# PROJECT DELIVERABLE REGISTER (QPF06.01)

## Sheet 1

| Drg. Ref. | Drawing Title | Format | Day | 04 | 08 | 15 | 11 | 09 | 1 | 09 | 11 | 26 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Month | 09 | 02 | 02 | 03 | 04 | 05 | 05 | 09 | 09 | 11 |
| | | | Year | 20 | 22 | 22 | 22 | 24 | 24 | 24 | 24 | 24 | 24 |
| | | | REVISION REFERENCE | | | | | | | | | | |
| 19289-BMD-ZZ-XX-DR-C-1010 | ACCESS AND SURFACES LAYOUT | A1 | | PL1 | | | PL2 | PL3 | PL3 | PL3 | PL4 | PL4 | PL4 |
| 19289-BMD-ZZ-XX-DR-C-1011 | VEHICLE TRACKING & SIGHTLINES ANALYSIS | A1 | | PL1 | | | PL2 | PL3 | PL3 | PL3 | PL4 | PL4 | PL4 |
| 19289-BMD-ZZ-XX-DR-C-1012 | VEHICLE TRACKING ANALYSIS (RIGHT TURN ENTRY) | A1 | | | | | PL1 | PL2 | PL2 | PL2 | PL3 | PL3 | PL3 |
| 19289-BMD-ZZ-XX-DR-C-1020 | DRAINAGE & WATERMAINS PLAN LAYOUT | A1 | | PL1 | PL2 | PL3 | PL3 | PL4 | PL4 | PL5 | | PL8 | PL8 |
| 19289-BMD-ZZ-XX-DR-C-1021 | SUDS STRATEGY LAYOUT | A1 | | PL1 | | | PL2 | PL3 | PL4 | PL4 | PL5 | PL6 | PL6 |
| 19289-BMD-ZZ-XX-DR-C-1120 | SURFACE WATER AND FOUL DRAINAGE LONGSECTIONS | A1 | | PL1 | PL2 | PL2 | PL2 | PL3 | PL3 | PL3 | | PL4 | PL4 |
| 19289-BMD-ZZ-XX-DR-C-1200 | STANDARD DRAINAGE DETAILS | A0 | | PL1 | | | PL2 | PL3 | PL3 | PL3 | | PL3 | PL3 |
| 19289-BMD-ZZ-XX-DR-C-1210 | ROAD & HARDSTANDING STANDARD DETAILS | A0 | | PL1 | | | PL2 | PL3 | PL3 | PL3 | | PL3 | PL3 |
| 19289-BMD-ZZ-XX-DR-C-1215 | SUDS DETAILS | A1 | | PL1 | | | PL2 | PL3 | PL3 | PL3 | | PL4 | PL4 |
| 19289-BMD-ZZ-XX-DR-C-1220 | STANDARD WATERMAIN DETAILS | A0 | | PL1 | | | PL2 | PL3 | PL3 | PL3 | | PL3 | PL3 |
| 19289-BMD-ZZ-XX-DR-C-1300 | OVERLAND FLOW LAYOUT | A1 | | PL1 | | | PL2 | PL3 | PL3 | PL3 | | PL4 | PL4 |
| 19289-BMD-ZZ-FN-DR-S-2000 | FOUNDATION LAYOUT | A1 | | | | | PL1 | PL2 | PL2 | PL2 | | PL3 | PL3 |
| Doc. Ref. | Document Title | | | | | | | | | | | | |
| 19289-IR-01 | INFRASTRUCTURE REPORT FOR PLANNING | A4 | | PL1 | | | PL2 | PL3 | PL3 | PL4 | | PL5 | PL6 |
| 20-0013 | CAUSEWAY GEOTECH - GROUND INVESTIGATION | A4 | | A00 | | | A00 | A00 | A00 | A00 | | A00 | A00 |

| DELIVERY | | ISSUE TO: | | Number of Copies | | | | | | | | | |
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| POST | COURIER | CLIENT | HARDCOPY | | | | | | | | | | |
| HAND | COLLECTION | | SOFT (D / E) | D | D | D | D | E | E | E | | E | E |
| POST | COURIER | ARCHITECT | HARDCOPY | | | | | | | | | | |
| HAND | COLLECTION | | SOFT (D / E) | D | D | D | D | E | E | E | | E | E |
| POST | COURIER | SERVICES ENGINEER | HARDCOPY | | | | | | | | | | |
| HAND | COLLECTION | | SOFT (D / E) | | | | | | | | | | |
| POST | COURIER | QUANTITY SURVEYOR | HARDCOPY | | | | | | | | | | |
| HAND | COLLECTION | | SOFT (D / E) | | | | | | | | | | |
| POST | COURIER | PLANNING CONSULTANT | HARDCOPY | | | | | | | | | | |
| HAND | COLLECTION | | SOFT (D / E) | D | D | D | D | E | E | E | | E | E |
| POST | COURIER | FIRE CONSULTANT | HARDCOPY | | | | | | | | | | |
| HAND | COLLECTION | | SOFT (D / E) | | | | | | | | | | |
| POST | COURIER | LANDSCAPE ARCHITECT | HARDCOPY | | | | | | | | | | |
| HAND | COLLECTION | | SOFT (D / E) | D | D | D | D | E | E | E | | E | E |
| POST | COURIER | CONTRACTOR | HARDCOPY | | | | | | | | | | |
| HAND | COLLECTION | | SOFT (D / E) | | | | | | | | | | |
| POST | COURIER | ASSIGNED CERTIFIER | HARDCOPY | | | | | | | | | | |
| HAND | COLLECTION | | SOFT (D / E) | | | | | | | | | | |
| POST | COURIER | PSDP | HARDCOPY | | | | | | | | | | |
| HAND | COLLECTION | | SOFT (D / E) | D | D | D | D | D | | | | | |
| POST | COURIER | IRISH WATER | HARDCOPY | | | | | | | | | | |
| HAND | COLLECTION | | SOFT (D / E) | D | D | D | | D | | | | | |
| POST | COURIER | | HARDCOPY | | | | | | | | | | |
| HAND | COLLECTION | | SOFT (D / E) | | | | | | | | | | |
| POST | COURIER | | HARDCOPY | | | | | | | | | | |
| HAND | COLLECTION | | SOFT (D / E) | | | | | | | | | | |
| POST | COURIER | | HARDCOPY | | | | | | | | | | |
| HAND | COLLECTION | | SOFT (D / E) | | | | | | | | | | |
| POST | COURIER | | HARDCOPY | | | | | | | | | | |
| HAND | COLLECTION | | SOFT (D / E) | | | | | | | | | | |

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**Quantity Surveyor:**
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**Fire Consultant**
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**Landscape Architect:**
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**Contractor:**
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**Assigned Certifier:**
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**PSDP:**
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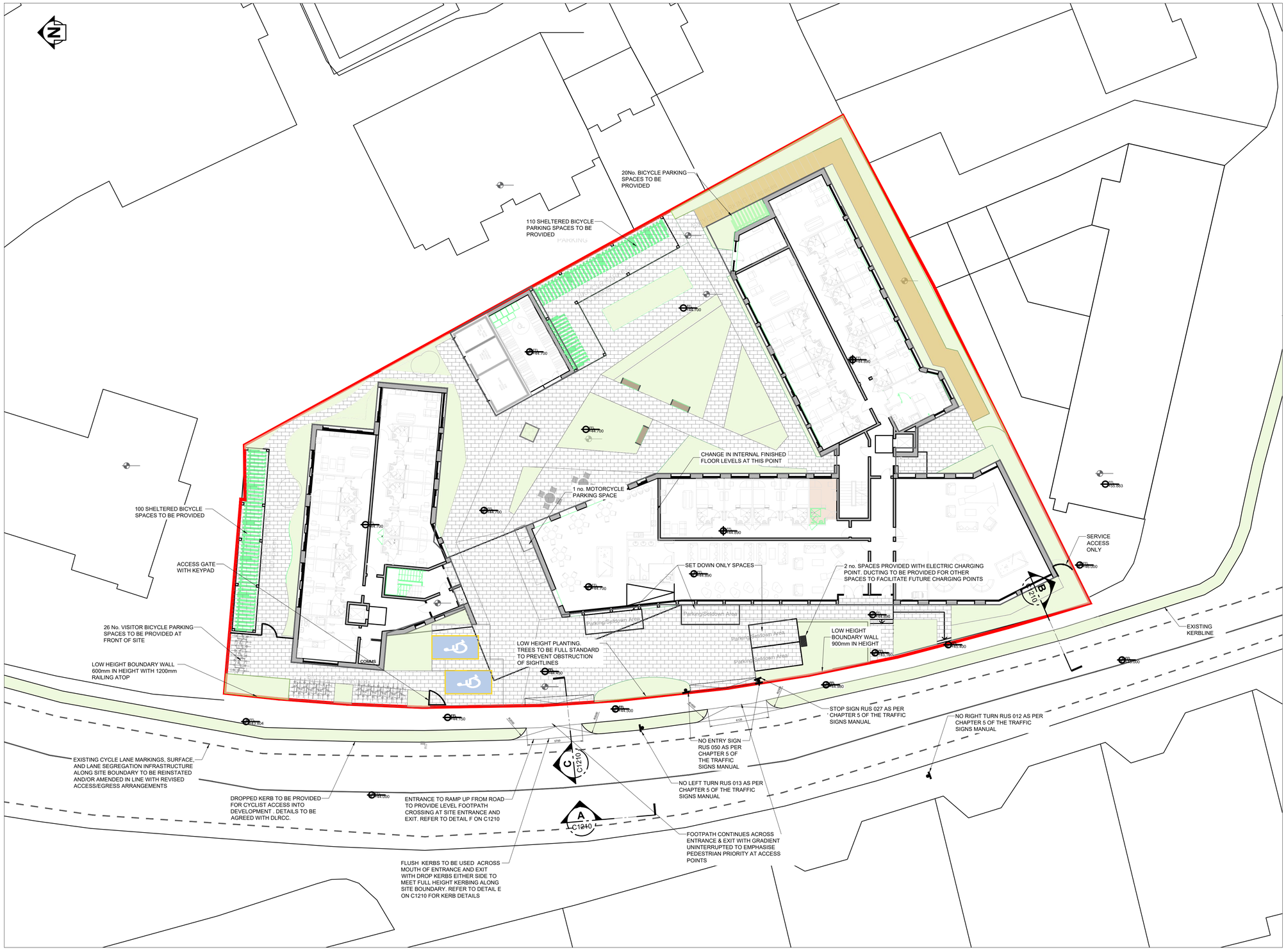
Tel: (0044) 084 5413 2722

Project Title: Goatstown Student Accommodation
Project Number: 19289

Deliverables Checked and Approved for Issue: BM




## ACCESS AND SURFACES LAYOUT

SCALE @ A1: 1:200
SCALE @ A3: 1:400

### NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - 'ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

### LEGEND

- GRASS / SOFT LANDSCAPING
- GRAVEL PATH
- MACADAM PATHS
- PERMEABLE PAVING (REFER TO SECTION D OF C1215)

| ISSUE | DATE | DESCRIPTION | DRN / CHK | P.E. / P.D. |
|---|---|---|---|---|
| PL4 | 10.09.24 | REVISED FOR LRD APPLICATION | MC / POD | BM / BM |
| PL3 | 19.03.24 | RE-ISSUED FOR LRD APPLICATION | MC / POD | BM / BM |
| PL2 | 11.03.22 | REVISED PLANNING APPLICATION | POD / POD | BM / BM |
| PL1 | 04.09.20 | ISSUED FOR PLANNING | TMH / TMH | BM / BM |

DRAWING STAGE
**PLANNING**

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PROJECT TITLE
**GOATSTOWN STUDENT ACCOMMODATION**

BM PROJECT No.
**19.289**

MODEL REFERENCE

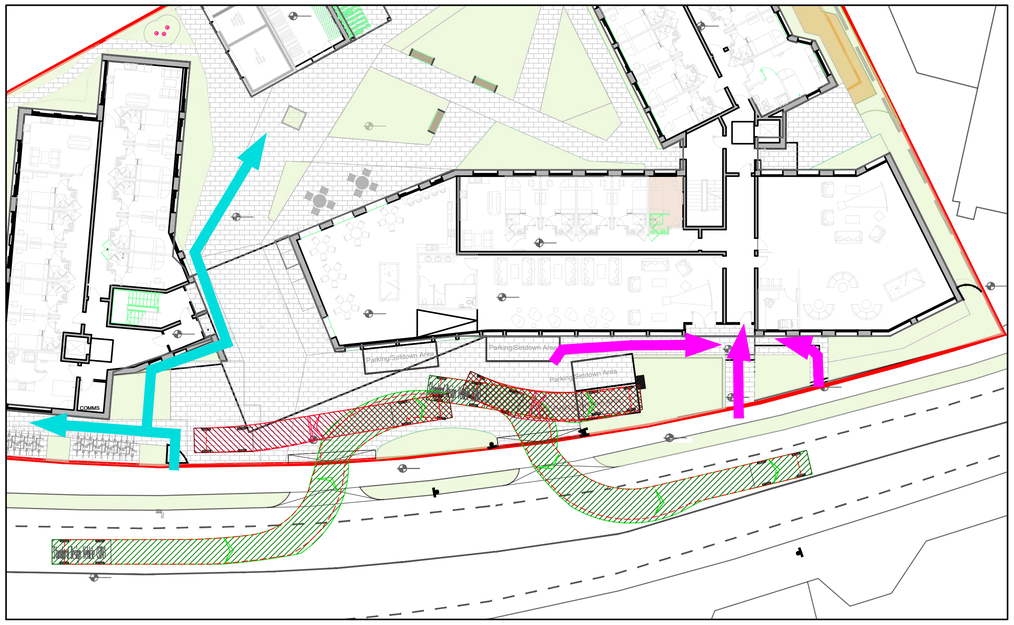
MODEL REV.

SUITABILITY

DRAWING TITLE
**ACCESS AND SURFACES LAYOUT**

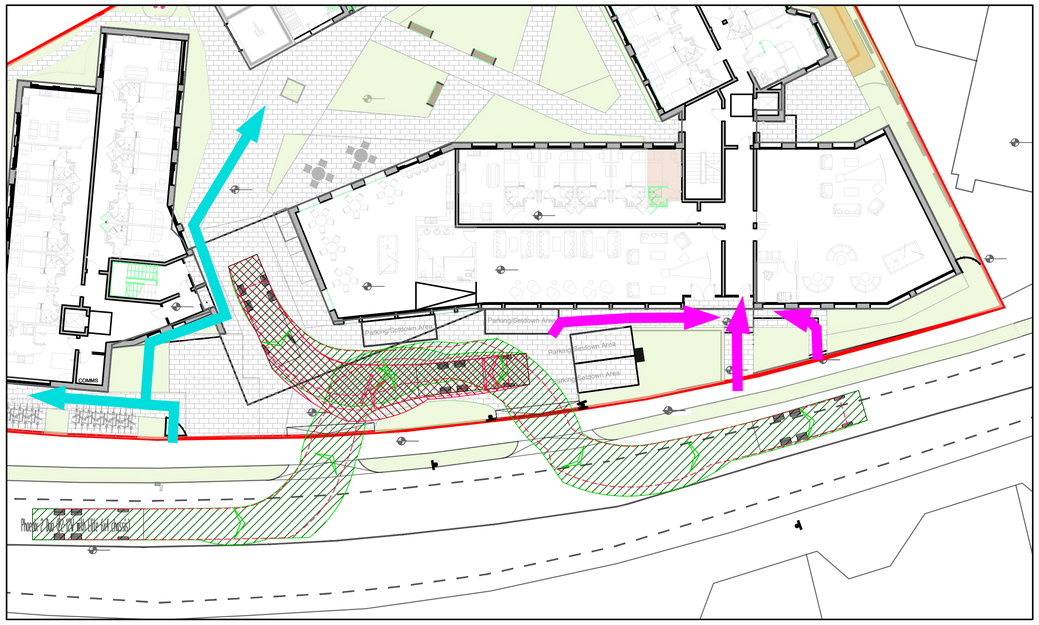
DRAWING No.
**19289-BMD-ZZ-XX-DR-C-1010**

ISSUE
**PL4**



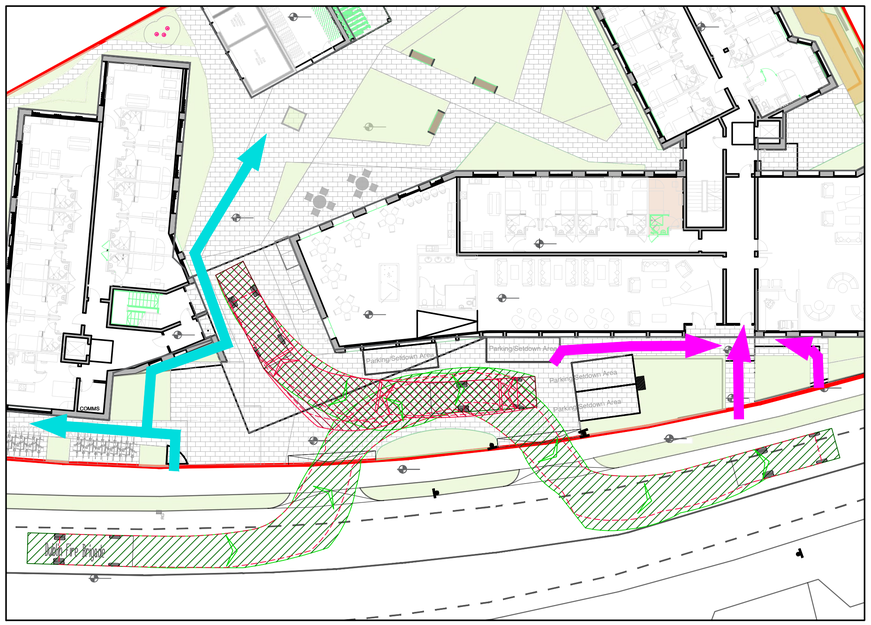

## PRIVATE CAR AUTOTRACK

SCALE @ A1: 1:250
SCALE @ A3: 1:500



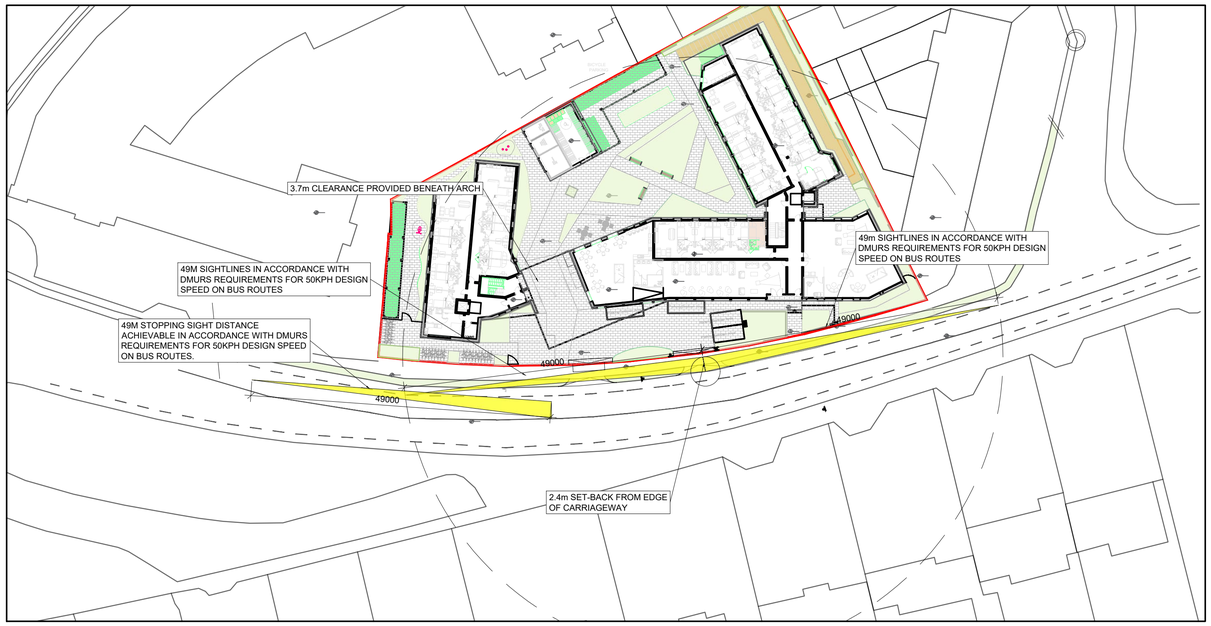

## REFUSE TRUCK TWIN AXLE AUTOTRACK

SCALE @ A1: 1:250
SCALE @ A3: 1:500




## DUBLIN FIRE BRIGADE - FIRE TENDER AUTOTRACK

SCALE @ A1: 1:250
SCALE @ A3: 1:500




## SIGHTLINES AT EXIT JUNCTION & STOPPING SIGHT DISTANCE TO ENTRANCE

SCALE @ A1: 1:500
SCALE @ A3: 1:1000

## NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - 'ASK'.
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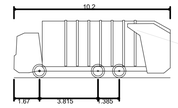
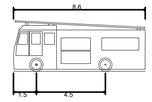
## LEGEND


| Standard Design Vehicle (SDV) | |
|---|---|
| Overall Length | 4.800m |
| Overall Width | 2.000m |
| Overall Body Height | 1.950m |
| Min Body Ground Clearance | 0.100m |
| Track Width | 2.000m |
| Lock-to-lock time | 4.00s |
| Wall to Wall Turning Radius | 6.000m |




| Phoenix 2 Duo (P2-12W with Elite 6x4 chassis) | |
|---|---|
| Overall Length | 10.200m |
| Overall Width | 2.530m |
| Overall Body Height | 3.751m |
| Min Body Ground Clearance | 0.304m |
| Track Width | 2.500m |
| Lock-to-lock time | 4.00s |
| Curb to Curb Turning Radius | 7.800m |




| Dublin Fire Brigade | |
|---|---|
| Overall Length | 8.600m |
| Overall Width | 2.500m |
| Overall Body Height | 3.300m |
| Min Body Ground Clearance | 0.140m |
| Track Width | 2.500m |
| Lock-to-lock time | 4.00s |
| Curb to Curb Turning Radius | 7.750m |

DENOTES DESIGNATED PEDESTRIAN ACCESS ROUTE

DENOTES DESIGNATED PEDESTRIAN + CYCLIST ACCESS ROUTE

| ISSUE | DATE | DESCRIPTION | DRN | CHK |
|---|---|---|---|---|
| PL4 | 10.09.24 | REVISED FOR LRD APPLICATION | MC | BM |
| PL3 | 19.03.24 | RE-ISSUED FOR LRD APPLICATION | MC | BM |
| PL2 | 11.03.22 | REVISED PLANNING APPLICATION | POD | BM |
| PL1 | 04.09.20 | ISSUED FOR PLANNING | NMM | TMH |

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PROJECT TITLE
**GOATSTOWN STUDENT ACCOMMODATION**

BM PROJECT No.
**19.289**

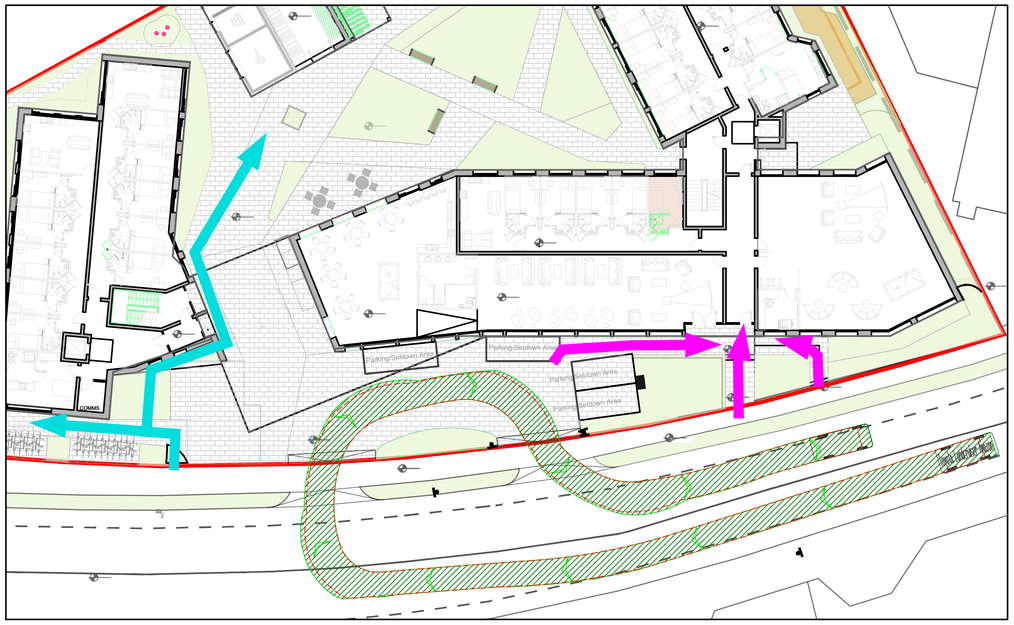
MODEL REFERENCE
**19289-BMD-ZZ-XX-DR-C-1011**

MODEL REV. **P1** | SUITABILITY **S0**

DRAWING TITLE
**VEHICLE TRACKING AND SIGHTLINES ANALYSIS**

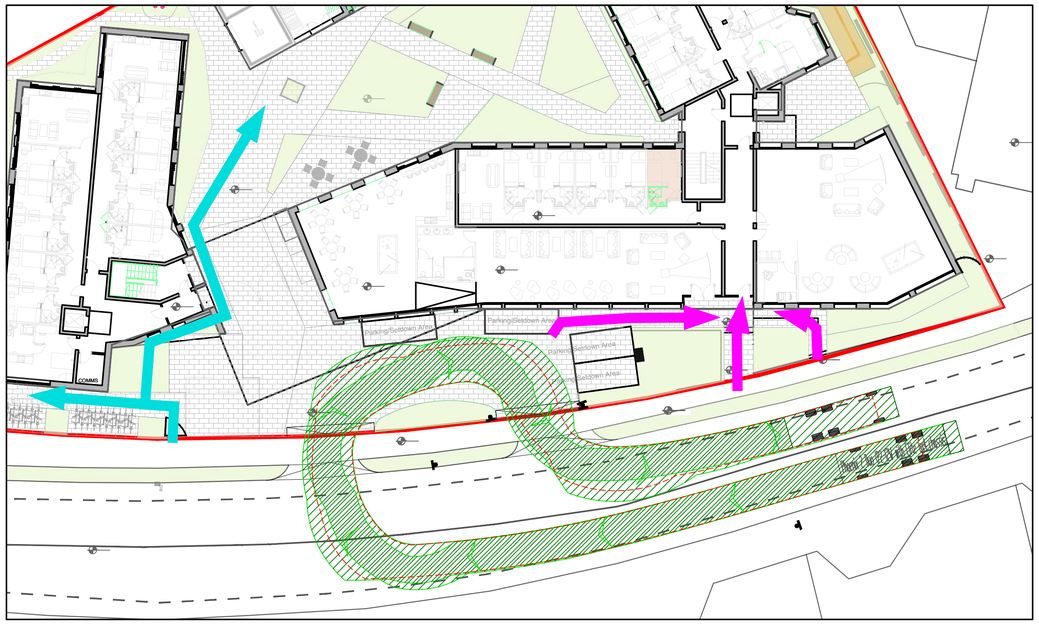
DRAWING No.
**19289-BMD-ZZ-XX-DR-C-1011**

ISSUE **PL4**



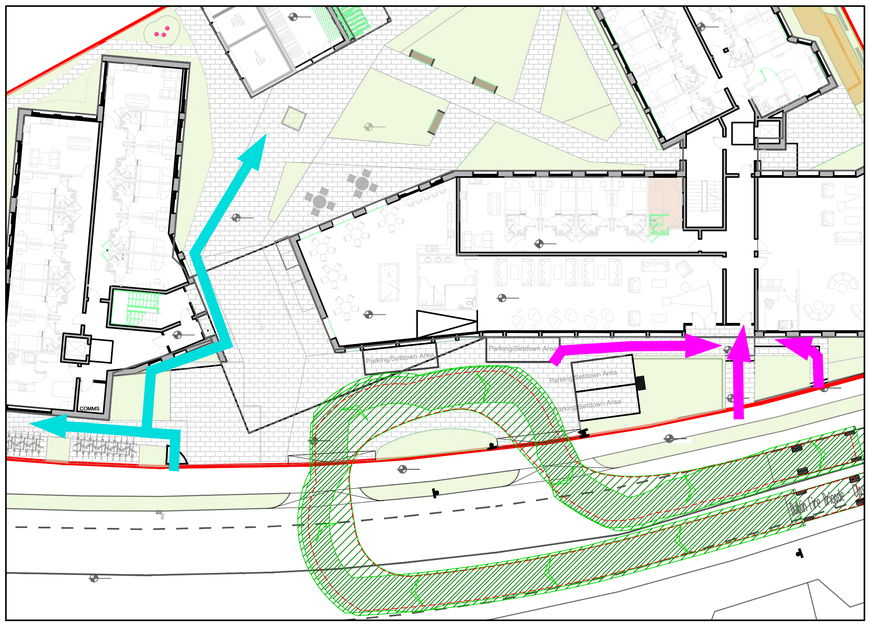

## PRIVATE CAR AUTOTRACK - RIGHT TURN ENTRY

SCALE @ A1: 1:250
SCALE @ A3: 1:500




## REFUSE TRUCK TWIN AXLE AUTOTRACK - RIGHT TURN ENTRY

SCALE @ A1: 1:250
SCALE @ A3: 1:500




## DUBLIN FIRE BRIGADE - FIRE TENDER AUTOTRACK (RIGHT TURN ENTRY)

SCALE @ A1: 1:250
SCALE @ A3: 1:500

### NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - 'ASK'.
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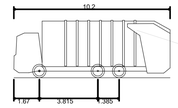
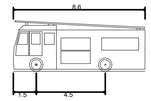
## LEGEND


| Standard Design Vehicle (SDV) | |
|---|---|
| Overall Length | 4.800m |
| Overall Width | 2.000m |
| Overall Body Height | 1.950m |
| Min Body Ground Clearance | 0.100m |
| Track Width | 2.000m |
| Lock-to-lock time | 4.00s |
| Wall to Wall Turning Radius | 6.000m |




| Phoenix 2 Duo (P2-12W with Elite 6x4 chassis) | |
|---|---|
| Overall Length | 10.200m |
| Overall Width | 2.530m |
| Overall Body Height | 3.751m |
| Min Body Ground Clearance | 0.304m |
| Track Width | 2.500m |
| Lock-to-lock time | 4.00s |
| Curb to Curb Turning Radius | 7.800m |




| Dublin Fire Brigade | |
|---|---|
| Overall Length | 8.600m |
| Overall Width | 2.500m |
| Overall Body Height | 3.300m |
| Min Body Ground Clearance | 0.140m |
| Track Width | 2.500m |
| Lock-to-lock time | 4.00s |
| Curb to Curb Turning Radius | 7.750m |

DENOTES DESIGNATED PEDESTRIAN ACCESS ROUTE

DENOTES DESIGNATED PEDESTRIAN + CYCLIST ACCESS ROUTE

| ISSUE | DATE | DESCRIPTION | DRN | CHK | P.E. | P.D. |
|---|---|---|---|---|---|---|
| PL3 | 10.09.24 | REVISED FOR LRD APPLICATION | MC | POD | BM | BM |
| PL2 | 19.03.24 | RE-ISSUED FOR LRD APPLICATION | MC | TMH | TMH | BM |
| PL1 | 11.03.22 | ISSUED FOR PLANNING | NMM | TMH | TMH | BM |

DRAWING STAGE
**PLANNING**

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| PROJECT TITLE | BM PROJECT No. |
|---|---|
| GOATSTOWN STUDENT ACCOMMODATION | 19.289 |

| MODEL REFERENCE | MODEL REV. | SUITABILITY |
|---|---|---|
| 19289-BMD-ZZ-XX-DR-C-1012 | P1 | S0 |

DRAWING TITLE
**VEHICLE TRACKING ANALYSIS (RIGHT TURN ENTRY)**

| DRAWING No. | ISSUE |
|---|---|
| 19289-BMD-ZZ-XX-DR-C-1012 | PL3 |

## NEW SURFACE WATER MANHOLE

| MANHOLE | COVER LEVEL | INVERT LEVEL | 'E' EASTING | 'N' NORTHING |
|---|---|---|---|---|
| Ex. S 790 | +44.08 | IN FROM S1.4: +42.88 | 717725.8801 | 728980.5629 |
| S1.0 | +44.75 | OUT: +43.55 | 717772.7152 | 728953.9161 |
| S1.1 | +44.84 | IN FROM S1.0: +43.48<br>OUT: +43.48 | 717763.0919 | 728948.3473 |
| S1.2 | +44.59 | IN FROM S1.1: +43.09<br>OUT: +43.09 | 717750.6581 | 728973.7749 |
| S1.3 | +44.59 | IN FROM S1.2: +43.06<br>OUT: +43.06 | 717746.7607 | 728974.7507 |
| S1.4 | +44.54 | IN FROM S1.3: +42.96<br>OUT: +42.96 | 717732.7842 | 728970.0202 |

## NEW FOUL DRAINAGE MANHOLE

| MANHOLE | COVER LEVEL | INVERT LEVEL | 'E' EASTING | 'N' NORTHING |
|---|---|---|---|---|
| F1.0 | +44.89 | OUT: +43.30 | 717758.8714 | 728945.8350 |
| F1.1 | +44.59 | IN FROM F1.0: +43.11<br>OUT: +43.11 | 717748.0812 | 728972.6134 |
| F1.2 | +44.65 | IN FROM F1.1: +43.00<br>IN FROM F2.0: +43.23<br>OUT: +43.00 | 717733.1405 | 728966.6366 |
| F1.3 | +44.31 | IN FROM F1.2: +42.88 | 717715.2036 | 728963.0993 |
| F2.0 | +44.93 | OUT: +43.44 | 717734.6111 | 728937.6594 |


## DRAINAGE & WATERMAINS PLAN LAYOUT

SCALE @ A1: 1:250
SCALE @ A3: 1:500

## NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - 'ASK'.
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## CIVIL LEGEND

- EX. FOUL MANHOLE — Ex.F
- EX. FOUL PIPE — PIPE DESCRIPTION
- NEW FOUL MANHOLE — F
- NEW FOUL PIPE — PIPE DESCRIPTION
- EX. SURFACE WATER MANHOLE — Ex.S
- EX. SURFACE WATER PIPE — PIPE DESCRIPTION
- NEW SURFACE WATER MANHOLE — S
- NEW SURFACE WATER PIPE — PIPE DESCRIPTION
- EX. COMBINED MANHOLE — Ex.C
- EX. COMBINED PIPE — PIPE DESCRIPTION
- NEW COMBINED MANHOLE — C
- NEW COMBINED PIPE — PIPE DESCRIPTION
- NEW RISING MAIN — PIPE DESCRIPTION
- DECOMMISSIONED LINE — PIPE DESCRIPTION
- FOUL ACCESS JUNCTION — AJ
- SURFACE ACCESS JUNCTION — AJ
- RAINWATER PIPE — RWP
- SOIL VENT PIPE — SVP
- ROAD GULLEY — RG
- BACK INLET GULLEY TRAP — BIGT
- FOUL RODDING EYE — RE
- SURFACE RODDING EYE — RE
- GULLEY TRAP — GT
- SITE BOUNDARY


## KEY PLAN

SCALE @ A1: 1:1500
SCALE @ A3: 1:3000

NOTE:

a) FOUL SEWER PIPES TO uPVC SN8.

b) WATERMAIN PIPES TO BE HOPE

c) SEWER & WATERMAIN PIPES TO B LAID WITH 3m MINIMUM CLEARANCE FROM ALL EXISTING & PROPOSED STRUCTURES

| ISSUE | DATE | DESCRIPTION | DRN / ORIG | P.E. / P.D. |
|---|---|---|---|---|
| PL8 | 19.09.24 | REVISED FOR LRD APPLICATION | CN / POD | BM / BM |
| PL7 | 17.09.24 | REVISED FOR LRD APPLICATION | MC / TMH | BM / BM |
| PL6 | 08.08.24 | REVISED AS CLOUDED | MC / TMH | BM / BM |
| PL5 | 09.05.24 | REVISED AS PER UE COF | MC / TMH | BM / BM |
| PL4 | 15.03.24 | RE-ISSUED FOR LRD APPLICATION | MC / TMH | BM / BM |
| PL3 | 15.02.22 | RED LINE BOUNDARY REVISED | MC / TMH | BM / BM |
| PL2 | 08.02.22 | REVISED PLANNING APPLICATION | MC / TMH | BM / BM |
| PL1 | 01.07.20 | ISSUE FOR IRISH WATER REVIEW | TMH / TMH | TMH / BM |

DRAWING STAGE
**PLANNING**

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Consulting Engineers, Civil . Structural . Project Management.E-mail: bmce@bmce.ie Web: www.bmce.ie

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PROJECT TITLE
**GOATSTOWN STUDENT ACCOMMODATION**

BM PROJECT No.
**19289**

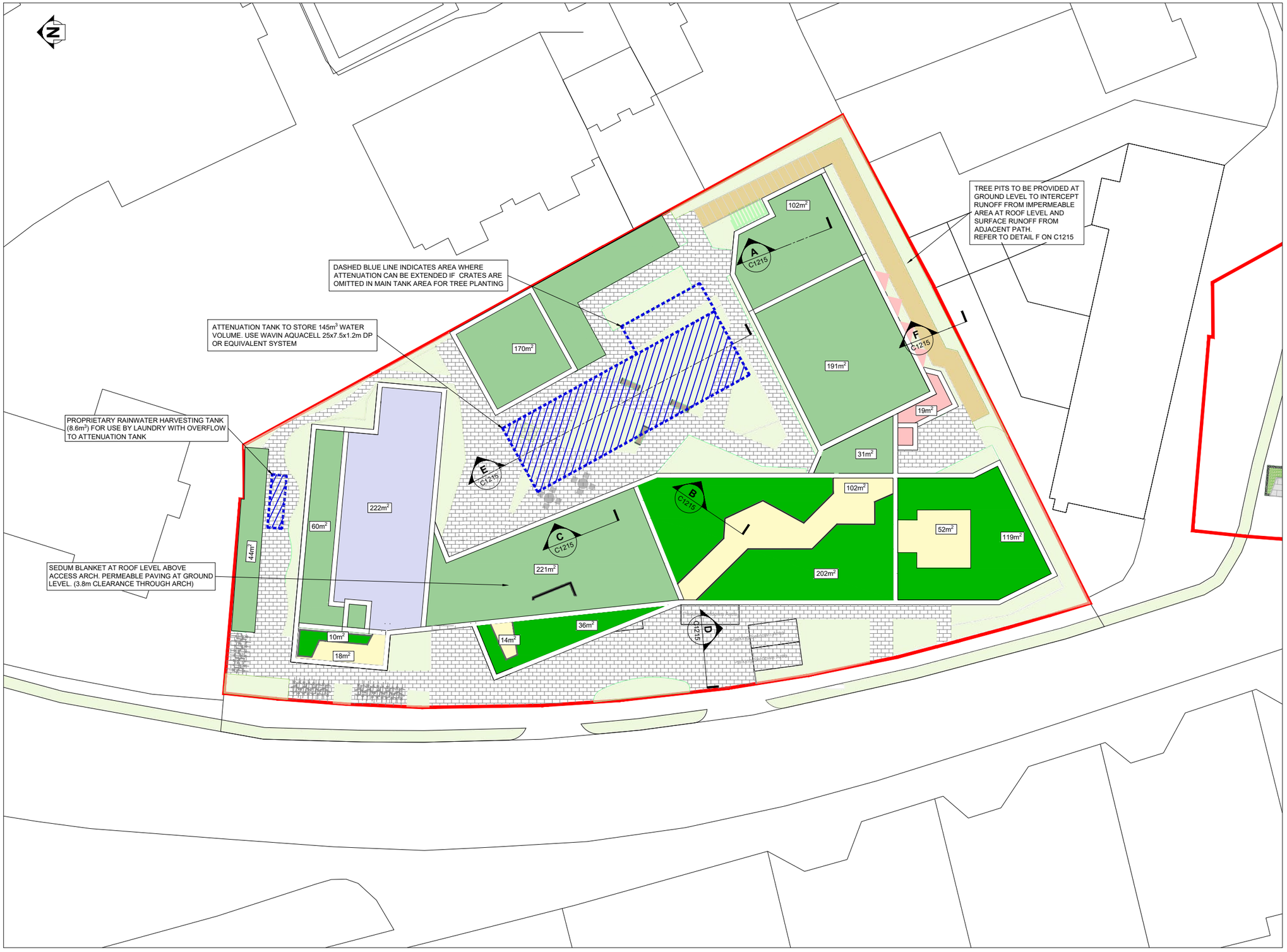
MODEL REFERENCE
**19289-BMD-ZZ-XX-DR-C-1020**

MODEL REV. | SUITABILITY

DRAWING TITLE
**DRAINAGE & WATERMAINS PLAN LAYOUT**

DRAWING No.
**19289-BMD-ZZ-XX-DR-C-1020**

ISSUE
**PL8**




## SUDS STRATEGY LAYOUT

SCALE @ A1: 1:200
SCALE @ A3: 1:400

## NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - 'ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

## LEGEND

| | |
|---|---|
| GRASS / SOFT LANDSCAPING | 132m² (+544m² NOT DRAINED) |
| GRAVEL PATH | 57m² |
| MACADAM PATHS | 90m² |
| PERMEABLE PAVING (REFER TO SECTION D OF C1215) | 931m² (+144m2 COVERED) |
| ROOF - STANDARD RUN-OFF | 19m² |
| HARVESTED ROOF (FOR LAUNDRY USE) | 222m² |
| EXTENSIVE GREEN ROOF - SEDUM BLANKET (REFER TO DETAIL C OF C1215) | 819m² |
| INTENSIVE GREEN ROOF - PAVED SURFACE (REFER TO DETAIL B OF C1215) | 186m² |
| INTENSIVE GREEN ROOF - PLANTED WITH BIODIVERSE SOFT LANDSCAPING. | 367m² |

ROOF AREAS

| | | | |
|---|---|---|---|
| STANDARD RUN-OFF | = 19m² | = | 1.2% |
| HARVESTED RUN-OFF | = 222m² | = | 13.8% |
| EXTENSIVE GREEN | = 819m² | = | 50.8% |
| INTENSIVE GREEN PLANTED (BIODIVERSE) | = 367m² | = | 22.8% |
| INTENSIVE GREEN PAVED | = 186m² | = | 11.4% |
| TOTAL | 1613m² | | 100% |

| ISSUE | DATE | DESCRIPTION | DRN / CHKD |
|---|---|---|---|
| PL6 | 19.09.24 | REVISED FOR LRD APPLICATION | CN / FOG / BM / BM |
| PL5 | 11.09.24 | REVISED FOR LRD APPLICATION | MC / FOG / BM / BM |
| PL4 | 30.04.24 | REVISED FOR LRD APPLICATION | MC / FOG / BM / BM |
| PL3 | 19.03.24 | REVISED FOR LRD APPLICATION | MC / FOG / BM / BM |
| PL2 | 11.03.22 | REVISED PLANNING APPLICATION | POD / POG / BM / BM |
| PL1 | 04.09.20 | ISSUED FOR PLANNING | TMH / TMH / BM / BM |

DRAWING STAGE
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PROJECT TITLE
**GOATSTOWN STUDENT ACCOMMODATION**

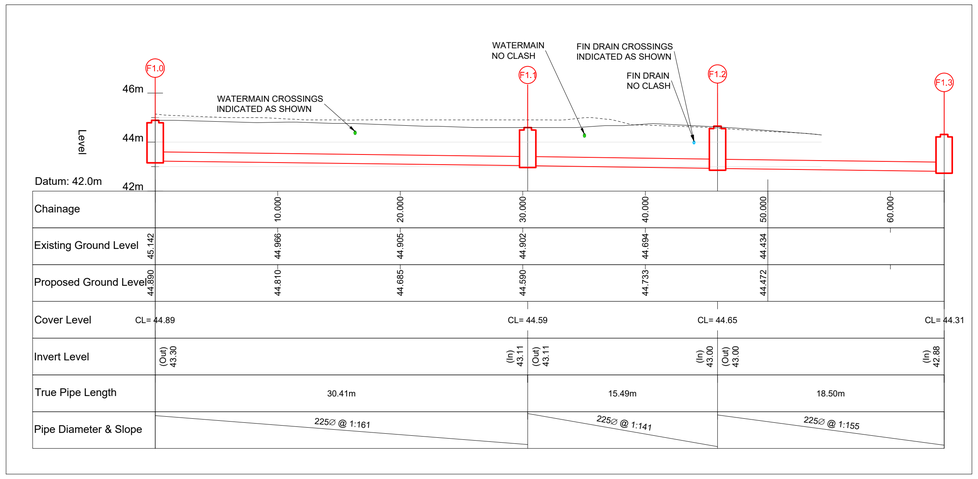
BM PROJECT No.
**19.289**

MODEL REFERENCE | MODEL REV. | SUITABILITY

DRAWING TITLE
**SuDS STRATEGY LAYOUT**

DRAWING No.
**19289-BMD-ZZ-XX-DR-C-1021**

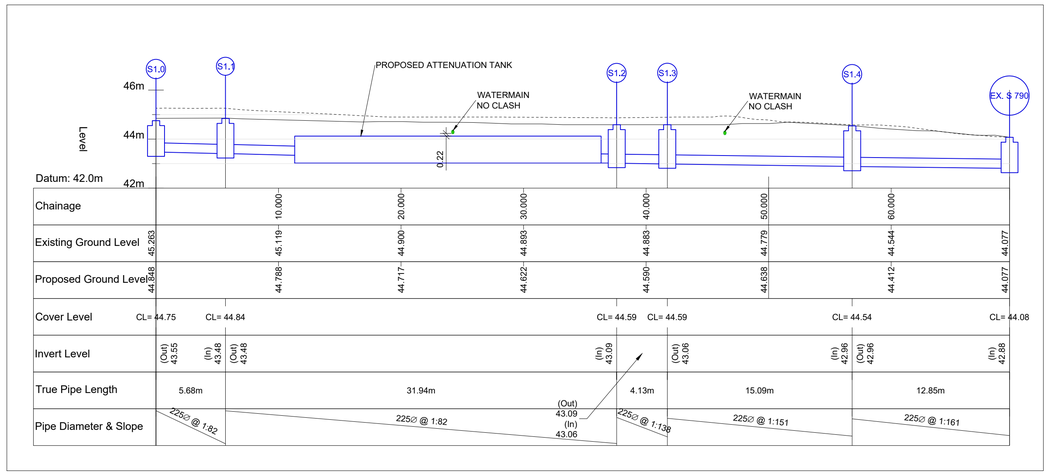
ISSUE
**PL6**




## F1 SECTION

1020

SCALE @ A0: H=1:250 ; V=1:125
SCALE @ A2: H=1:500 ; V=1:250




## S1 SECTION

1020

SCALE @ A0: H=1:250 ; V=1:125
SCALE @ A2: H=1:500 ; V=1:250




## F2 SECTION

1020

SCALE @ A0: H=1:250 ; V=1:125
SCALE @ A2: H=1:500 ; V=1:250




## FIN DRAIN SECTIONS

1020

SCALE @ A0: H=1:250 ; V=1:125
SCALE @ A2: H=1:500 ; V=1:250

## NOTES

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2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.
3. ALL FOUL DRAINAGE AND WATERMAINS TO BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST IRISH WATER STANDARD DETAILS AND CODES OF PRACTICE.
4. POSITIONS OF SERVICES SHOWN ARE INDICATIVE ONLY. THE SETTING OUT OF ALL SERVICES SHOWN IS THE RESPONSIBILITY OF THE CONTRACTOR, AND HE/SHE SHALL SATISFY THEMSELVES THAT THE REQUIRED DEPTH OF COVER AND SEPERATION DISTANCES ARE ACHIEVED IN ACCORDANCE WITH THE IRISH WATER CODES OF PRACTICE AND STANDARD DETAILS, IN PARTICULAR STD-W-11 AND STD-WW-05
5. THE GENERAL SPECIFICATION FOR BELOW GROUND FOUL WASTEWATER GRAVITY DRAINAGE PIPELINE SYSTEMS ON THE PROJECT SHALL BE THE "CODE OF PRACTICE FOR WASTEWATER INFRASTRUCTURE" PUBLISHED BY IRISH WATER (LATEST EDITION).
5. THE GENERAL SPECIFICATION FOR THE WATERMAIN SYSTEM ON THE PROJECT SHALL BE THE "CODE OF PRACTICE FOR WATER INFRASTRUCTURE" PUBLISHED BY IRISH WATER (LATEST EDITION).

| ISSUE | DATE | DESCRIPTION | DRN / ORIG | P.E / P.D. |
|---|---|---|---|---|
| PL4 | 23.09.24 | ISSUED FOR PLANNING | AO / MJ | BM / BM |
| PL3 | 15.03.24 | REVISED FOR LRD APPLICATION | BS / MJ | BM / BM |
| PL2 | 11.03.22 | REVISED PLANNING APPLICATION | TN / MJ | BM / BM |
| PL1 | 04.09.20 | ISSUED FOR PLANNING | MJ / MJ | TMH / BM |

DRAWING STAGE
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**ORCHID RESIDENTIAL LTD**

PROJECT TITLE
**GOATSTOWN STUDENT ACCOMMODATION**

BM PROJECT No.
**19.289**

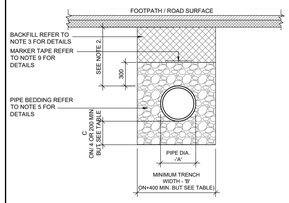
MODEL REFERENCE
**19289-BM-C3D-M-DRAINAGE**

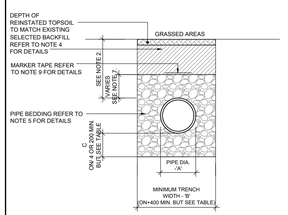
MODEL REV. | SUITABILITY

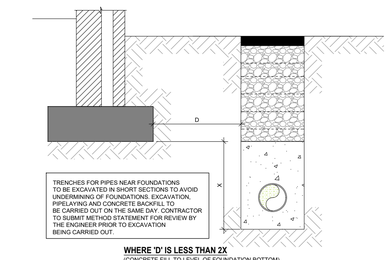
DRAWING TITLE
**SURFACE WATER & FOUL DRAINAGE LONGSECTIONS**

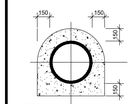
DRAWING No.
**GOAT-BMD-ZZ-ZZ-DR-C-1120**

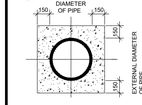
ISSUE
**PL4**

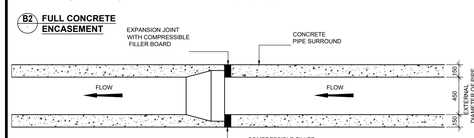


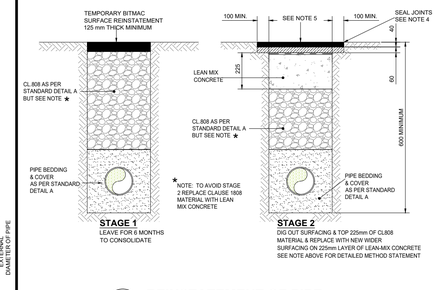


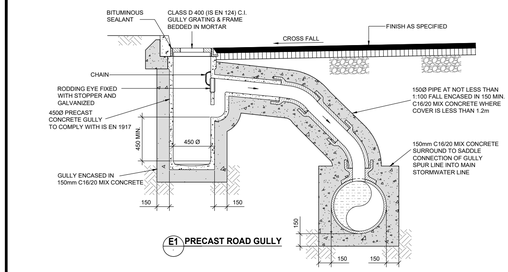


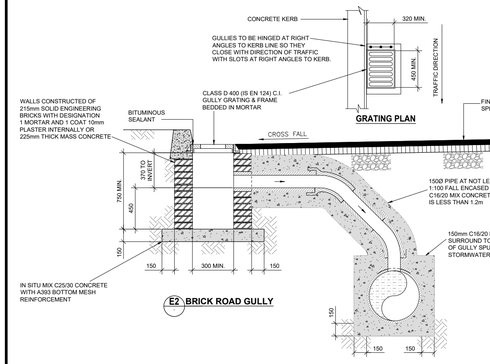


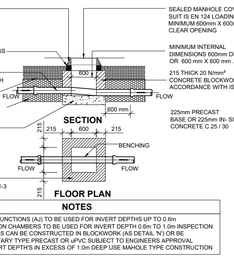


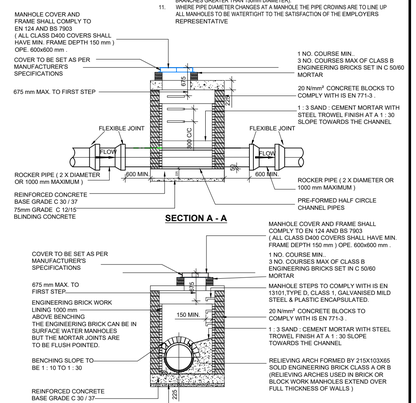


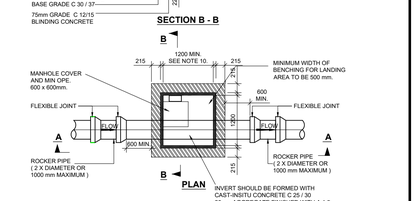












## A1 CROSS SECTION IN PAVED AREAS

## A2 CROSS SECTION IN GRASSED AREAS / SOFT LANDSCAPING

1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE
2. THE MINIMUM DEPTH OF COVER FROM THE FINISHED SURFACE TO THE CROWN OF GRAVITY PIPES WITHOUT PROTECTION SHOULD BE AS FOLLOWS :
   - A) GARDENS AND PATHWAYS WITHOUT ANY POSSIBILITY OF VEHICULAR ACCESS - DEPTH NOT LESS THAN 0.5 M . ( THIS WOULD NORMALLY RELATE TO DRAINS IN PRIVATE PROPERTY . SHALLOW PIPES OF THIS NATURE ARE UNDESIRABLE AND SHOULD BE INSTALLED IN ACCORDANCE WITH THE CURRENT BUILDING REGULATIONS ) .
   - B) DRIVEWAYS, PARKING AREAS AND YARDS WITH HEIGHT RESTRICTIONS TO PREVENT ENTRY BY VEHICLES WITH A GROSS VEHICLE WEIGHT IN EXCESS OF 7.5 TONNES - DEPTH NOT LESS THAN 0.75 M .
   - C) DRIVEWAYS, PARKING AREAS AND NARROW STREETS WITHOUT FOOTWAYS ( E.G.MEWS DEVELOPMENTS ) WITH LIMITED ACCESS FOR VEHICLES WITH A GROSS VEHICLE WEIGHT IN EXCESS OF 7.5 TONNES - DEPTH NOT LESS THAN 0.9 M .
   - D) DEPTHS OF SEWERS IN GATED ESTATES SHALL BE SIMILAR TO THAT OUTLINED ABOVE .
   - E) AGRICULTURAL LAND AND PUBLIC OPEN SPACE - DEPTH NOT LESS THAN 0.9 M .
   - F) OTHER HIGHWAYS AND PARKING AREAS WITH UNRESTRICTED ACCESS TO VEHICLES WITH A GROSS VEHICLE WEIGHT IN EXCESS OF 7.5 TONNES - DEPTH NOT LESS THAN 1.2 m . IF THE MINIMUM COVERS LISTED ABOVE ARE NOT ACHIEVED THE PIPES ARE TO BE FULLY ENCASED IN CONCRETE AS PER DETAIL B2.
3. CLAUSE 808 MATERIAL IN ACCORDANCE WITH THE TII SPECIFICATION FOR ROAD WORKS IS TO BE USED AS BACKFILL MATERIAL WHERE THE SEWER MAIN IS LOCATED IN ROADS, FOOTPATHS OR WHEN THE NEAREST PART OF THE TRENCH IS WITHIN 1 m OF THE PAVED EDGE OF THE ROADWAY. CLAUSE 808 IS TO BE COMPACTED AS PER CLAUSE 802 OF THE TII SPECIFICATION FOR ROAD WORKS .
4. SELECTED EXCAVATED MATERIAL (eg. CLASS 2C MATERIAL TO TABLE 6.1 OF TII SPECIFICATION FOR ROADWORKS) MAY BE USED IN GREEN - FIELD AREAS ABOVE GRANULAR PIPE SURROUND MATERIAL SUBJECT TO THE APPROVAL OF THE EMPLOYERS REPRESENTATIVE .
5. PIPE BEDDING SHALL COMPLY WITH WIS 4-08-02 AND IGN 4-08-01 GRANULAR MATERIAL SHALL BE 14 mm TO 5 mm GRADED AGGREGATE OR 10 mm SINGLE SIZED AGGREGATE IS EN 13242 CONCRETE BED , HAUNCH & SURROUND WHERE REQUIRED (NOTE: CONCRETE BED AND HAUNCH REQUIRED IN AREAS TO BE TAKEN IN CHARGE BY DUBLIN CITY COUNCIL) , SHALL BE TO DETAIL B1.
6. IN SOFT GROUND CONDITIONS ( CBR < 5 ) THE MATERIAL SHOULD BE EXCAVATED AND DISPOSED OF IN ACCORDANCE WITH THE WASTE MANAGEMENT ACT AND CLAUSE 808 MATERIAL IN ACCORDANCE WITH THE TII SPECIFICATION FOR ROAD WORKS SHALL REPLACE THE EXCAVATED MATERIAL, WRAPPED IN GEO - TEXTILE WRAPPING . ALTERNATIVELY , SPECIAL PIPE SUPPORT ARRANGEMENTS , INCLUDING PILING ETC . MAY BE REQUIRED WHERE THE DEPTH OF SOFT MATERIAL IS EXCESSIVE.SUCH ARRANGEMENTS SHALL BE SUBJECT TO ASSESSMENT BY THE EMPLOYERS REPRESENTATIVE BEFORE ADVANCING WITH THE WORK .
7. IN GREEN FIELD AREAS , TYPE B BACKFILL ( SELECTED EXCAVATED MATERIAL ) WILL BE ALLOWED ABOVE THE SIDE HAUNCH GRANULAR MATERIAL IN THE CASE OF RIGID PIPES . A GRANULAR SURROUND OF A MINIMUM DEPTH OF 150 mm ABOVE THE CROWN OF THE PIPE IS REQUIRED FOR FLEXIBLE PIPES , AND TYPE B MATERIAL MAY BE USED AS BACKFILL ABOVE THIS . ALL RISING MAINS IN GREENFIELD AREAS SHALL HAVE A MINIMUM COVER OF 300 mm OF GRANULAR MATERIAL ABOVE THE EXTERNAL CROWN OF THE PIPE .
8. PIPES SHALL NOT BE SUPPORTED ON STONES , ROCKS , OR ANY HARD OBJECTS AT ANY POINT ALONG THE TRENCH . ROCK SHALL BE EXCAVATED TO A DEPTH OF 150 mm BELOW THE ACTUAL DEPTH OF THE TRENCH WITH THE VOID FILLED WITH CLAUSE 808 MATERIAL IN ACCORDANCE WITH THE TII SPECIFICATION FOR ROAD WORKS . THE GRANULAR MATERIAL SHALL BE LAID ABOVE THIS VOID BACKFILL MATERIAL
9. NON DEGRADABLE MARKER TAPE SHOULD BE INSTALLED AT TOP OF PIPE BEDDING LAYER . .
10. TRENCH WIDTHS FOR PIPE SIZES 80 mm MAY BE < 500 mm , SUBJECT TO CONSIDERATION BEING GIVEN TO THE TRENCH DEPTH , HEALTH & SAFETY & CONSTRUCTION ACCESS REQUIREMENTS .

| ⌀PIPE DIAMETER A ( mm ) | TRENCH WIDTH B ( mm ) |
|---|---|
| 80 RISING MAIN | SEE NOTE 10. |
| 100 | 500 |
| 150 | 600 |
| 200 | 600 |
| 250 | 750 |
| 300 | 750 |
| 350 | 750 |
| 400 | 900 |
| 450 | 900 |

## PIPE MATERIALS

UNLESS SPECIFICALLY NOTED OTHERWISE IN THE DRAINAGE LAYOUT THE PIPE MATERIAL WILL BE AS FOLLOWS:

PIPE DIAMETER < 225mm: USE uPVC PIPE WORK
PIPE DIAMETER ≥225mm: USE CONCRETE PIPE WORK.
PIPE MATERIAL TO BE IN ACCORDANCE WITH THE FOLLOWING:

1. CONCRETE PIPES TO HAVE SPIGOT & SOCKET JOINTS AND RUBBER RING FITTINGS TO IS EN 1916 (2002); BS5911, PART 1 , (2002- 2010) AND IS 6 (2004), STRENGTH CLASS 120
2. uPVC PIPES, JOINTS AND FITTINGS TO COMPLY WITH THE PROVISION OF IS EN 1401-PART 1 AND BS 4660 (NOTE: uPVC PIPES NOT PERMITTED IN AREAS TO BE TAKEN IN CHARGE BY DUBLIN CITY COUNCIL)

# A TRENCH BACKFILL & BEDDING

**WHERE 'D' IS LESS THAN 2X**
(CONCRETE FILL TO LEVEL OF FOUNDATION BOTTOM)

# C DRAIN LAID NEAR FOUNDATIONS

## B1 CONCRETE BED & HAUNCH

## B2 FULL CONCRETE ENCASEMENT

1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
2. CONCRETE PIPE BEDS AND HAUNCHES MAY BE REQUIRED TO ADDRESS MINIMUM COVER SITUATIONS. AND SHALL BE SUBJECT TO SUBMISSION AND ASSESSMENT BY THE EMPLOYERS REPRESENTATIVE BEFORE ADVANCING WITH THE WORKS.
3. CONCRETE PIPE BEDS AND HAUNCHES SHALL HAVE MINIMUMTHICKNESS OF 150 mm WITH AN ABSOLUTE MINIMUM DEPTH OF COVER ABOVE THE EXTERNAL CROWN OF THE PIPE OF 150 mm .
4. CONCRETE TO BE IN ACCORDANCE WITH IS EN 206 AND TO BE CLASS C 16 / 20.
5. THE HAUNCHES AND SURROUNDS TO BE FORMED USING FORMWORK TO PROVIDE A ROUGH CAST FINISH .
6. EXPANSION JOINTS IN THE CONCRETE SHALL BE PROVIDED AT ALL PIPE JOINTS TO ALLOW FOR PIPE FLEXIBILITY , COMPRESSIBLE FILLER BOARD TO BE IN ACCORDANCE WITH BS EN 622-1 AND BS EN 622-4. AND TO BE 18mm THICK .
7. POLYETHYLENE PIPES SHALL BE WRAPPED IN PLASTIC SHEETING HAVING A COMPOSITION IN ACCORDANCE WITH BS 6076 BEFORE BEING CAST INTO CONCRETE.
8. BITUMINOUS MATERIAL SHALL NOT BE PUT IN CONTACT WITH PE OR PVC PIPES .

**SPIGOT AND SOCKET JOINT**

# B CONCRETE HAUNCH, BED & SURROUND

NOTE:

1. FORM A SAW CUT 100mm DEEP AT A MIN. OF 100mm FROM SIDES OF EXCAVATION PRIOR TO PERMANENT REINSTATEMENT. WHERE ANY TRIM LINES ARE WITHIN 400mm OF ROAD EDGE, JOINT OR OTHER REINSTATEMENT, THE TRIM LINE SHOULD BE EXTENDED TO THE INTERFACE OF SUCH SITUATIONS.
2. LEAN-MIX SURFACE TO BE SPRAYED AS PER CLAUSE 920 (TII SPEC.) PRIOR TO APPLICATION OF BINDER COURSE MACADAM.
3. 100°C HOT BITUMEN BINDER 50 PEN OR COLD THIXOTROPIC BITUMEN 50 - 70 PEN TO BE APPLIED TO ALL VERTICAL CUTS IN ACCORDANCE WITH IS EN 13108-4 PRIOR TO APPLICATION OF BITUMINOUS MATERIAL.
4. JOINTS SEALED WITH HOT BITUMEN AND TOPPED WITH FINE SAND / GRIT TO GET A MINIMUM 55 SKID RESISTANCE VALUE AS DETERMINED BY THE PORTABLE SKID RESISTANCE PENDULUM USED IN ACCORDANCE WITH ROAD NOTE 27 AND SHALL NOT EXCEED 3mm THICKNESS AND 25mm WIDTH.
5. SURFACE REINSTATEMENT
   ASPHALT CONCRETE ROAD -
   40mm MIN THICK OF 'SMA 10 surf 70/100 des' SURFACE COURSE TO IS EN 13108 and NSAI's S28; ON 60mm MIN THICK OF 'AC 20 dense bin 70 /100 des' BINDER COURSE TO IS EN 13108 AND NSAI's S28; ON BITUMEN SPRAY TO Cl.920 OF TII SPECIFICATION FOR ROAD WORKS ON 225mm THICK LEAN MIX CONCRETE. SAW CUT AND REINSTATE TO 100mm FROM EDGE OF TRENCH EXCAVATION. JOINTS SEALED WITH HOT BITUMEN AS NOTE 4

**STAGE 1**
LEAVE FOR 6 MONTHS TO CONSOLIDATE

**STAGE 2**
DIG OUT SURFACING & TOP 225mm OF CL808 MATERIAL & REPLACE WITH NEW WIDER SURFACING ON 225mm LAYER OF LEAN-MIX CONCRETE SEE NOTE ABOVE FOR DETAILED METHOD STATEMENT

# D REINSTATEMENT OF PIPE TRENCH IN EXISTING ROAD

## E1 PRECAST ROAD GULLY

## E2 BRICK ROAD GULLY

# E TYPICAL SECTION THROUGH ROAD GULLY

## NOTES

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2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.
3. WASTE DRAINAGEDETAILS TO BE IN ACCORDANCE WITH IRISH WATER REQUIREMENTS UNLESS NOTED OTHERWISE. REFER TO IRISH WATER DETAILS FOR ADDITIONAL INFORMATION.
4. REFER TO THE STRUCTURAL WATERMAIN DETAILS DRAWING FOR A TYPICAL SERVICE LAYOUT UNDER A FOOTPATH
5. CONNECTION OF BRANCHES TO THE MAIN LINE ARE TO BE BY MEANS OF 45° BRANCH CONNECTIONS, SADDLE CONNECTIONS NOT ALLOWED.
6. INTERNAL GROUND FLOOR FOUL CONNECTIONS TO DRAIN SEPARATELY FROM THE UPPER STOREYS.
7. ALL BURIED PIPES UNDER GROUND FLOOR SLABS TO BE ENCASED IN CONCRETE.
8. ALL GULLY GRATINGS AND LIDS TO BE MIN. D400 RATING.

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1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
2. AN INSPECTION CHAMBER SHOULD BE LOCATED AT OR WITHIN 1m OF THE PROPERTY BOUNDARY AT THE UPSTREAM END OF EACH SERVICE CONNECTION ON THE PRIVATE SIDE OF THE CURTILAGE , IF PRACTICABLE .
3. ANY PIPE AND ASSOCIATED ACCESS UPSTREAM OF THE POINT OF CONNECTION TO A PUBLIC SEWER IS A PRIVATE DRAIN AND SHOULD BE CONSTRUCTED IN ACCORDANCE WITH THE BUILDING REGULATIONS .
4. ACCESS POINTS SHOULD BE LOCATED SO THAT THEY ARE ACCESSIBLE AND APPARENT TO THE MAINTAINER AT ALL TIMES FOR USE .THEY SHOULD AVOID REAR GARDENS OR ENCLOSED LOCATIONS AND THEY SHOULD NEVER BE OVERLAIN WITH SURFACE DRESSING, TOPSOIL , ETC.
5. COVERS AND FRAMES SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS SUBJECT TO APPROVAL FROM IRISH WATER .
6. 200 mm ALL AROUND, 100 mm DEEP CONCRETE PLINTH WITH PROTECTIVE STAINLESS METAL BAND AROUND COVERS IN GREEN AREAS.
7. PROPRIETARY PREFABRICATED CHAMBER UNITS MAY ALSO BE USED, SUBJECT TO APPROVAL FROM THE ENGINEER.
8. CONCRETE CHAMBERS SHALL BE SURROUNDED BY A MINIMUM OF 150mm COMPACTED CLAUSE 808 MATERIAL.

## NOTES

1. ACCESS JUNCTIONS (AJ) TO BE USED FOR INVERT DEPTHS UP TO 0.6m
2. INSPECTION CHAMBERS TO BE USED FOR INVERT DEPTH 0.6m TO 1.0m INSPECTION CHAMBERS CAN BE CONSTRUCTED IN BLOCKWORK (AS DETAIL 'N') OR BE PROPRIETARY TYPE PRECAST OR uPVC SUBJECT TO ENGINEERS APPROVAL
3. FOR INVERT DEPTH'S IN EXCESS OF 1.0m DEEP USE MAHOLE TYPE CONSTRUCTION

# M INSPECTION CHAMBER (BLOCKWORK CONSTRUCTION)

1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
2. SOLID BLOCKWORK TO BE OF HIGH STRENGTH ( 20 N/mm) TO IS EN 771 .
3. MAXIMUM DEPTH OF BLOCK WORK MANHOLE IS 2.0 m ( THE USE OF BLOCK WORK IN DEEPER MANHOLES WILL BE CONSIDERED BUT SUCH USE WILL REQUIRE DETAILED STRUCTURAL DESIGN AND WRITTEN APPROVAL FROM THE EMPLOYERS REPRESENTATIVE ) .
4. WALLS TO BE FLUSH POINTED INTERNALLY. FOR FOUL MANHOLES PROVIDE, INTERNAL LINING OF ENGINEERING BRICK TO IS EN 771-1 TO A HEIGHT OF 1 m ABOVE BENCHING. ENGINEERING BRICK TO BE BONDED TO BLOCK WORK USING ENGLISH GARDEN WALL BOND .
5. STRUCTURAL DESIGN AND REINFORCEMENT DETAILS FOR ROOF AND BASE SLABS TO BE PROVIDED BY THE CONTRACTOR AND SUBMITTED TO THE EMPLOYERS REPRESENTATIVE FOR REVIEW .
6. COVERS AND FRAMES SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS SUBJECT TO APPROVAL FROM THE EMPLOYERS REPRESENTATIVE
7. 200mm ALL AROUND, 100mm DEEP CONCRETE PLINTH WITH PROTECTIVE STAINLESS STEEL METAL BAND AROUND COVERS IN GREEN AREAS.
8. ALL CHAMBERS TO BE CHECKED FOR UPLIFT BY THE CONTRACTOR BASED ON GROUND CONDITIONS WITHIN THE SITE. SHOULD ANTI FLOATATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO APPROVAL FROM THE EMPLOYERS REPRESENTATIVE .
9. ALL CONCRETE TO BE ACCORDANCE WITH IS EN 206: 2013 .
10. BRANCH PIPES INTO MANHOLES: BENCHING TO BE SHAPED SO AS TO GUIDE THE FLOW IN THE FLOW DIRECTION. THE MINIMUM LENGTH OF THE MANHOLE BASED ON THE SIDE WITH THE GREATEST NUMBER OF BRANCHES EQUAL TO 300mm PLUS THE SUM OF THE BRANCH DIAMETERS PLUS 200mm PER BRANCH FOR BRANCHES UP TO 150mm (OR 300mm FOR BRANCHES GREATER THAN 150mm DIAMETER).
11. WHERE PIPE DIAMETER CHANGES AT A MANHOLE THE PIPE CROWNS ARE TO LINE UP ALL MANHOLES TO BE WATERTIGHT TO THE SATISFACTION OF THE EMPLOYERS REPRESENTATIVE

# F BLOCKWORK MANHOLE < (450mm DIAMETER & DEPTH TO INVERT < 2m)

1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
2. PRE-CAST MANHOLES UNITS : COMPLYING WITH REQUIREMENTS OF IS EN 1917 AND BS 5911-PART 3 .
3. THICKER MANHOLE BASES REQUIRED FOR SEWERS IN EXCESS OF 3m DEEP WHERE THE SIZE IS GREATER THAN THE STANDARD MINIMUM SIZE .
4. APPROVED PRE-CAST CONCRETE BASES MAY BE USED INCORPORATING CHANNELS , BENCHING ETC. SUBJECT TO THE EMPLOYERS REPRESENTATIVE APPROVAL AND COMPLYING WITH BS 5911-PART 4 2002 .
5. STRUCTURAL DESIGN AND REINFORCEMENT DETAILS TO BE PROVIDED BY THE DEVELOPER AND SUBMITTED TO THE EMPLOYERS REPRESENTATIVE FOR REVIEW .
6. MANHOLES GREATER THAN 3m IN DEPTH WILL REQUIRE A DETAILED STRUCTURAL DESIGN AND BE SUBJECT TO THE EMPLOYERS REPRESENTATIVES APPROVAL .
7. MANHOLE ROOFS SHOULD CONSIST OF RE-INFORCED CONCRETE SLAB OF IN-SITU CONCRETE , C 30 / 37 ,WITH A MINIMUM THICKNESS OF 225mm. DESIGNED TO CARRY ALL LIVE AND DEAD LOADS, ALTERNATIVELY, APPROVED PRE-CAST CONCRETE ROOF SLABS MAY BE USED SUBJECT TO THE EMPLOYERS REPRESENTATIVES APPROVAL AND COMPLIANCE WITH BS 5911 PART 4 : 2002.
8. COVERS AND FRAMES SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS SUBJECT TO APPROVAL FROM THE EMPLOYERS REPRESENTATIVES
9. 200 mm ALL AROUND, 100 mm DEEP CONCRETE PLINTH WITH PROTECTIVE STAINLESS METAL BAND AROUND COVERS IN GREEN AREAS.
10. ALL CHAMBERS TO BE CHECKED FOR UPLIFT BY THE CONTRACTOR, BASED ON GROUND CONDITIONS WITHIN THE SITE . SHOULD ANTI FLOTATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO APPROVAL FROM THE EMPLOYERS REPRESENTATIVE
11. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206 : 2013 .
12. BRANCH PIPES INTO MANHOLES: BENCHING TO BE SHAPED SO AS TO GUIDE THE FLOW IN THE FLOW DIRECTION. THE MINIMUM LENGTH OF THE MANHOLE BASED ON THE SIDE WITH THE GREATEST NUMBER OF BRANCHES EQUAL TO 300mm PLUS THE SUM OF THE BRANCH DIAMETERS PLUS 200mm PER BRANCH FOR BRANCHES UP TO 150mm (OR 300mm FOR BRANCHES GREATER THAN 150mm DIAMETER).
13. WHERE PIPE DIAMETER CHANGES AT A MANHOLE THE PIPE CROWNS ARE TO LINE UP
14. MANHOLE SHAFTS ARE RECOMMENDED IN DEEP MANHOLES . THE DISTANCE BETWEEN THE TOP OF THE BENCHING AND THE SOFFIT OF THE MAIN ROOF SLAB SUPPORTING THE SOFFIT SHOULD BE NOT LESS THAN 2.1m , THE MINIMUM SHAFT SIZE SHOULD BE 900mm.
15. ALL MANHOLES TO BE WATERTIGHT TO THE SATISFACTION OF THE EMPLOYERS REPRESENTATIVE.

| MINIMUM MANHOLE DIAMETERS | |
|---|---|
| DIAMETER OF LARGEST PIPE IN MANHOLE ( mm ) | INTERNAL DIAMETER OF MANHOLE ( mm ) |
| LESS THAN 375 | 1200 |
| 375 TO 450 | 1350 |
| 500 TO 750 | 1500 |

# G PRE- CAST CONCRETE MANHOLE

1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
2. IN-SITU MANHOLES TO HAVE A MINIMUM WALL AND FLOOR THICKNESS OF 225mm FOR MANHOLE DEPTHS UP TO 3.0 m AND 300 mm OR MORE WHEN THE MANHOLE DEPTH EXCEEDS 3.0 m .
3. STRUCTURAL DESIGN & REINFORCEMENT DETAILS TO BE PROVIDED BY THE DEVELOPER AND SUBMITTED TO THE EMPLOYERS REPRESENTATIVE FOR REVIEW
4. MANHOLES GREATER THAN 3m IN DEPTH WILL REQUIRE A DETAILED STRUCTURAL DESIGN AND BE SUBJECT TO THE EMPLOYERS REPRESENTATIVE APPROVAL .
5. COVERS AND FRAMES SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS SUBJECT TO APPROVAL FROM THE EMPLOYERS REPRESENTATIVE
6. 200 mm ALL AROUND, 100 mm DEEP CONCRETE PLINTH WITH PROTECTIVE STAINLESS METAL BAND AROUND COVERS IN GREEN AREAS.
7. ALL CHAMBERS TO BE IN CHECKED FOR UPLIFT BY THE CONTRACTOR, BASED ON GROUND CONDITIONS WITHIN THE SITE . SHOULD ANTI FLOTATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO APPROVAL FROM THE ER.
8. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206 : 2013 .
9. BRANCH PIPES INTO MANHOLES: BENCHING TO BE SHAPED SO AS TO GUIDE THE FLOW IN THE FLOW DIRECTION. THE MINIMUM LENGTH OF THE MANHOLE BASED ON THE SIDE WITH THE GREATEST NUMBER OF BRANCHES EQUAL TO 300mm PLUS THE SUM OF THE BRANCH DIAMETERS PLUS 200mm PER BRANCH FOR BRANCHES UP TO 150mm (OR 300mm FOR BRANCHES GREATER THAN 150mm DIAMETER).
10. WHERE PIPE DIAMETER CHANGES AT A MANHOLE THE PIPE CROWNS ARE TO LINE UP
11. MANHOLE SHAFTS ARE RECOMMENDED IN DEEP MANHOLES . THE DISTANCE BETWEEN THE TOP OF THE BENCHING AND THE SOFFIT OF THE MAIN ROOF SLAB SUPPORTING THE SOFFIT SHOULD BE NOT LESS THAN 2.1m , THE MINIMUM SHAFT SIZE SHOULD BE 900mm.
12. ALL MANHOLES TO BE WATERTIGHT TO THE SATISFACTION OF THE EMPLOYERS REPRESENTATIVE.

| MINIMUM MANHOLE DIMENSIONS " D " | |
|---|---|
| DIAMETER OF LARGEST PIPE IN MANHOLE ( mm ) | INTERNAL DIMENSION OF MANHOLE ( mm ) |
| LESS THAN 375 | 1200 |
| 375 TO 450 | 1350 |
| 500 TO 750 | 1500 |

# H IN- SITU CONCRETE MANHOLE

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. RODDING EYE CHAMBER SHALL BE COVERED WITH APPROVED HEAVY DUTY METAL COVERS TO IS 261 AND BS 5834. COVER AND FRAME SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS AND IS SUBJECT TO THE APPROVAL OF THE EMPLOYERS REPRESENTATIVE
3. ALL CHAMBERS TO BE CHECKED FOR UPLIFT BY THE DEVELOPER BASED ON GROUND CONDITIONS WITHIN THE SITE. SHOULD ANTI FLOATATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO APPROVAL FROM THE EMPLOYERS REPRESENTATIVE.
4. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.
5. MANHOLE DETAILS TO BE IN ACCORDANCE WITH DETAILS F,G & H

**TYPE NO. 1**
150mm - 450mm DIA. ( INCL. ) DROP GREATER THAN 1700mm
500mm - 900mm DIA. ( INCL. ) DROP GREATER THAN 2300mm.

**TYPE NO. 2**
150mm - 450mm DIA. ( INCL. ) DROP GREATER THAN 600 AND LESS THAN 1700mm
500mm - 900mm DIA. ( INCL. ) DROP GREATER THAN 1300mm AND LESS THAN 2300mm.

**TYPE NO. 3**
150mm - 450mm DIA. ( INCL. ) DROP GREATER THAN 600mm AND LESS THAN 900mm
500mm - 900mm DIA. ( INCL. ) DROP GREATER THAN 600mm AND LESS THAN 1300mm.

# L BACKDROP MANHOLE

# HYDRO-BRAKE MANHOLE DETAIL

# P TYPICAL SUMP INLET MANHOLE

SCALE @ A0: 1:25
SCALE @ A2: 1:50

| PL3 | 19.03.24 | RE-ISSUED FOR LRD APPLICATION | MC / POD | BM / BM |
|---|---|---|---|---|
| PL2 | 11.03.22 | REVISED PLANNING APPLICATION | POD / POD | BM / BM |
| PL1 | 04.09.20 | ISSUED FOR PLANNING | MC / MC | TMcH / BM |
| ISSUE | DATE | DESCRIPTION | DRN / ORIG | P.E. / P.D. |

DRAWING STAGE
**PLANNING**

BM
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The Institution of Structural Engineers
ACEI
FIDIC International Federation of Consulting Engineers

CLIENT
**ORCHID RESIDENTIAL LTD.**

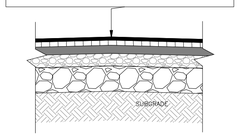
| PROJECT TITLE | BM PROJECT No. |
|---|---|
| **GOATSTOWN STUDENT ACCOMMODATION** | **19.289** |

| MODEL REFERENCE | MODEL REV. | SUITABILITY |
|---|---|---|
| **19289-BMD-ZZ-XX-DR-C-1200** | **P1** | **S0** |

DRAWING TITLE
**STANDARD DRAINAGE DETAILS**

| DRAWING No. | ISSUE |
|---|---|
| **19289-BMD-ZZ-XX-DR-C-1200** | **PL3** |

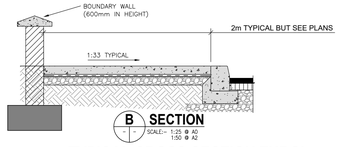
40mm MIN. THICK OF 'SMA 10 surf 70/100 des' SURFACE COURSE TO IS EN 13108 and NSA's S28; AA/10 ON
60mm MIN THICK OF 'AC 20 dense bin 70/100 des' BINDER COURSE TO IS EN 13108 AND NSA's S28 ON
100mm MIN THICK OF 'AC 32 dense base 70/100 des' BASE COURSE TO IS EN 13108 AND NSA's S28 ON
150mm MIN. THICK CLAUSE 808 SUB-BASE ON
300mm MIN. THICK C9F16F2 CAPPING LAYER ON SUBGRADE (REFER TO NOTES ON SUBGRADE TESTING)




**A** **BUILDUP FOR REINSTATEMENT OF BLACK ASPHALT CARRIAGEWAY**
SCALE @ A0: 1:25

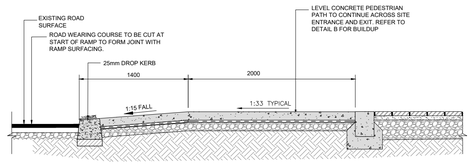
*100mm THICK IN-SITU CONCRETE FOOTPATH (SEE NOTE 5) ON POLYTHENE SHEETING SEPERATING MEMBRANE 125 MICRONS THICK (300 LAPS) ON 100mm SUB-BASE (SEE NOTE 3)

PROVIDE TRANSVERSE CONTRACTION JOINTS IN FOOTPATH @ 3m Crs. USING A DOUBLE LAYER OF ROOFING FELT TO IS EN 13707 FOR THE FULL DEPTH OF THE JOINT.
*AT VECHULAR CROSSINGS INCREASE DEPTH OF CONCRETE TO 200mm




**B** **SECTION**
SCALE:- 1:25 @ A0
1:50 @ A2

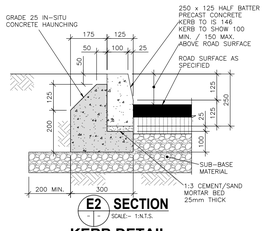
**TYPICAL CROSS SECTION THRO' CONCRETE FOOTPATH**




**C** **SECTION THROUGH SITE ENTRANCE/EXIT**
SCALE @ A0 1:25

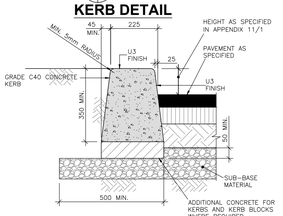
## DETAIL 'B' FOOTPATH DETAILS

## DETAIL 'C' - ENTRANCE & EXIT JUNCTIONS



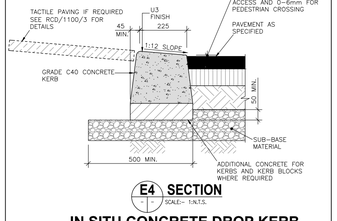

**E2** **SECTION**
SCALE:- 1:N.T.S.

**KERB DETAIL**




**E3** **SECTION**
SCALE:- 1:N.T.S.

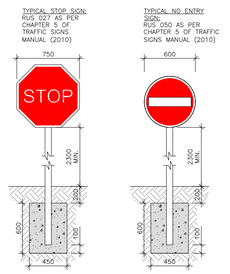
**STANDARD IN SITU CONCRETE KERB**




**E4** **SECTION**
SCALE:- 1:N.T.S.

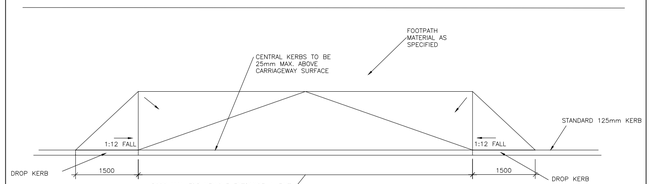
**IN SITU CONCRETE DROP KERB**

## DETAIL 'E' - KERB DETAILS




NOTE:
- MIN. MOUNTING HEIGHT = 2300mm FROM FINISHED GROUND LEVEL (OR FROM FINISHED FOOTPATH LEVEL IF WITHIN 1.2m OF SIGN POST) TO LOWEST EDGE OF SIGN. WHERE SIGNS ARE LOCATED IN THE VICINITY OF CYCLE LANES, MOUNTING HEIGHT SHALL BE INCREASED TO 2500mm.
- ALL SIGNS TO BE MOUNTED ON 1no. 76.1mm# GALVANISED CHS POST SECURED WITH PROPRIETARY ANTI-ROTATION CLIPS.
- ALL POSTS TO BE FITTED WITH POST CAPS IMMEDIATELY AFTER INSTALLATION TO PREVENT WATER INGRESS.
- ALL SIGN POSTS TO BE SET IN 450mm x 450mm x 600mm DEEP C32/40 CONCRETE FOUNDATION.
- TOP OF FOUNDATION TO BE FINISHED 200mm BELOW FINISHED GROUND LEVEL
- ALL SIGN SIZES AND MOUNTING HEIGHTS SHOULD BE VERIFIED WITH ENGINEER PRIOR TO PLACING ORDER.

**D** **TYPICAL SIGNAGE POST AND FOUNDATION DETAILS**
SCALE 1:25 @ A0 & 1:50 @ A2




**F** **TYPICAL PAVING DETAILS AT ACCESS/EGRESS**
SCALE 1:50 @ A0 & 1:100 @ A2

## NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - ASK.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

## NOTES

1. ALTERNATIVE BASE COURSE MATERIAL:

   AS AN ALTERNATIVE TO ASPHALTIC CONCRETE BASE COURSE THE CONTRACTOR CAN USE AN STANDARD CONCRETE MIX 'ST2' 'LEAN MIX' BASE COURSE 150mm THICK. STANDARD CONCRETE MIX 'ST2' SHALL CONFORM TO IS 206-1, BS 8500-1, BS 8500-2 & IS EN 13877-1. CURING OF LEAN-MIX ROAD BASE SHALL BE BY BITUMINOUS SPRAYING TO CLAUSE 920 NRA SPECIFICATION FOR ROAD WORKS.

2. USE OF BASE COURSE FOR CONSTRUCTION TRAFFIC:

   THE BASE COURSE MAY BE USED FOR CONSTRUCTION TRAFFIC PROVIDED IT HAS BEEN INCREASED IN THICKNESS BY 50mm AND SURFACE DRESSED. SURFACE DRESSING SHOULD BE CARRIED OUT IN ACCORDANCE WITH CLAUSE 812 AND 918 OF THE NRA SPECIFICATION FOR ROADWORKS. THE BINDER SHOULD BE CUTBACK BITUMEN OR CATIONIC BITUMEN EMULSION, COMPLYING WITH THE SPECIFICATION. OTHER BINDERS MAY BE USED, SUBJECT TO APPROVAL.

   CUTBACK BITUMEN SHOULD BE OF THE APPROPRIATE GRADE SPECIFIED. CATIONIC BITUMEN EMULSION SHOULD HAVE A NOMINAL BITUMEN CONTENT OF 70%. THE BINDER SHOULD BE SPREAD AT THE APPROPRIATE RATE SPECIFIED. CHIPPINGS SHOULD BE OF A SINGLE SIZE (AS APPROVED BY THE LOCAL AUTHORITY), CUBICAL IN SHAPE AND SHOULD COMPLY WITH THE REQUIREMENTS OF TABLE 2.4 OF CLAUSE 919 OF THE NRA SPECIFICATION FOR ROAD WORKS.

3. DEPTH OF SUB-BASE & CAPPING LAYER:

   THE DEPTH OF THE SUB-BASE AND CAPPING LAYERS WILL VARY WITH THE SUBGRADE STRENGTH, AS INDICATED BY THE CBR TEST RESULTS.

   THE THICKNESS OF THE SUB-BASE LAYER SHOULD BE 150mm FOR ALL FORMS OF ROADWAY CONSTRUCTION.

   THE THICKNESS OF THE CAPPING LAYER WILL VARY WITH THE CBR VALUE, AS INDICATED IN TABLE 3.1 BELOW. IF THE CBR VALUE OF THE SUBGRADE EXCEEDS 15%, NO CAPPING LAYER IS REQUIRED. SEE FIGURE 4.1 IN PART 2A, HD25-26 OF NRA DESIGN MANUAL FOR ROADS AND BRIDGES.

| TABLE 3.1 CAPPING LAYER - MINIMUM CONSTRUCTION THICKNESS | |
|---|---|
| LOWEST SUBGRADE CBR (%) | MINIMUM CAPPING LAYER THICKNESS (mm) |
| * LESS THAN 2 | (SEE FOOTNOTE) |
| 2->5 | 450->250 |
| 5->15 | 250->150 |
| MORE THAN 15 | NO CAPPING LAYER REQUIRED |

   * FOR SUBGRADES WITH A CBR OF LESS THAN 2%, A GEOTEXTILE SEPARATOR (e.g. TERRAM 1000) SHOULD BE USED AND SPECIALIST ADVICE SOUGHT REGARDING MINIMUM THICKNESS.

   IF THE CONTRACTOR PROPOSES TO USE THE SUB-BASE FOR CONSTRUCTION TRAFFIC HE SHOULD SEEK APPROVAL FROM THE ENGINEER TO DO SO. SUCH APPROVAL WILL ONLY NORMALLY BE GIVEN ON CONDITION THAT THE SUB-BASE THICKNESS IS INCREASED. TYPICALLY FOR CBR VALUES > 4% THE SUB-BASE THICKNESS WILL HAVE TO BE INCREASED BY 150mm. FOR CBR VALUES > = 4% AN INCREASE OF 80mm WILL BE SUFFICIENT.

   SUBGRADE STRENGTH SHOULD BE ESTABLISHED BY MEANS OF THE CALIFORNIA BEARING RATIO (CBR) TEST, IN ACCORDANCE WITH BS 1377-4:1990. SAMPLES SHOULD BE TAKEN AT THE RATE OF ONE PER 100m OF ROAD AND WHERE SIGNIFICANT VARIATIONS IN SOIL TYPE ARE ANTICIPATED. EXTRA SAMPLES MAY BE REQUIRED BY THE LOCAL AUTHORITY WHERE THE DIFFERENCE IN STRENGTH BETWEEN TWO ADJACENT SAMPLES INDICATES A SIGNIFICANT VARIATION IN SOIL TYPE. IN PREPARING THE TEST SPECIMEN, THE METHOD OF COMPACTION SHOULD BE BY DYNAMIC METHOD, METHOD 2, AS SPECIFIED IN PARAGRAPH 7.2.3.3 OF BS 1377-4:1990.

4. MATERIAL SPECIFICATION FOR SUB-BASE AND CAPPING LAYER:

   (a) SUB-BASE

   SUB-BASE MATERIAL SHOULD COMPRISE TYPE B GRANULAR MATERIAL, IN ACCORDANCE WITH CLAUSE 804 OF THE SPECIFICATIONS FOR ROADWORKS. THE MATERIAL SHOULD LIE WITHIN THE GRADING LIMITS SET OUT IN TABLE 4.1 BELOW.

| TABLE 4.1 SUB-BASE MATERIAL - PERCENTAGE BY MASS PASSING | | | |
|---|---|---|---|
| ISO SIEVE SIZE (mm) | OVERALL GRADING RANGE | SUPP. DECLARED VALUE GRADING RANGE | TOLERANCE |
| 63 | 100 | NR | NR |
| 31.5 | 80-99 | NR | NR |
| 16 | 55-85 | 63-77 | +/-8 |
| 8 | 35-65 | 43-57 | +/-8 |
| 4 | 22-50 | 30-42 | +/-8 |
| 2 | 15-40 | 22-33 | +/-7 |
| 1 | 10-35 | 15-30 | +/-5 |
| 0.5 | 0-20 | 5-15 | +/-5 |
| 0.063 | 0-7 | NR | NR |

   PARTICLE SIZE DISTRIBUTION SHOULD BE DETERMINED BY THE WASHING AND SIEVING METHOD OF IS EN 933-1, ALL MATERIAL USED SHOULD BE FROST RESISTANT.

   MATERIAL PASSING THE 0.425mm SIEVE, WHEN TESTED IN ACCORDANCE WITH BS 1377-2, SHOULD BE NON-PLASTIC.

   THE MATERIAL SHOULD HAVE A TEN PERCENT FINES VALUE OF 100kN, OR MORE, WHEN TESTED IN ACCORDANCE WITH IS EN 933-1.

   THE SUB-BASE SHOULD BE LAID AND COMPACTED TO THE REQUIREMENTS OF CLAUSE 802 OF THE NRA SPECIFICATION FOR ROADWORKS, WITHOUT DRYING OUT, OR SEGREGATION.

   (b) CAPPING LAYER

   THE CAPPING LAYER SHALL BE CONSTRUCTED WITH CLASS 6F1 OR 6F2 MATERIAL AS PER SERIES 600 OF THE NRA SPECIFICATION FOR ROAD WORKS AND COMPRISING OF EITHER CRUSHED ROCK, NATURAL GRAVEL, CRUSHED GRAVEL OR CRUSHED CONCRETE. THE MATERIAL SHOULD HAVE A MAXIMUM SIZE OF 100mm AND THE MAXIMUM ALLOWABLE PASSING THE 63 MICRON SHOULD BE 10%. THE MATERIAL SHOULD BE WELL GRADED THROUGHOUT ALL SIZES.

   SELECTED DEMOLITION MATERIALS WHICH MEET THE ABOVE REQUIREMENTS MAY ALSO BE USED, SUBJECT TO APPROVAL.

5. CONCRETE FOR ROAD PAVEMENTS:

   PAVING QUALITY CONCRETE SHOULD BE PAV2 MIX (AIR ENTRAINED CONCRETE) MADE FROM NATURAL AGGREGATES, CEMENT, WATER AND AIR ENTRAINING AGENT COMPLYING WITH IS 206-1, BS 8500-1, BS 8500-2, EN 13877-2 AND THE REQUIREMENTS OF SERIES 1000 OF THE NRA SPECIFICATION FOR ROAD WORKS.

| TABLE 5.1 CONSTITUENTS FOR PAVING QUALITY CONCRETE | |
|---|---|
| MINIMUM CEMENT CONTENT | 340kg/m³ |
| MAXIMUM FREE WATER/CEMENT RATIO | 0.45 |
| MAXIMUM AGGREGATE SIZE | 20mm |
| MINIMUM STRENGTH CLASS | C32/40 |
| AIR CONTENT | 4.0 % |
| SLUMP CLASS | S3 |

6. REINFORCEMENT FOR CONCRETE SLABS SHOULD BE LONG MESH STEEL FABRIC, COMPLYING WITH BS 4483 AND SHOULD BE FREE FROM LOOSE MILL SCALE, RUST, DIRT, OIL, PAINT OR GREASE. THE MINIMUM WEIGHT OF REINFORCEMENT SHOULD BE 2.61kg/m². THE REINFORCEMENT SHOULD HAVE 50mm MINIMUM COVER FROM THE SURFACE AND SHOULD TERMINATE BETWEEN 250 AND 350mm FROM ANY TRANSVERSE JOINT BETWEEN 40 AND 80mm FROM A LONGITUDINAL JOINT. THE REINFORCEMENT SHOULD TERMINATE BETWEEN 100 AND 150mm FROM THE EDGE OF THE SLAB. REINFORCING MATS SHOULD OVERLAP SUCH THAT THE TRANSVERSE WIRE OF ONE MAT WOULD LIE WITHIN THE LAST COMPLETE MESH OF THE PREVIOUS MAT AND THE OVERLAP SHOULD BE 1/2 MESH. MAXIMUM TRANSVERSE CONTRACTION JOINT SPACING FOR VARIOUS MESH SIZES SHOULD BE AS FOLLOWS.

| LONG MESH REINFORCEMENT TO BS 4483 | MAXIMUM SPACING (m) OF CONTRACTION JOINTS |
|---|---|
| C283 | 15m |
| C385 | 20m |
| C503 | 25m |

7. SAWING OF JOINT GROOVES SHOULD BE UNDERTAKEN AS SOON AS POSSIBLE AFTER THE CONCRETE HAS HARDENED SUFFICIENTLY TO ENABLE A SHARP EDGED GROOVE TO BE PRODUCED, WITHOUT DISRUPTING THE CONCRETE AND BEFORE RANDOM CRACKS DEVELOP IN THE SLAB. THIS WOULD BE WITHIN 6 TO 24 HOURS AFTER THE CONCRETE IS POURED. THE GROOVES SHOULD BE BETWEEN ¼ & ⅓ THE DEPTH OF SLAB AND OF ANY CONVENIENT WIDTH NOT LESS THAN 3mm. THE GROOVE CAN BE WIDENED BY SAWING AT THIS STAGE, OR LATER, TO ACCOMMODATE THE JOINT SEALANT.

   EXPANSION JOINT FILLER SHOULD BE COMPRESSIBLE BOARD 25mm THICK, FOR THE FULL DEPTH OF THE CONCRETE. THE TOP OF THE FILLER BOARD SHOULD BE ROUTED OUT LATER, TO A DEPTH OF 25mm, IN ORDER TO RECEIVE THE JOINT SEALANT.

8. DOWEL BARS AND TIE BARS SHOULD BE B500B STEEL, COMPLYING WITH IS EN 13877-3 AND SHOULD BE FREE FROM OIL, DIRT, LOOSE SCALE AND RUST. DOWEL BARS SHOULD BE STRAIGHT, FREE FROM BURRS AND SHOULD BE SQUARE TO THE JOINT FACE. DOWEL BARS SHOULD BE DEBONDED OVER THEIR LENGTH WITH A TOUGH, DURABLE PLASTIC SHEATH OF AVERAGE THICKNESS NOT GREATER THAN 1.25mm. FOR EXPANSION JOINTS, THE EXPANSION SPACE AVAILABLE IN THE WATERPROOF CAP SHOULD BE 10mm GREATER THAN THE THICKNESS OF THE JOINT FILLER BOARD.

9. JOINT GROOVES SHOULD BE SEALED WITH A COLD APPLIED JOINT-SEALING COMPOUND COMPLYING WITH BS 5212 TYPE N. THE FINISHED SURFACE OF THE SEAL SHOULD BE 3mm BELOW THE SURFACE LEVEL OF THE CONCRETE.

## NOTES Ctd.

14. GRATED LINEAR DRAINAGE CHANNEL SYSTEMS SHALL BE OF 100mm, 150mm OR 200mm NOMINAL INTERNAL WIDTH, AS SPECIFIED ON THE DRAWINGS, MANUFACTURED FROM HIGH STRENGTH POLYMER CONCRETE WITH CAST-IN GALVANISED STEEL EDGE RAILS. THE CHANNELS SHALL BE INSTALLED WITH MANUFACTURERS DUCTILE IRON OR STAINLESS STEEL GRATING APPROPRIATE TO THE SPECIFIED LOAD CLASS AND LOCKED SECURELY IN PLACE. THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.
15. SLOTTED LINEAR DRAINAGE CHANNEL SYSTEMS SHALL BE CHOSEN ACCORDING TO THE LOAD CLASS REQUIRED AND MANUFACTURED FROM HIGH STRENGTH POLYMER CONCRETE INCORPORATING A 10mm WIDE CENTRALLY POSITIONED SLOT. THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.
16. PRECAST KERBS SHALL BE LAID AND LEVELLED IN ACCORDANCE WITH BS 7533: PART 4. A RAISED LIP OF 25mm SHOULD BE USED FOR VEHICULAR ENTRANCES AND 0-6mm FOR PEDESTRIAN CROSSINGS.
17. IN SITU KERBS SHALL COMPLY WITH THE REQUIREMENTS OF BS 5931. KERBS SHALL BE PROTECTED FROM THE EFFECTS OF ADVERSE WEATHER UNTIL CURED. A RAISED LIP OF 25mm SHOULD BE USED FOR VEHICULAR ENTRANCES AND 0-6mm FOR PEDESTRIAN CROSSINGS.

NOTE:
BEFORE PAVERS / PAVEMENT WORKS ARE COMMENCED THE CONTRACTOR IS TO ESTABLISH IF THESE WORKS ARE TO BE TAKEN IN CHARGE BY THE LOCAL AUTHORITY. IF THIS IS THE CASE THE CONTRACTOR IS TO GET APPROVAL FROM THE LOCAL AUTHORITY FOR THE DETAILS SHOWN ON THIS DRAWING AND ESTABLISH INSPECTION AND TESTING REQUIREMENTS BEFORE COMENCING THE WORK

## NOTES Ctd.

10. CLAY AND CALCIUM SILICATE PAVERS SHOULD COMPLY WITH IS EN 1344: TYPE PB WITH CHAMFERS. 200 x 100 x 65mm FOR TRAFFICKED AREAS & 50mm THICK FOR PEDESTRIAN AREAS

    CONCRETE BLOCK PAVERS SHOULD COMPLY WITH BS EN 1338: TYPE R. 200 x 100 x 80mm THICK FOR TRAFFICKED AREAS & 60mm THICK FOR PEDESTRIAN AREAS.

    HORIZONTAL INTERLOCK SHOULD BE GIVEN TO THE PAVING EITHER BY THE USE OF SHAPED BLOCKS, OR BY LAYING RECTANGULAR BLOCKS IN HERRINGBONE FASHION. AT THE EDGE OF THE PAVEMENT, RESTRAINT SHOULD BE PROVIDED, IN ORDER TO PREVENT THE PAVERS AND THE LAYING COURSE FROM MIGRATING OUTWARDS AND LOSING INTERLOCK.

    CLAY, CALCIUM SILICATE & CONCRETE BLOCK PAVERS SHOULD BE LAID IN ACCORDANCE WITH BS 7533-3.

11. LAYING COURSE SAND SHALL BE 'GRS 0/4 (MP)' AS PER IS EN 12620. AS A GUIDE TO MOISTURE CONTENT, AFTER THE MATERIAL IS COMPRESSED THE MATERIAL SHOULD BIND TOGETHER WITHOUT SHOWING FREE MOISTURE ON ITS SURFACE. WHERE LAYING COURSE MATERIAL IS STORED ON SITE IT SHOULD BE COVERED TO REDUCE MOISTURE LOSS DUE TO EVAPORATION, OR SATURATION FROM RAINFALL.

    IF THE LAYING COURSE MATERIAL BECOMES SATURATED AFTER PLACEMENT THEN IT SHOULD BE REMOVED AND REPLACED WITH LAYING COURSE MATERIAL IN A CONDITION SUITABLE FOR THE BLOCK LAYING OPERATION. ALTERNATIVELY THE LAYING COURSE CAN BE LEFT IN PLACE UNTIL IT DRIES SUFFICIENTLY TO ALLOW BLOCK LAYING TO PROCEED.

12. JOINTS BETWEEN PAVERS TO BE LAID TIGHT (2mm to 5mm WIDE) AND FILLED WITH FINE SAND 'GRS 0/1 (FP)' AS PER IS EN 12620.
13. LINEAR DRAINAGE CHANNEL SYSTEMS SHALL BE FULLY COMPLIANT WITH IS EN 1433:2002 AND CERTIFIED TO THE LOAD CASES SPECIFIED ON THE DRAWINGS AND AS DEFINED IN IS EN 1433:2002.

| ISSUE | DATE | DESCRIPTION | DRN | CHKD |
|---|---|---|---|---|
| PL3 | 19.03.24 | RE-ISSUED FOR LRD APPLICATION | MC/CG | SM/SM |
| PL2 | 11.03.22 | REVISED PLANNING APPLICATION | PDS | SM/SM |
| PL1 | 04.09.20 | ISSUED FOR PLANNING | MC/MC | SM/SM |

DRAWING STAGE: **PLANNING**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The Institution of Structural Engineers · ACEI · Member Association of Consulting Engineers


CLIENT: **ORCHID RESIDENTIAL LTD.**

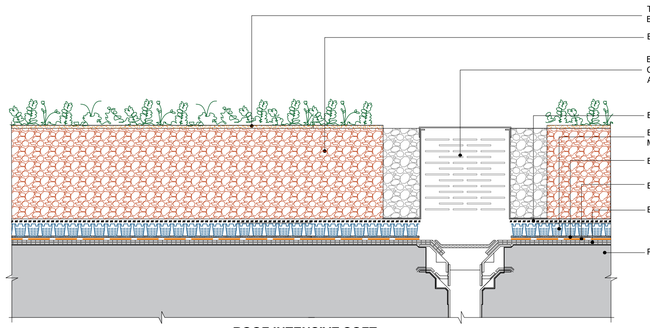
PROJECT TITLE: **GOATSTOWN STUDENT ACCOMMODATION**
BM PROJECT No.: **19.289**
MODEL REFERENCE: **19289-BMD-ZZ-XX-DR-C-1210**
MODEL REV: **P1**
SUITABILITY: **S0**

DRAWING TITLE: **ROAD & HARDSTANDING STANDARD DETAILS**

DRAWING No.: **19289-BMD-ZZ-XX-DR-C-1210**
ISSUE: **PL3**

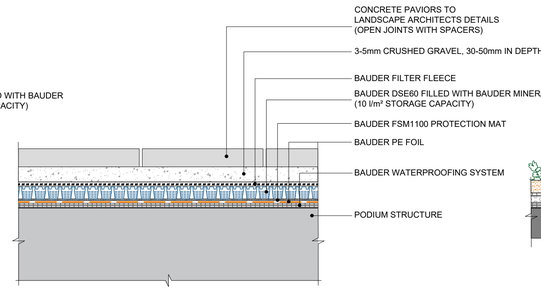
## NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - 'ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.




**ROOF INTENSIVE SOFT LANDSCAPING SUDS DETAIL**

**A DETAIL**
SCALE @ A1: 1:10
SCALE @ A3: 1:20




**ROOF INTENSIVE HARD LANDSCAPING SUDS DETAIL**

**B DETAIL**
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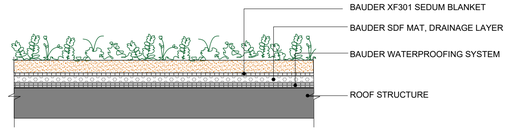
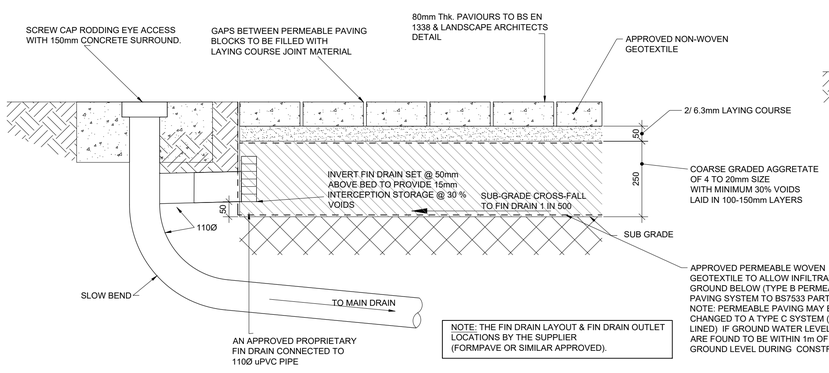
SCALE @ A3: 1:20




**ROOF EXTENSIVE SEDUM BLANKET SUDS ROOF DETAILS**

**C DETAIL**
SCALE @ A1: 1:10
SCALE @ A3: 1:20

## INTENSIVE GREEN ROOF DETAILS




**TYPICAL TYPE B PERMEABLE PAVING SYSTEM (5% CBR ASSUMED)**

**D1 DETAIL**
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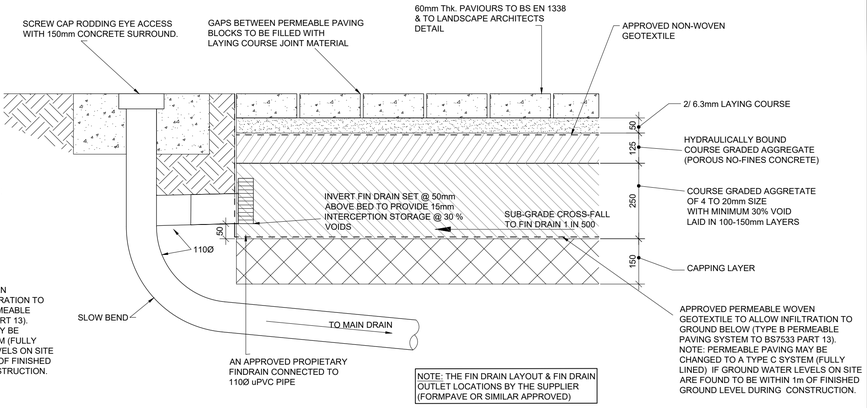
SCALE @ A3: 1:20




**PERMEABLE PAVING DETAIL FOR AREAS WITH FIRE TENDER ACCESS (5% CBR ASSUMED)**

**D2 DETAIL**
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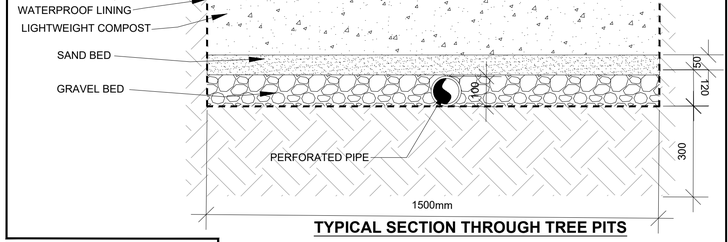
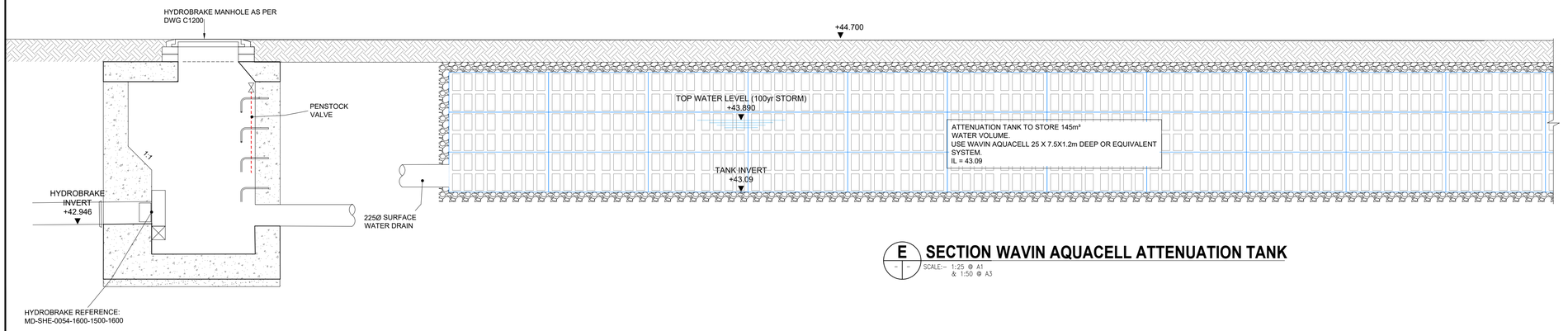
SCALE @ A3: 1:20




**TYPICAL SECTION THROUGH TREE PITS**

**F DETAIL**
SCALE @ A1: 1:10
SCALE @ A3: 1:20




**E SECTION WAVIN AQUACELL ATTENUATION TANK**
SCALE:– 1:25 @ A1 & 1:50 @ A3

| ISSUE | DATE | DESCRIPTION | DRN. / ORIG. | P.E. / P.D. |
|---|---|---|---|---|
| PL4 | 19.09.24 | REVISED FOR LRD APPLICATION | CN / POD | BM / BM |
| PL3 | 19.03.22 | RE-ISSUED FOR LRD APPLICATION | MC / POD | BM / BM |
| PL2 | 11.03.22 | REVISED PLANNING APPLICATION | POS / POD | BM / BM |
| PL1 | 04.09.20 | ISSUED FOR PLANNING | TMH / TMH | BM / BM |

DRAWING STAGE
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CLIENT
**ORCHID RESIDENTIAL LTD.**

PROJECT TITLE
**GOATSTOWN STUDENT ACCOMMODATION**

BM PROJECT No.
**19289**

MODEL REFERENCE
**19289-BMD-ZZ-XX-DR-C-1215**

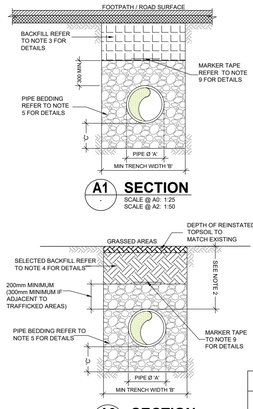
MODEL REV.
**P1**

SUITABILITY
**S0**

DRAWING TITLE
**SuDS DETAILS**

DRAWING No.
**19289-BMD-ZZ-XX-DR-C-1215**

ISSUE
**PL4**




A1 - SECTION
SCALE @ A0: 1:25
SCALE @ A2: 1:50

A2 - SECTION
SCALE @ A0: 1:25
SCALE @ A2: 1:50

## NOTES

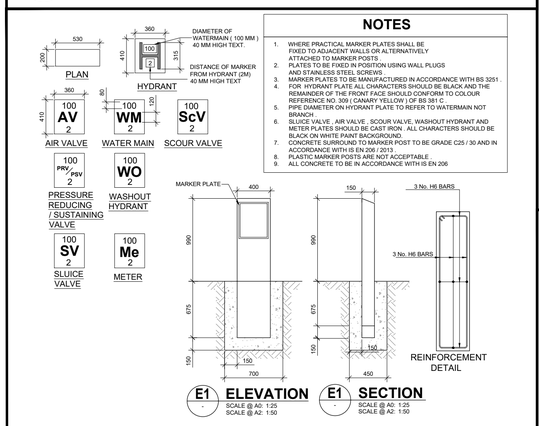
1. ALL DIMENSIONS ARE IN MILLIMETERS (MM) UNLESS NOTED OTHERWISE.
2. THE MINIMUM DEPTH OF COVER FROM THE FINISHED GROUND LEVEL TO THE EXTERNAL CROWN OF THE PIPE SHALL BE 750 mm FOR SERVICE CONNECTIONS , 900 mm FOR WATER MAINS . GREATER DEPTHS OF COVER AND / OR PIPE STRENGTH AND / OR A HIGHER CLASS OF BEDDING MATERIAL MAY BE REQUIRED WHERE HIGH TRAFFIC LOADING IS ANTICIPATED . THE MAXIMUM COVER SHOULD NOT EXCEED 1200 mm WHERE PRACTICABLE .
3. CLAUSE 808 MATERIAL IN ACCORDANCE WITH THE TII SPECIFICATION FOR ROAD WORKS IS TO BE USED AS BACKFILL MATERIAL WHERE THE WATER MAIN IS LOCATED IN ROADS FOOTPATHS OR WHEN THE NEAREST PART OF THE TRENCH IS WITHIN 1 m OF THE PAVED EDGE OF THE ROADWAY . CLAUSE 808 IS TO BE COMPACTED AS PER CLAUSE 802 OF THE TII SPECIFICATION FOR ROAD WORKS .
4. SELECTED EXCAVATED MATERIAL MAY BE USED IN GREEN - FIELD AREAS ABOVE GRANULAR PIPE SURROUND MATERIAL, SUBJECT TO THE APPROVAL OF THE EMPLOYERS REPRESENTATIVE .
5. PIPE BEDDING SHALL COMPLY WITH SEC 4-08-02 AND IGN 4-08-01 GRANULAR MATERIAL SHALL BE 14 mm TO 5 mm GRADED AGGREGATE OR 10 mm SINGLE SIZED AGGREGATE TO IS EN 13242 .
6. IN SOFT GROUND CONDITIONS ( CBR < 5 ) THE MATERIAL SHOULD BE EXCAVATED OUT AND DISPOSED OF IN ACCORDANCE WITH THE WASTE MANAGEMENT ACT AND CLAUSE 808 MATERIAL IN ACCORDANCE WITH THE NATIONAL ROADS AUTHORITY SPECIFICATION FOR ROAD WORKS SHALL REPLACE THE EXCAVATED MATERIAL, WRAPPED IN GEO - TEXTILE WRAPPING , ALTERNATIVELY , SPECIAL PIPE SUPPORT ARRANGEMENTS , INCLUDING PILING ETC . MAY BE REQUIRED WHERE THE DEPTH OF SOFT MATERIAL IS EXCESSIVE . SUCH ARRANGEMENTS SHALL BE SUBJECT TO ASSESSMENT BY EMPLOYER REPRESENTATIVE BEFORE ADVANCING WITH THE WORK .
7. PIPES SHALL NOT BE SUPPORTED ON STONES OR ROCKS , OR ANY HARD OBJECT AT ANY POINT ALONG THE TRENCH . ROCK SHALL BE EXCAVATED TO A DEPTH OF 150 mm BELOW THE ACTUAL DEPTH OF THE TRENCH WITH THE VOID FILLED WITH CLAUSE 808 MATERIAL IN ACCORDANCE WITH THE TII SPECIFICATION FOR ROAD WORKS . THE GRANULAR MATERIAL SHALL BE LAID ABOVE THIS VOID BACKFILL MATERIAL .
8. SHOULD MINIMUM COVER NOT BE ACHIEVABLE, CONCRETE GRADE C8/10 SHALL BE USED AS BACKFILL MATERIAL .
9. MARKER TAPE TO BE 400 mm WIDE BLUE POLYETHYLENE MATERIAL IN ACCORDANCE WITH EN 12163 . PLASTIC PIPES SHALL HAVE WARNING TAPE INCORPORATED A REINFORCED BAND BRACING WIRE . SERVICE PIPES SHALL HAVE 200 mm WIDE MESH TAPE . MARKER TAPE TO BE LAID AT TOP OF PIPE BEDDING LAYER .
10. TRENCH WIDTHS FOR PIPE SIZES < = 80 mm MAY BE < 500 mm , SUBJECT TO CONSIDERATION BEING GIVEN TO THE TRENCH DEPTH , HEALTH & SAFETY & CONSTRUCTION ACCESS REQUIREMENTS .

### TABLE A

| PIPE DIAMETER 'A' (mm) | WIDTH OF TRENCH 'B' (mm) |
|---|---|
| ≤ 80 | SEE NOTE 10 |
| 100 | 500 |
| 150 | 600 |
| 200 | 600 |
| 250 | 750 |
| 300 | 750 |
| 350 | 750 |
| 400 | 900 |
| 450 | 900 |

| PIPE DIAMETER 'A' (mm) | DEPTH OF BEDDING 'C' (mm) |
|---|---|
| < 200 | 150 |
| > 250 | 200 |

# A - TYPICAL TRENCH BACKFILL & BEDDING DETAILS




## NOTES

1. WHERE PRACTICAL MARKER PLATES SHALL BE FIXED TO ADJACENT WALLS OR ALTERNATIVELY ATTACHED TO MARKER POSTS .
2. PLATES TO BE FIXED IN POSITION USING WALL PLUGS AND STAINLESS STEEL SCREWS .
3. MARKER PLATES TO BE MANUFACTURED IN ACCORDANCE WITH BS 3251 .
4. FOR HYDRANT PLATE ALL CHARACTERS SHOULD BE BLACK AND THE REMAINDER OF THE FRONT FACE SHOULD CONFORM TO COLOUR REFERENCE NO. 309 ( CANARY YELLOW ) OF BS 381 C .
5. PIPE DIAMETER ON HYDRANT PLATE TO REFER TO WATERMAIN NOT BRANCH .
6. SLUICE VALVE , AIR VALVE , SCOUR VALVE, WASHOUT HYDRANT AND METER PLATES SHOULD BE CAST IRON . ALL CHARACTERS SHOULD BE BLACK ON WHITE PAINT BACKGROUND .
7. CONCRETE SURROUND TO MARKER POST TO BE GRADE C25 / 30 AND IN ACCORDANCE WITH IS EN 206 / 2013 .
8. PLASTIC MARKER POSTS ARE NOT ACCEPTABLE
9. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206

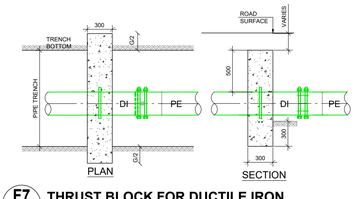
E1 - ELEVATION
SCALE @ A0: 1:25
SCALE @ A2: 1:50

E1 - SECTION
SCALE @ A0: 1:25
SCALE @ A2: 1:50

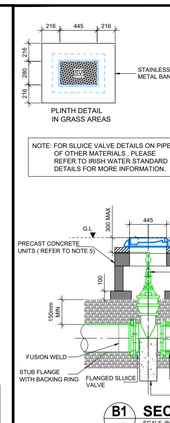
# E - TYPICAL MARKER POST / PLATE DETAILS

## NOTES

1. ALL DIMENSION ARE IN MILLIMETERS (MM) UNLESS NOTED OTHERWISE
2. CONCRETE THRUST BLOCKS (ANCHORAGE) SHALL BE POSITIONED SYMMETRICALLY WITH RESPECT TO THE CONNECTING PIPE & BENDS .
3. TRENCH DIMENSIONS : REFER TO DETAIL A
4. THRUST BLOCKS SHALL BEAR ON UNDISTURBED SOIL . IF FOR ANY REASON THEY CANNOT THEN THE CONTRACTOR SHALL NOTIFY THE EMPLOYER REPRESENTATIVE IMMEDIATELY WITH A PROPOSED SOLUTION .
5. THRUST BLOCK REINFORCEMENT REQUIRE SPECIFIC DESIGN .
6. FOR TEST PRESSURES GREATER THAN 18 BAR , THRUST BLOCK DESIGN IS TO BE SUBMITTED TO IRISH WATER FOR APPROVAL .
7. THRUST BLOCKS ARE DESIGNED FOR AN AVERAGE BEARING PRESSURE OF 100 KN/M . ( TYPICAL FOR SOFT CLAY ) FOR OTHER CONDITIONS , ACTUAL DIMENSIONS MAY BE ALTERED ON INSTRUCTIONS FROM THE EMPLOYER REPRESENTATIVE .
8. CONCRETE IN THRUST BLOCKS SHALL BE GRADE C20/25
9. COMPRESSIBLE FILLER FOR CONCRETE PROTECTION TO BE IN ACCORDANCE WITH BS EN 622 - 1 AND BS EN 622 - 4 , BITUMINOUS MATERIAL SHALL NOT BE PUT IN CONTACT WITH PLASTIC PIPES . THE THICKNESS OF COMPRESSIBLE FILLER FOR MAINS < 450 MM IN DIAMETER IS TO BE 18 MM .
10. CONCRETE THRUST BLOCKS FOR POLYETHYLENE PIPE TO COMPLY WITH THE MANUFACTURES REQUIREMENTS .
11. POLYETHYLENE PIPE SHALL BE WRAPPED IN PLASTIC SHEETING HAVING A COMPOSITION IN ACCORDANCE WITH BS 6076 BEFORE BEING CAST INTO CONCRETE .
12. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206




# F7 - THRUST BLOCK FOR DUCTILE IRON TO POLETHLENE CHANGE OVER

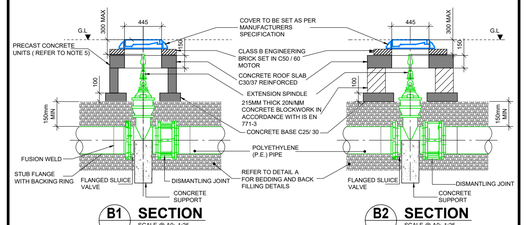



PLINTH DETAIL IN GRASS AREAS

NOTE: FOR SLUICE VALVE DETAILS ON PIPES OF OTHER MATERIALS , PLEASE REFER TO IRISH WATER STANDARD DETAILS FOR MORE INFORMATION.

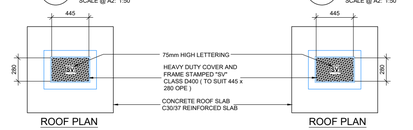
## NOTES

1. ALL DIMENSIONS IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
2. SLUICE VALVE CHAMBERS SHALL BE COVERED WITH APPROVED HEAVY DUTY METAL COVERS TO IS 261 OR BS 5834. COVER AND FRAME SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS AND IS SUBJECT TO THE APPROVAL OF THE EMPLOYERS REPRESENTATIVE .
3. SLUICE VALVES SHALL BE RESILIENT SEATED AND SHALL COMPLY WITH BS 5163-1, BS 5163-2, IS EN 1074-1, IS EN 1074-2, OR EQUIVALENT E.U SPECIFICATIONS.
4. ALL SLUICE VALVES SHALL BE ANTI-CLOCKWISE CLOSING.
5. VALVE CHAMBER TO BE CONSTRUCTED OF PRECAST CONCRETE UNITS OR HIGH DENSITY BLOCKWORK. ALTERNATIVELY PROPRIETARY PREFABRICATED CHAMBER UNITS MAY ALSO BE USED. SUBJECT TO APPROVAL FROM IRISH WATER.
6. CONCRETE CHAMBERS SHALL BE SURROUNDED BY A MINIMUM OF 150MM COMPACTED CLAUSE 808 MATERIAL.
7. DUCTILE IRON PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN 545. PE PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN 12201:2011.
8. 200mm ALL AROUND, 100mm DEEP CONCRETE PLINTH WITH PROTECTIVE STAINLESS STEEL METAL BAND AROUND COVER IN GREEN AREAS.
9. THRUST BLOCKS (NOT SHOWN ON DRAWING), TO BE PROVIDED AS PER STANDARD DRAWING STD-W-28 AT ALL TEES, BENDS, TAPERS, DEAD ENDS AND PIPES AT STEEP SLOPES.
10. ANTI-CORROSION TAPE TO BE PROVIDED AROUND BURIED FLANGES.
11. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.

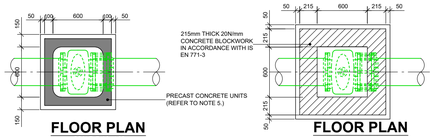



B1 - SECTION
SCALE @ A0: 1:25
SCALE @ A2: 1:50

B2 - SECTION
SCALE @ A0: 1:25
SCALE @ A2: 1:50




ROOF PLAN

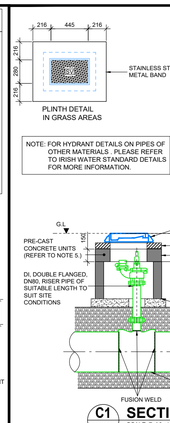



FLOOR PLAN
SCALE @ A0: 1:25
SCALE @ A2: 1:50

SLUICE VALVE CHAMBER (PRECAST CONCRETE CONSTRUCTION)

SLUICE VALVE CHAMBER (BLOCKWORK CONSTRUCTION)

# B - TYPICAL SLUICE VALVE DETAILS FOR A POLYETHYLENE ( PE ) PIPE

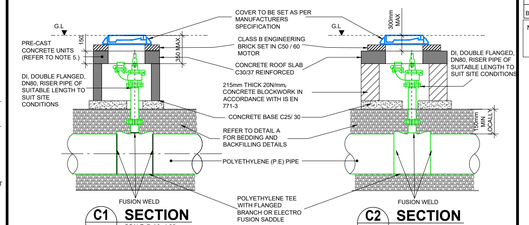



PLINTH DETAIL IN GRASS AREAS

NOTE: FOR HYDRANT DETAILS ON PIPES OF OTHER MATERIALS , PLEASE REFER TO IRISH WATER STANDARD DETAILS FOR MORE INFORMATION.

## NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS (MM) UNLESS NOTED OTHERWISE.
2. HYDRANT CHAMBERS SHALL BE COVERED WITH APPROVED HEAVY DUTY METAL COVERS TO IS 261 AND BS 5834 COVER AND FRAME SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS AND IS SUBJECT TO THE APPROVAL OF EMPLOYER REPRESENTATIVE.
3. ALL HYDRANTS, SURFACE BOX FRAMES & COVERS SHALL COMPLY WITH THE RELEVANT PROVISIONS OF IS EN 14339, IS EN 1074-6 & BS 750. FIRE HYDRANTS SHALL BE TYPE 2.
4. THE HYDRANT INLET SHALL BE 80MM DIAMETER WITH PN16.
5. ALL HYDRANTS SHALL BE CLOCKWISE CLOSING.
6. HYDRANT CHAMBER TO BE CONSTRUCTED OF PRECAST CONCRETE UNITS OR HIGH DENSITY BLOCKWORK. ALTERNATIVELY PROPRIETARY PREFABRICATED CHAMBER UNITS MAY ALSO BE USED. SUBJECT TO APPROVAL FROM THE EMPLOYER REPRESENTATIVE
7. CONCRETE CHAMBERS SHALL BE SURROUNDED BY A MINIMUM OF 150MM COMPACTED CLAUSE 808 MATERIAL.
8. DUCTILE IRON PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN 545 .
9. 200MM ALL AROUND 100MM DEEP CONCRETE PLINTH WITH PROTECTIVE STAINLESS STEEL METAL BAND AROUND COVERS IN GREEN AREAS.
10. THRUST BLOCKS TO BE PROVIDED AS PER DETAIL F AT ALL TEES, BENDS, TAPERS, DEAD ENDS AND PIPES AT STEEP SLOPES.
11. ANTI-CORROSION TAPE TO BE PROVIDED AROUND BURIED FLANGES.
12. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.




C1 - SECTION
SCALE @ A0: 1:25
SCALE @ A2: 1:50

C2 - SECTION
SCALE @ A0: 1:25
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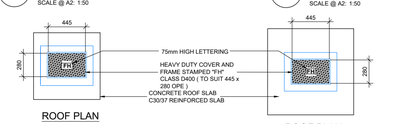
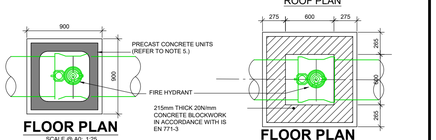



ROOF PLAN

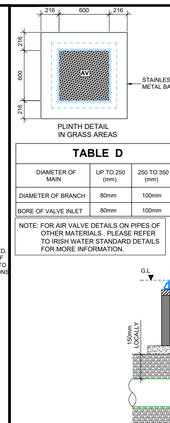



FLOOR PLAN
SCALE @ A0: 1:25
SCALE @ A2: 1:50

FIRE HYDRANT CHAMBER (PRECAST CONCRETE CONSTRUCTION)

FIRE HYDRANT CHAMBER (BLOCKWORK CONSTRUCTION)

# C - TYPICAL ON-LINE HYDRANT DETAILS FOR A POLYETHYLENE ( PE ) PIPE




PLINTH DETAIL IN GRASS AREAS

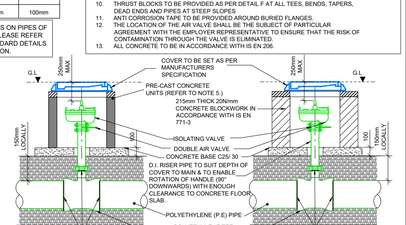
### TABLE D

| DIAMETER OF MAIN | UP TO 250 (mm) | 250 TO 350 (mm) |
|---|---|---|
| DIAMETER OF BRANCH | 80mm | 100mm |
| BORE OF VALVE INLET | 80mm | 100mm |

NOTE: FOR AIR VALVE DETAILS ON PIPES OF OTHER MATERIALS , PLEASE REFER TO IRISH WATER STANDARD DETAILS FOR MORE INFORMATION.

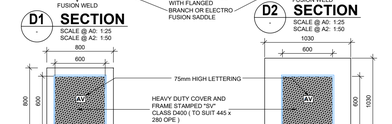
## NOTES

1. ALL DIMENSIONS IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. AIR VALVE CHAMBERS SHALL BE COVERED WITH APPROVED VENTILATED HEAVY DUTY METAL COVERS TO IS EN 124 RATING D400. COVER AND FRAME SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS AND IS SUBJECT TO THE APPROVAL OF THE EMPLOYER REPRESENTATIVE
3. AIR VALVES SHALL COMPLY WITH THE REQUIREMENTS OF IS EN 1074-4.
4. AIR VALVES SHALL BE DOUBLE ORIFICE TYPE AND SHALL INCLUDE AN ISOLATING VALVE. THE ISOLATING VALVE SHALL BE A GATE VALVE CONFORMING TO IS EN 1074-2 & SHALL BE OF A BOLTLESS BONNET DESIGN.
5. THE AIR VALVES SHALL HAVE BODIES AND COVERS OF CAST IRON TO BS EN 1563 WITH FLANGES DRILLED TO PN 16 IN ACCORDANCE WITH BS EN 1092. EACH VALVE SHALL HAVE A LARGE AND A SMALL AIR ESCAPE ORIFICE WITH AN ISOLATING VALVE.
6. SERVICE CONNECTIONS SHALL NOT BE PROVIDED WITHIN 2m OF THE AIR VALVE LOCATION.
7. AIR VALVE CHAMBERS TO BE OF PRECAST CONCRETE UNITS OR HIGH DENSITY BLOCKWORK. ALTERNATIVE PROPRIETARY PREFABRICATED CHAMBER UNITS MAY ALSO BE USED. SUBJECT TO APPROVAL FROM THE EMPLOYER REPRESENTATIVE.
8. PRECAST CONCRETE CHAMBERS SHALL BE SURROUNDED BY A MINIMUM OF 150mm COMPACTED CLAUSE 808 MATERIAL.
9. DUCTILE IRON PIPES AND FITTINGS TO BE IN ACCORDANCE WITH IS EN 545.
10. 200mm ALL AROUND, 100mm DEEP CONCRETE PLINTH WITH PROTECTIVE STAINLESS STEEL METAL BAND AROUND COVERS IN GREEN AREAS.
11. THRUST BLOCKS TO BE PROVIDED AS PER DETAIL F AT ALL TEES, BENDS, TAPERS, DEAD ENDS AND PIPES AT STEEP SLOPES
12. ANTI CORROSION TAPE TO BE PROVIDED AROUND BURIED FLANGES.
13. THE LOCATION OF THE AIR VALVE SHALL BE THE SUBJECT OF PARTICULAR AGREEMENT WITH THE EMPLOYER REPRESENTATIVE TO ENSURE THAT THE RISK OF CONTAMINATION THROUGH THE VALVE IS ELIMINATED.
14. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.



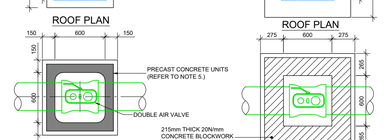

D1 - SECTION
SCALE @ A0: 1:25
SCALE @ A2: 1:50

D2 - SECTION
SCALE @ A0: 1:25
SCALE @ A2: 1:50




ROOF PLAN

ROOF PLAN




FLOOR PLAN
SCALE @ A0: 1:25
SCALE @ A2: 1:50

DOUBLE AIR VALVE (PRECAST CONCRETE CONSTRUCTION)

DOUBLE AIR VALVE (BLOCKWORK CONSTRUCTION)

# D - TYPICAL ON-LINE AIR VALVE DETAILS FOR A POLYETHYLENE ( PE ) PIPE

### THRUST BLOCK DIMENSIONS
< 12 BAR TEST PRESSURE

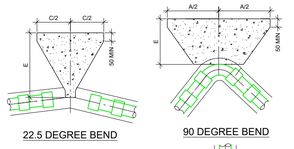
| NOM DIA (mm) | DIMENSIONS A | B | C | D | E | F | G | H | J | K |
|---|---|---|---|---|---|---|---|---|---|---|
| 100 | 600 | 330 | 160 | 80 | 200 | 350 | 390 | 700 | 600 | 400 |
| 150 | 950 | 510 | 260 | 130 | 225 | 450 | 660 | 900 | 750 | 600 |
| 200 | 1150 | 600 | 310 | 160 | 300 | 600 | 790 | 1050 | 900 | 700 |
| 250 | 1350 | 750 | 380 | 200 | 300 | 800 | 970 | 1200 | 1000 | 750 |
| 300 | 1580 | 850 | 450 | 220 | 320 | 950 | 1110 | 1300 | 1100 | 850 |
| 350 | 2100 | 1150 | 570 | 290 | 450 | 1000 | 1450 | 1550 | 1200 | 900 |
| 400 | 2550 | 1400 | 700 | 350 | 500 | 1050 | 1800 | 1700 | 1250 | 1000 |
| 450 | 3000 | 1630 | 830 | 420 | 680 | 1100 | 2130 | 1800 | 1450 | 1150 |
| 500 | 3590 | 1950 | 990 | 500 | 800 | 1200 | 2540 | 1950 | 1600 | 1250 |
| 600 | 4100 | 2200 | 1120 | 570 | 850 | 1400 | 2880 | 2100 | 1700 | 1300 |

### THRUST BLOCK DIMENSIONS
12 BAR TO 15 BAR TEST PRESSURE

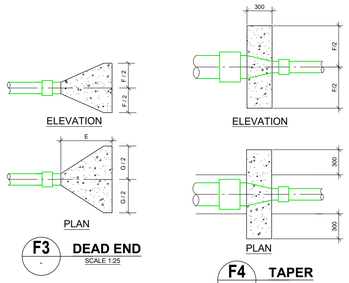
| NOM DIA (mm) | DIMENSIONS A | B | C | D | E | F | G | H | J | K |
|---|---|---|---|---|---|---|---|---|---|---|
| 100 | 700 | 380 | 190 | 100 | 200 | 350 | 510 | 750 | 600 | 400 |
| 150 | 1135 | 620 | 320 | 160 | 225 | 450 | 760 | 950 | 750 | 600 |
| 200 | 1400 | 750 | 380 | 190 | 300 | 650 | 980 | 1150 | 950 | 700 |
| 250 | 1730 | 940 | 480 | 240 | 320 | 800 | 1210 | 1350 | 1050 | 850 |
| 300 | 2090 | 1130 | 580 | 300 | 380 | 950 | 1480 | 1500 | 1200 | 950 |
| 350 | 2600 | 1410 | 720 | 360 | 500 | 1050 | 1840 | 1700 | 1350 | 1050 |
| 400 | 2980 | 1610 | 820 | 420 | 750 | 1200 | 2110 | 1850 | 1500 | 1150 |
| 450 | 3400 | 1840 | 940 | 470 | 900 | 1300 | 2330 | 2000 | 1600 | 1250 |
| 500 | 4090 | 2210 | 1130 | 570 | 1000 | 1400 | 2890 | 2200 | 1750 | 1350 |
| 600 | 5010* | 2710* | 1380 | 700 | 1000 | 1500 | 3550* | 2350 | 1900 | 1500 |

### THRUST BLOCK DIMENSIONS
15 BAR TO 18 BAR TEST PRESSURE

| NOM DIA (mm) | DIMENSIONS A | B | C | D | E | F | G | H | J | K |
|---|---|---|---|---|---|---|---|---|---|---|
| 100 | 750 | 400 | 205 | 100 | 220 | 400 | 530 | 800 | 650 | 400 |
| 150 | 1250 | 700 | 350 | 180 | 250 | 500 | 890 | 1000 | 850 | 650 |
| 200 | 1650 | 890 | 450 | 230 | 320 | 700 | 1170 | 1250 | 1000 | 800 |
| 250 | 1980 | 1060 | 540 | 270 | 350 | 900 | 1370 | 1450 | 1150 | 900 |
| 300 | 2300 | 1200 | 640 | 320 | 500 | 1100 | 1630 | 1650 | 1300 | 1050 |
| 350 | 2930 | 1580 | 830 | 410 | 750 | 1200 | 2070 | 1850 | 1500 | 1150 |
| 400 | 3510 | 1900 | 970 | 190* | 1000 | 1300 | 2490 | 2000 | 1600 | 1250 |
| 450 | 3810 | 2270 | 1160 | 580 | 1000 | 1350 | 2970 | 2150 | 1700 | 1350 |
| 500 | 4340* | 2380 | 1210 | 610 | 1000 | 1400 | 3700 | 2250 | 1750 | 1400 |
| 600 | 6370* | 3450* | 1760 | 890 | 1000 | 1500 | 4500* | 2400 | 2050 | 1650 |

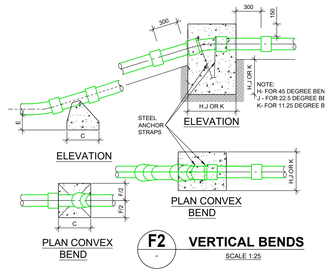



# F1 - HORIZONTAL BENDS
SCALE 1:25

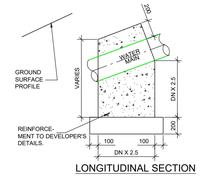


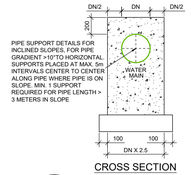

# F3 - DEAD END
SCALE 1:25

# F4 - TAPER
SCALE 1:25

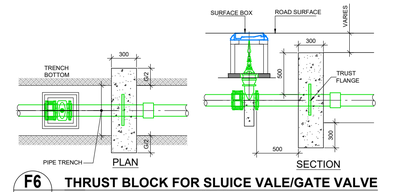



# F2 - VERTICAL BENDS
SCALE 1:25




# F5 - INCLINED SLOPES
SCALE 1:25




# F6 - THRUST BLOCK FOR SLUICE VALE/GATE VALVE
SCALE 1:25

# F - TYPICAL WATERMAINTHRUST AND SUPPORT BLOCK DETAILS

## NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - ASK .
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

| ISSUE | DATE | DESCRIPTION | DRN | CHKD |
|---|---|---|---|---|
| PL3 | 19.03.24 | RE-ISSUED FOR LRD APPLICATION | SC | RM |
| PL2 | 11.03.22 | REVISED PLANNING APPLICATION | PDS | RM |
| PL1 | 04.09.20 | ISSUED FOR PLANNING | SC | RM |

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CLIENT: **ORCHID RESIDENTIAL LTD.**

PROJECT TITLE: **GOATSTOWN STUDENT ACCOMMODATION**

BM PROJECT No.: **19.289**

MODEL REFERENCE: **19289-BMD-ZZ-XX-DR-C-1220**

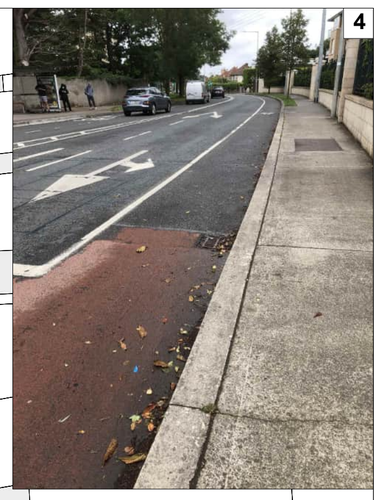
MODEL REV.: **P1**

SUITABILITY: **S0**

DRAWING TITLE: **STANDARD WATERMAIN DETAILS**

DRAWING No: **19289-BMD-ZZ-XX-DR-C-1220**

ISSUE: **PL3**








## PLAN

SCALE @ A1: 1:500
SCALE @ A3: 1:1000

## NOTES

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### ANALYSIS OF OVERLAND FLOW ROUTES FOR FLOODWATER DISCHARGE FROM BLOCKED MANHOLE S1.3

1. GOATSTOWN ROAD FORMS A GOOD CHANNEL FOR ANY FLOODWATER EMANATING FROM THE SITE WITH 125mm KERBLINES ON BOTH SIDES OF THE ROAD AND WITH ALL ACCESS POINTS TO PROPERTIES ON THE LOWER KERBSIDE, OR ON UPHILL GRADIENT FROM THE EDGE OF THE CARRIAGEWAY
   - SEE GRADIENT LINES FOR KERBLINES SHOWN ON PLAN WITH REFERENCE PHOTOGRAPHS.
2. THE NEAREST ROAD GULLY IS APPROXIMATELY 110m FROM THE NORTHERN CORNER OF THE SITE WITH ANOTHER GULLY APPOXIMATELY 30m FURTHER ON AND A KERB OUTLET A FURTHER 35m.
3. FOR 100% BLOCKAGE THE VOLUME OF FLOOD WATER = 194m³ FOR THE 10,080 MINUTES (168 hour) STORM.
   THE 145m³ ATTENUATION TANK WILL FILL UP FIRST SO THE 194m³ WILL FLOW OVER A TIME =168 x $\frac{194}{340}$ = 96 HOURS = 2.02m³/HOUR.
   TAKING A TIME OF CONCENTRATION = 4 MINUTES = 0.135m³ FLOW AND AN 0.3m CHANNEL WIDTH OVER 110m LENGTH TO THE FIRST GULLY GIVES 0.135/(110 X 0.3) = 4mm DEPTH OF WATER IN THE CHANNEL.

| ISSUE | DATE | DESCRIPTION | DRN / ORIG | P.E. / P.D. |
|---|---|---|---|---|
| PL4 | 26.09.24 | REVISED FOR LRD APPLICATION | MC / POD | BM / BM |
| PL3 | 19.03.24 | RE-ISSUED FOR LRD APPLICATION | MC / POD | BM / BM |
| PL2 | 11.03.22 | REVISED PLANNING APPLICATION | POD / POD | BM / BM |
| PL1 | 04.09.20 | ISSUED FOR PLANNING | NMM / TMH | TMH / BM |

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PROJECT TITLE: **GOATSTOWN STUDENT ACCOMMODATION**
BM PROJECT No.: **19.289**
MODEL REFERENCE: **19289-BMD-ZZ-XX-DR-C-1300**
MODEL REV.: **P1**
SUITABILITY: **S0**
DRAWING TITLE: **OVERLAND FLOW LAYOUT**
DRAWING No.: **19289-BMD-ZZ-XX-DR-C-1300**
ISSUE: **PL4**

## NOTES

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2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

### STEEL MEMBERS SCHEDULE

**FOUNDATION SCHEDULE**

| REF. | SIZE | REF. | SIZE |
|---|---|---|---|
| PF1 | 1500 x 1500 x 600mm Dp. RC. PAD FOUNDATION | PF2 | 1750 x 1750 x 600mm Dp. RC. PAD FOUNDATION |
| PF3 | 2250 x 2250 x 600mm Dp. RC. PAD FOUNDATION | PF4 | 3000 x 3000 x 600mm Dp. RC. PAD FOUNDATION |
| PF5 | 4000 x 1200 x 600mm Dp. RC. PAD FOUNDATION | PF6 | 5000 x 9500 x 600mm Dp. RC. PAD FOUNDATION |
| SF1 | 900 x 300 Dp. RC. STRIP FOOTING | SF2 | 900 x 600 Dp. RC. STRIP FOOTING |

**CONCRETE COLUMN SCHEDULE**

| REF. | SIZE | REF. | SIZE |
|---|---|---|---|
| C1 | 800 x 200 RC. COLUMN | - | - |

SITE BOUNDARY


## FOUNDATION PLAN

SCALE @ A0: 1:100
SCALE @ A2: 1:200

| ISSUE | DATE | DESCRIPTION | BY |
|---|---|---|---|
| PL3 | 19.09.24 | REVISED FOR LRD APPLICANT | CN |
| PL2 | 19.03.24 | REVISED FOR LRD APPLICANT | MC |
| PL1 | 11.03.22 | ISSUED FOR PLANNING | JN |

Project Engineer: RMcA | Project Director: BM

BM STAGE: **PLANNING**


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CLIENT: **ORCHID RESIDENTIAL LTD.**

PROJECT TITLE: **GOATSTOWN STUDENT ACCOMODATION**

BM PROJECT No.: **19.289**

| STATUS | REFERENCE | SUITABILITY | REVISION |
|---|---|---|---|

DRAWING TITLE: **FOUNDATION LAYOUT**

| DRAWING REFERENCE | STATUS | REVISION |
|---|---|---|
| 19289-BMD-ZZ-FN-DR-S-2000 | | PL3 |