GENERAL.

ALL DRAINAGE CONSTRUCTION TO COMPLY WITH SECTION 'H' OF THE BUILDING REGULATIONS 1985 AND LATEST REVISIONS AND RECOMMENDATIONS OF THE BRITISH STANDARD BS 8301 AND BS-EN752
ALL EXISTING GROUND LEVELS AND EXISTING DRAIN AND SEWER CONNECTION INVERT LEVELS SHOWN ON THE DRAINAGE LAYOUT DRAWING ARE TO BE VERIFIED PRIOR TO ANY DRAINAGE CONSTRUCTION.
THE FOLLOWING NOTES EXTRACT THE PRIMARY SPECIFICATION REQUIREMENTS FROM THE ABOVE DOCUMENTS. FOR THE DETAILED SPECIFICATION AND ASSOCIATED REQUIREMENTS OF OTHER STANDARDS, REFER TO THE ABOVE DOCUMENTS.
WHERE DRAINAGE IS TO BE ADOPTED THE SPECIFICATIONS AND DETAILS OF THE ADOPTING AUTHORITY SHALL TAKE PRECEDENCE (SEWERS FOR ADOPTION-6TH EDITION) WHERE MORE OUEROUS THAN THE FOLLOWING.

PIPES, JOINTS AND FITTINGS.

FLEXIBLE JOINTS TO BE PROVIDED TO ALL PIPES. ACCEPTABLE MATERIALS AND ASSOCIATED BRITISH STANDARDS FOR PIPES.

RIGID:

VITRIFIED CLAY	TO B.S. 65 & B.S. EN 295	STRENGTH CLASS 200
PRECAST CONCRETE	TO B.S. 5911 Part 100	STRENGTH CLASS 'H'

FLEXIBLE: (SURFACE WATER ONLY)
uPVC TO BS 4660 AND BS 5481 FOR STRENGTH CLASS REFER TO MANUFACTURER GIVING DEPTH AND SURFACE (TRAFFIC ETC.) LOADING CATEGORY.

CHEMICAL RESISTANCE REQUIREMENTS: CLASS 2.
ALL FITTINGS TO BE OBTAINED FROM THE MANUFACTURER OF THE PIPE AND FIXED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

PIPE BEDDING.

TO BE AS IDENTIFIED ON THE DRAINAGE LAYOUT DRAWING IN ACCORDANCE WITH DETAILS GIVEN BELOW.

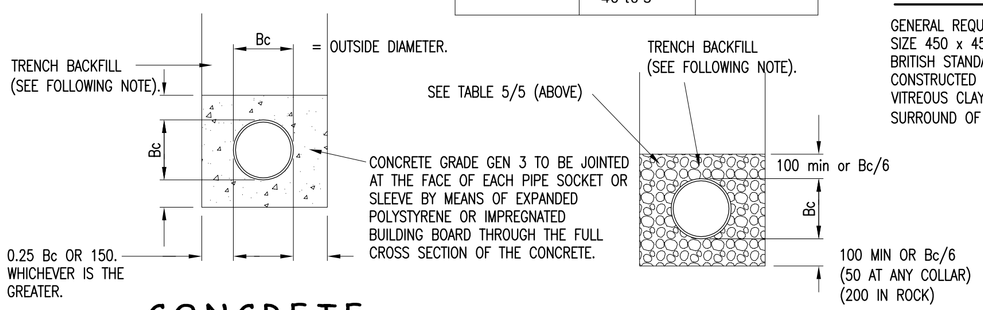
ALL ROAD GULLEY CONNECTION PIPES TO HAVE CONCRETE SURROUND FOR THEIR ENTIRE LENGTH TO THE COLLECTING DRAIN.

PIPE COVER

ALL PIPES WITH LESS THAN 900mm BETWEEN FINISHED LEVEL AND SOFFIT OF PIPE ARE TO RECEIVE CONCRETE PROTECTION MAINTAINING A FLEXIBLE JOINT AT EVERY PIPE LENGTH.

TABLE 5/5: Granular Materials to BS 882

Nominal Pipe Diameter	BS 882 Coarse Aggregate (Table 4)	
	Graded aggregate ranges (mm)	Single sized aggregate sizes (mm)
Not exceeding 140	-	10
Exceeding 140 but not exceeding 400	20 to 5 or 14 to 5	10, 14 or 20
Exceeding 400	14 to 5, 20 to 5 or 40 to 5	10, 14, 20 or 40



CONCRETE SURROUND (CS)

GRANULAR BEDDING (CLASS 'S')

MANHOLES PRECAST CONCRETE.

PRECAST CONCRETE SECTIONS TO COMPLY WITH B.S. 5911. PARTS 1 & 2. REINFORCED CHAMBER RINGS, DIA AS PER SCHEDULE, JOINTED WITH CLASS (i) MORTAR (BS 5628)***. STEP IRONS TO BS 1247 ALTERNATELY STAGGERED HORIZONTALLY 300mm CENTRE TO CENTRE AND SPACED 300mm VERTICALLY. INSITU CONCRETE BASE 225mm BELOW PIPE BARREL, GRADE AS PIPE BEDDING (CS) PREFORMED CHANNELS TO INVERTS, FIRST PIPE OUT OF MANHOLE NOT TO EXCEED 600mm TO 1ST JOINT * BENCHING ABOUT CHANNEL TO HAVE A SLOPE OF 1in12 UP TO 450 WIDE AND 1 in 36 FOR GREATER THAN 450 WIDE AND FINISHED WITH GRANOLITHIC SCREED. PRECAST SECTIONS SURROUNDED WITH 150mm CONCRETE OF GRADE TO PIPE BEDDING (CS) REQUIREMENTS. COVER AND FRAME TO BS EN 124. AS PER SCHEDULE BEDDED AND HAUNCHED** ON 2 OR 3 COURSES OF ENGINEERING CLASS B BRICKWORK ALL IN CLASS (i) MORTAR. A SET OF COVER KEYS TO BE PROVIDED TO CLIENT FOR EACH TYPE OF COVER. MANHOLES DEEPER THAN 2.700m TO INVERT OF PIPE TO HAVE ACCESS SHAFT ON REDUCING SLAB OF 900mm DIA UPON 2.0m CLEAR DIMENSION FROM THE UNDERSIDE OF THE REDUCING SLAB TO CROWN OF PIPE BEING ACHIEVABLE.
MANHOLES OVER 3.250m DEEP TO INVERT TO INCORPORATE A FLAT RUNG LADDER (BS 4211) WITH MIN. DISTANCE FROM WALL 200mm AND MAX DISTANCE FROM COVER LEVEL TO FIRST RUNG 750mm.
* THE LENGTH OF NEXT PIPE, THE ROCKER OR ARTICULATED PIPE, AWAY FROM THE STRUCTURE SHALL NOT EXCEED 0.750m FOR PIPES UP TO 450mm DIA AND 1m FOR PIPES UPTO 750mm DIA.
** SEE SEPERATE DETAILS WHERE APPLICABLE (IN CONCRETE AND BLOCK PAVIOR AREAS, ETC)
*** PREFORMED SEAL PROVIDED BY PRECAST CONCRETE MANUFACTURER TO BE USED BELOW WATERTABLE.

MANHOLES BRICKWORK.

225mm THICK CLASS B ENGINEERING BRICKWORK BUILT IN ENGLISH BOND. BRICKS SET IN CLASS (i) MORTAR. EXPOSED WORK SHALL BE FLUSH JOINTED AS THE WORK PROCEEDS. JOINTS TO BE UNIFORM 10mm. BRICKS WITH SINGLE FROGS LAID WITH FROGS UPWARDS. BRICKWORK TO RISE UNIFORMLY. SAWN BRICKS TO BE USED ONLY WHERE ESSENTIAL FOR BOND. OVERSAIL CORBELLING NOT TO EXCEED 30mm PER COURSE. 112.5mm RELIEVING ARCH TO BE PROVIDED ON PIPES OVER 150mm DIA.
CONCRETE COVER SLAB 225mm THICK GRADE RC35 REINFORCED WITH 20mm MILD STEEL BARS 125mm CRS, BOTH WAYS IN BOTTOM OF SLAB. COVER 40mm. OTHER DETAILS AS PRECAST CONCRETE.
INTERNAL SIZES AS PER SCHEDULE. INSITU CONCRETE BASE SLAB 150mm THICK UP TO 1.800mm DEPTH 225mm IF GREATER. CONCRETE GRADE AS PIPE BEDDING (CS) REQUIREMENTS.

CATCHPIT.

AS MANHOLES BUT BENCHING OMITTED.
INTERNAL SIZE TO BE A Minimum OF 1200 x 750mm OR 1050 DIAMETER (DEPENDANT ON PIPE SIZE)
TOP OF BASE TO BE 300mm BELOW OUTLET LEVEL (300ø & BELOW) & 600mm BELOW
FOR PIPE SIZES ABOVE 300mmø. ALL PIPES TO PROTUDE IN TO CHAMBER BY A Min 20mm.

LAND DRAINS.

150mm DIA POROUS OR PERFORATED PIPES COMPLYING WITH EITHER BS 1194 OR BS 1196.
WIDTH OF TRENCH Min 600mm. PIPES LAID TO MANUFACTURERS INSTRUCTIONS. TRENCH TO BE FILLED TO WITHIN 100mm OF SURFACE WITH TYPE B FILTER MATERIAL TO CLAUSE 505 DOT "SPECIFICATION FOR HIGHWAY WORKS". CAREFULLY PACKED AROUND PIPES AND LIGHTLY COMPACTED IN 225mm LAYERS.

INSPECTION CHAMBER.

GENERAL REQUIREMENTS AS FOR MANHOLES. DEPTH TO INVERT NOT TO EXCEED 1.0m. MINIMUM INTERNAL SIZE 450 x 450mm OR 450mm DIAMETER. PROPRIETARY TYPES ARE TO ACCORD WITH THE RELEVANT BRITISH STANDARDS AND TO BE COMPATIBLE WITH THE TYPE OF PIPES EMPLOYED IN ALL ASPECTS AND CONSTRUCTED IN ACCORDANCE WITH THE MANUFACTURES RECOMMENDATIONS. PRECAST CONCRETE, VITREOUS CLAY AND POLYPROPYLENE PREFORMED CHAMBERS TO HAVE 150mm CONCRETE BASE AND SURROUND OF GRADE AS REQUIRED FOR PIPE BEDDING (CS).

BACKFILL TO DRAINAGE TRENCHES.

BENEATH EXTERNAL PAVING AND GROUND FLOOR SLABS: APPROVED SELECTED EXCAVATED PRIMARILY COHESIONLESS (SANDS, GRAVEL, ETC) MATERIAL OR, IF THE FORMER IS NOT PRESENT ON THE SITE, APPROVED IMPORTED GRANULAR MATERIAL. WHILST A COHESIVE (CLAY, ETC) FRACTION MAY BE ACCEPTABLE IN THE ABOVE (SO LONG AS THE RESULTING MATERIAL IS READILY COMPACTIBLE) MATERIAL WHICH IS PRIMARILY COHESIVE IS NOT SUITABLE. THE MATERIAL SHALL BE UNFROZEN AND EXCLUDE BOULDERS, LARGE CONCRETE LUMPS, TIMBER, VEGETABLE AND ORGANIC MATERIAL ETC. BACKFILL IN LAYERS NOT TO EXCEED 300mm.

BENEATH LANDSCAPED AREAS: APPROVED SELECTED SITE GENERATED OR IMPORTED MATERIAL CAPABLE OF BEING COMPACTED SUCH THAT SELF CONSOLIDATION OR SETTLEMENT IS MINIMAL.

ADJACENT TO BUILDINGS: CONCRETE OF GRADE APPLICABLE TO PIPE BEDDING TO LEVEL OF FOUNDATION BOTTOM OR WHERE THE DISTANCE BETWEEN THE SIDE OF THE FOUNDATION AND THE SIDE OF THE TRENCH IS GREATER THAN 1m TO A LEVEL OF THAT DISTANCE LESS 150mm BENEATH THE FOUNDATION BOTTOM.

PIPE TESTING.

ALL PIPE LINES ARE TO BE TESTED IN ACCORDANCE WITH THE SPECIFIED WATER OR AIR TEST AND ACHIEVE THE ACCEPTANCE CRITERIA AT THE FOLLOWING STAGES :-

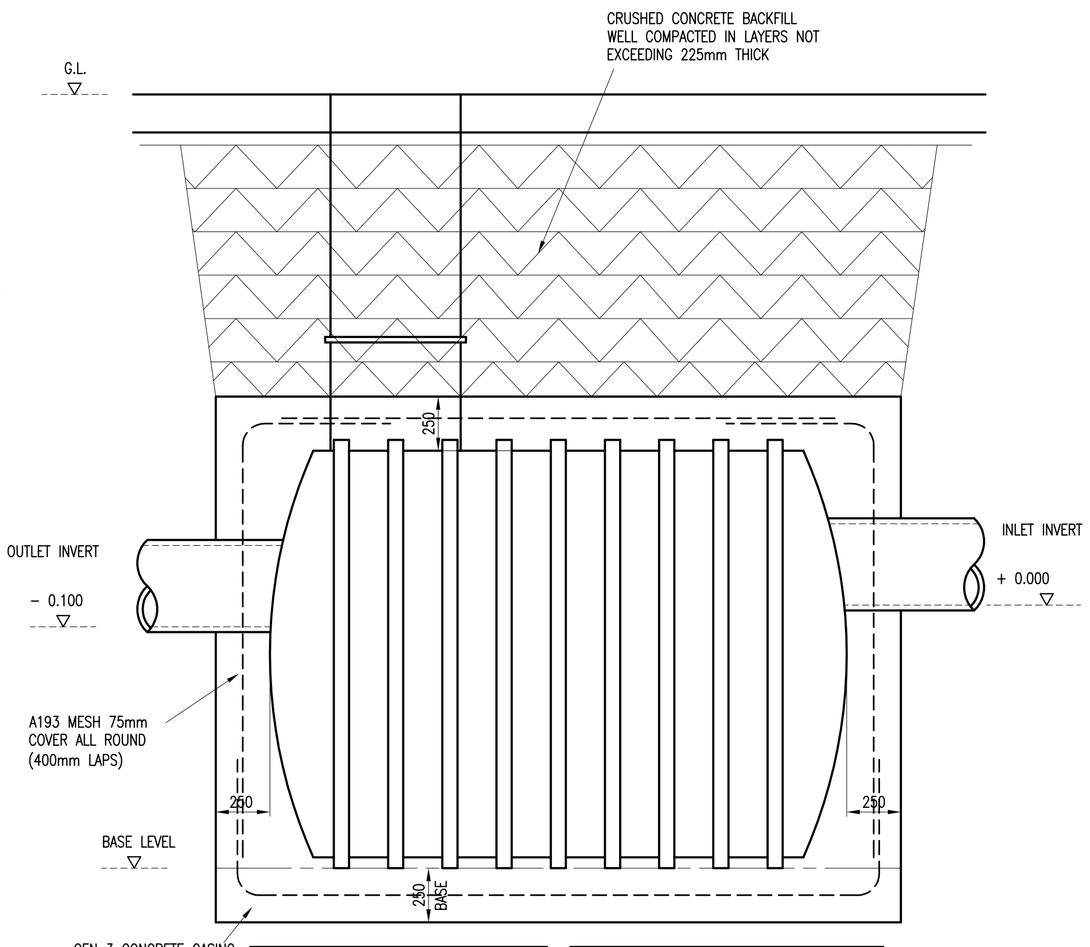
FIRST STAGE : AFTER LAYING & JOINTING BUT BEFORE SIDEFILL.
SECOND STAGE: AFTER LAYING AND COMPACTING OF BACKFILL.
FINAL STAGE: AFTER COMPLETION OF FINAL SURFACING OR FLOOR SLAB AND ADJACENT SUPERSTRUCTURE.

DRAINS PASSING THROUGH BUILDING STRUCTURE.

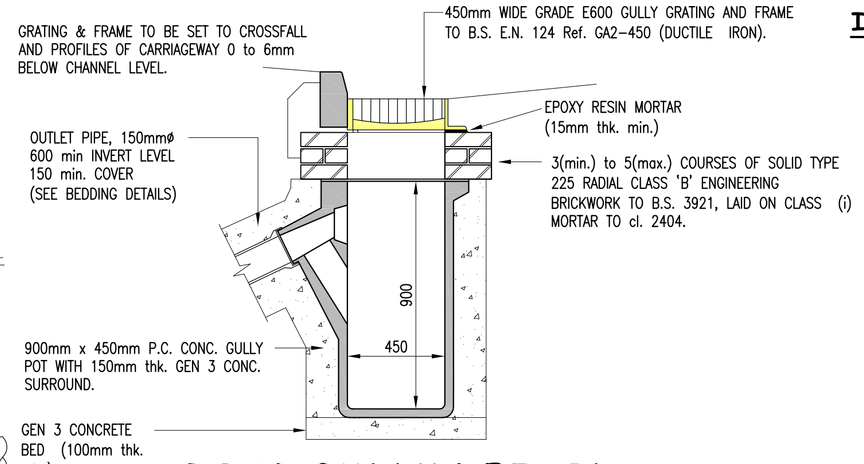
1. DRAINS PASSING THROUGH WALLS ARE TO BE PROTECTED WITH A LINTOL OVER. ANY DRAIN PASSING THROUGH A FOUNDATION TO BE WRAPPED WITH 50mm MINERAL WOOL FIBRE SUCH THAT THE PIPE IS NOT IN CONTACT WITH THE CONCRETE.
2. INTERNAL STACKS TO CONNECT INTO CLAY COLLARS SET 50mm BELOW FFL AND GROUTED IN OR INTO PROPRIETARY ADAPTORS SET FLUSH WITH FFL. ACCESS PLATES ARE TO BE PROVIDED AT THE BASE OF ALL STACKS (GENERALLY 150mm ABOVE F.F.L BUT NO MORE THAN 1000mm).

PETROL INTERCEPTOR.

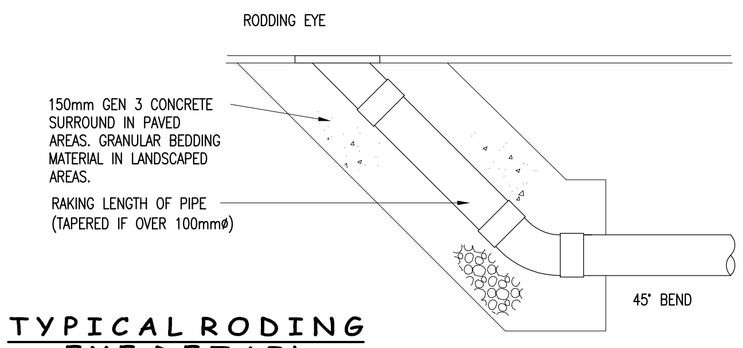
TYPE AND CAPACITY AS SPECIFIED ON DRAINAGE LAYOUT DRAWING. INSTALLED AND CONNECTED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS. TO BE SURROUNDED IN MIN 250mm ST4 CONCRETE WITH A193 MESH THROUGHOUT (MIN 75mm COVER). TO BE BACKFILLED WITH MOT TYPE1 GRANULAR MATERIAL IN MAX 225mm COMPACTED LAYERS.



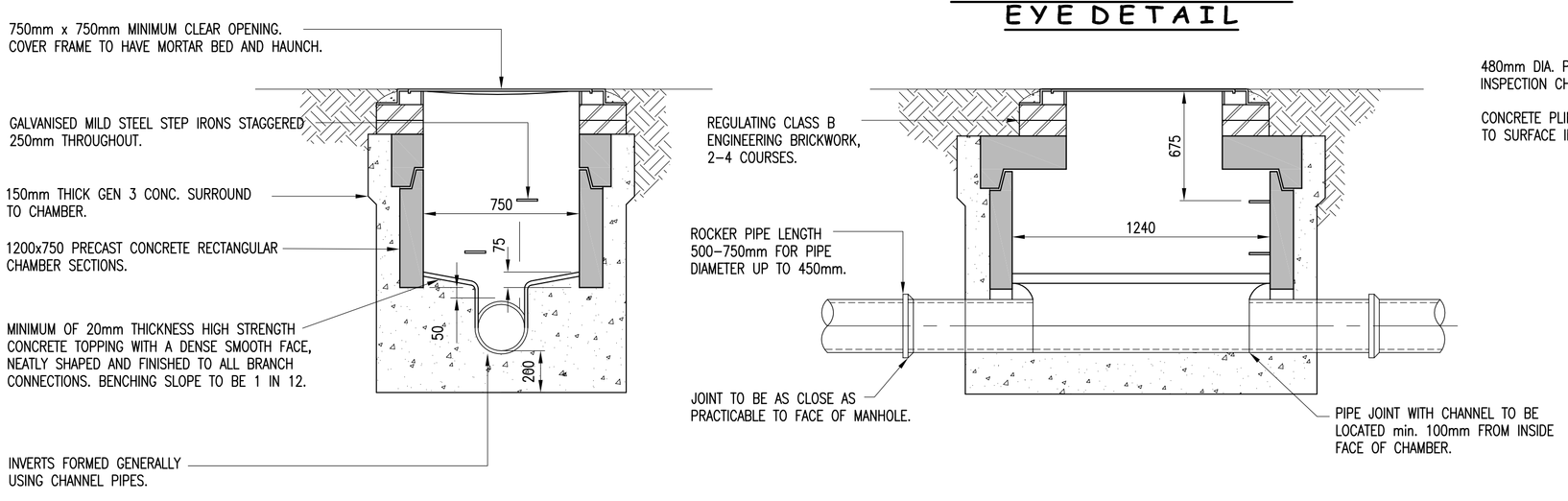
INTERCEPTOR CASING DETAILS
Scale 1:20



ROAD GULLY DETAIL
Scale 1:20

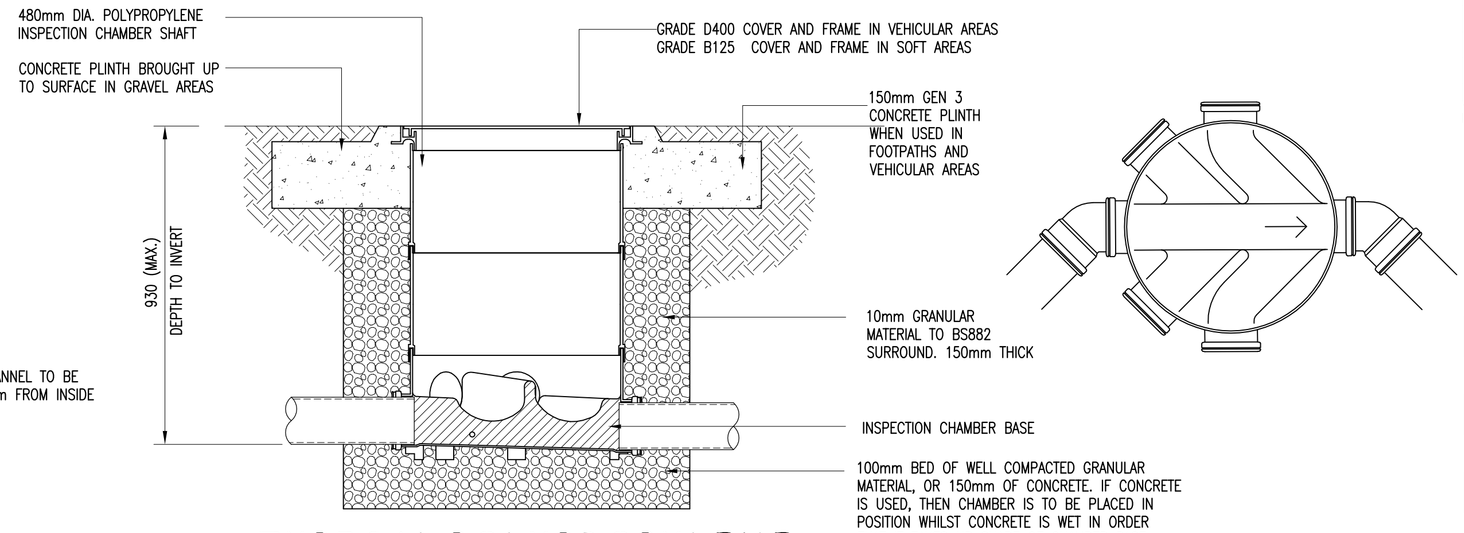


TYPICAL RODING EYE DETAIL



TYPICAL MANHOLE TYPE 'F'

DEPTH TO SOFFIT UP TO 1.0m FROM COVER LEVEL
(MANHOLE CONSTRUCTED TO B.S. 8301).



TYPICAL POLYPROPYLENE MANHOLE

PROLOGIS™

REV	DATE	DESCRIPTION	CHK	DRN
P1	02.09.13	PRELIMINARY ISSUE	TC	MD

NOTE: Where a "P" revision applies, this drawing is NOT to be used for construction

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PROJECT
PHASE 3 (Units C,D &G)
PROLOGIS PARK, HAYES

TITLE
DRAINAGE DETAIL SHEET 1
Ref: Michael Sparks Associates 30587

ARCHITECT
MICHAEL SPARKS Associates

DRAWN	DESIGNED	CHECKED
MWD	TC	TC

DATE	SCALE	STATUS
Aug. 2013	As Shown	Preliminary

2607-52 P1

ISO 9001 REGISTERED FIRM Certificate No. GB2000/50
INTERNATIONAL ACCREDITATION BOARD Registration No. 0044/1