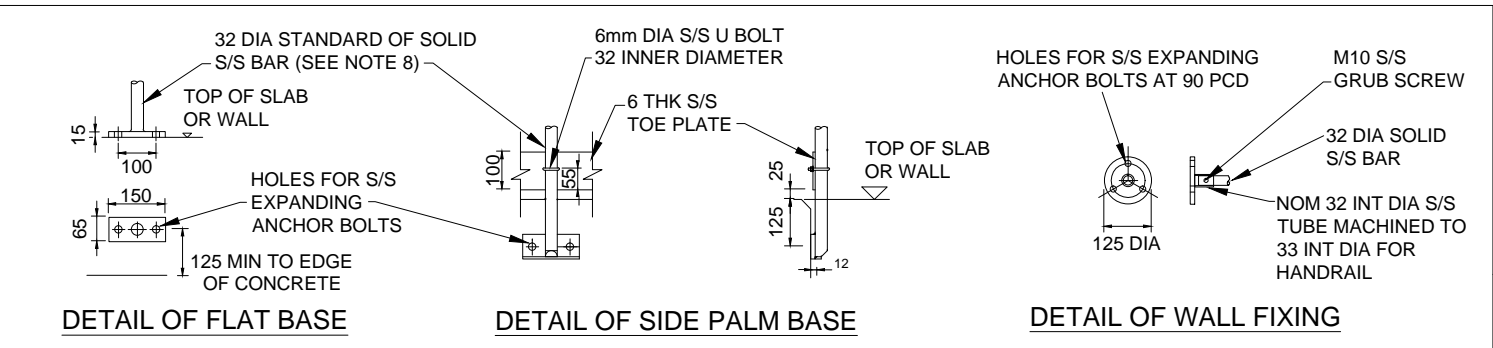


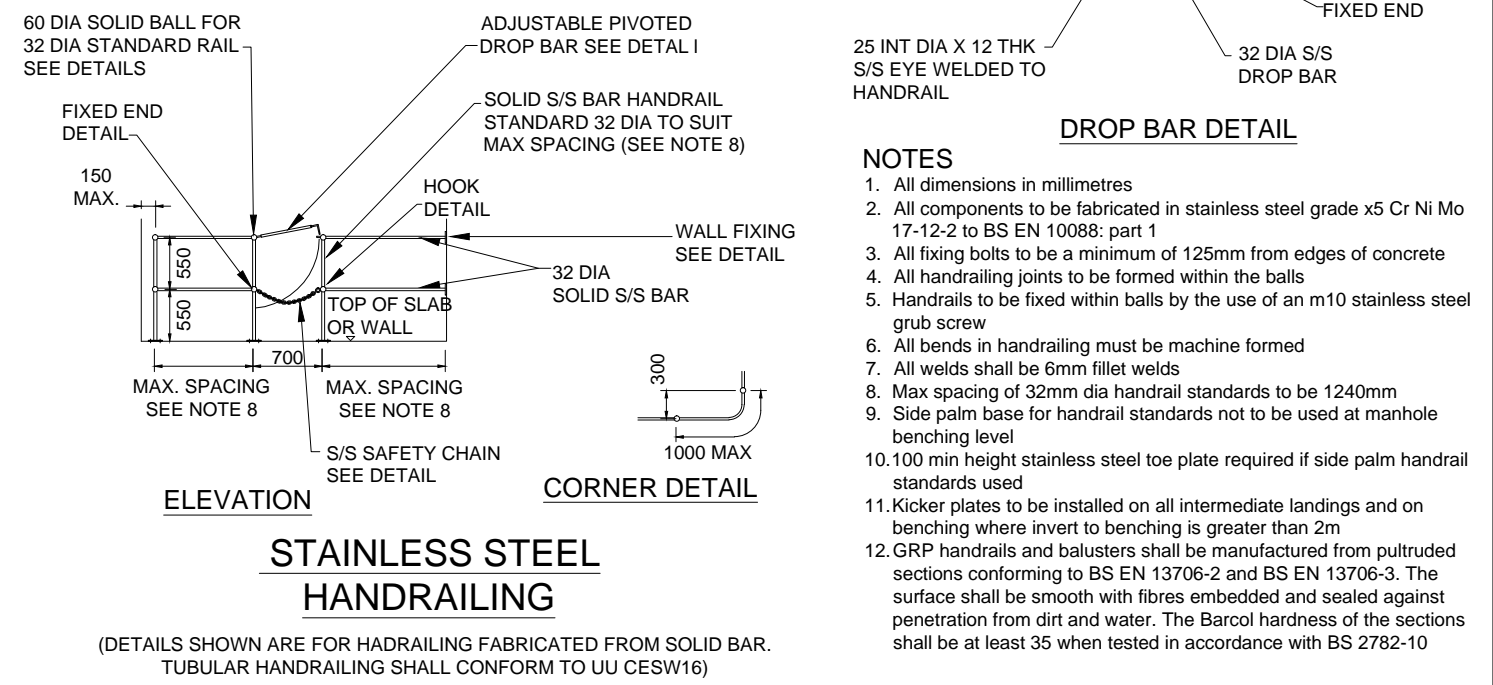
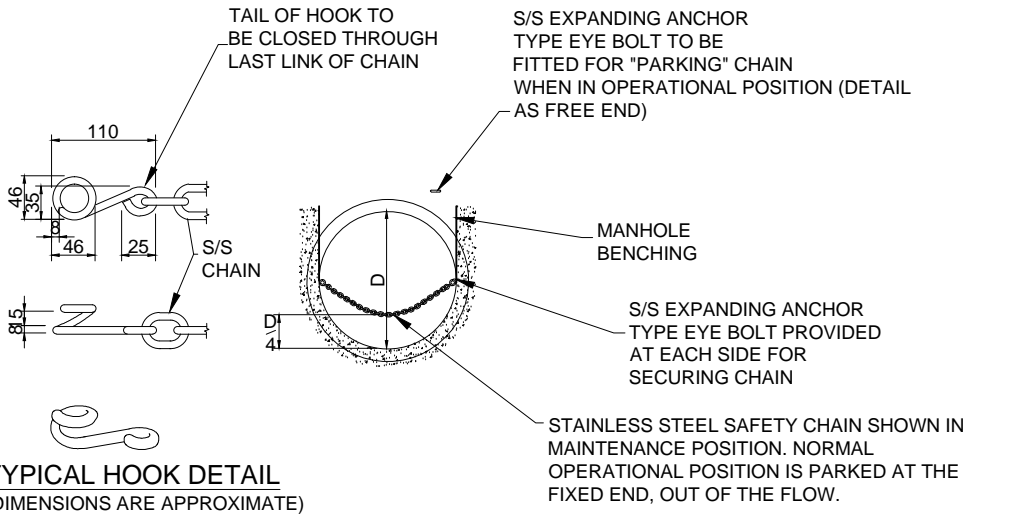
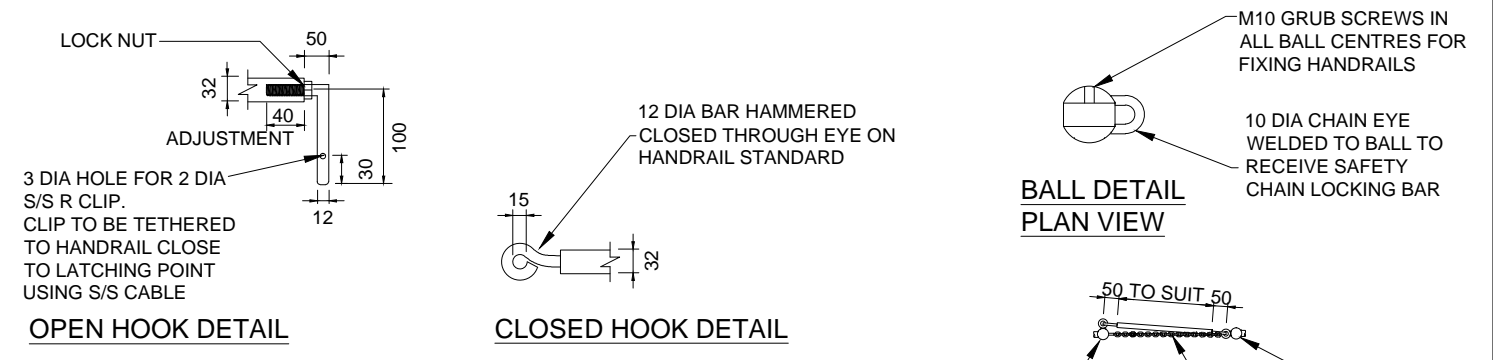
NOTES

- All dimensions in millimetres
- Ladders shall be fixed with two stringers type d in accordance with BS EN 14396 with or without handhold
- All components to be fabricated in stainless steel grade x5 Cr Ni Mo 17-12-2 to BS EN 10088: part 1
- The two piece adjustable bracket has been detailed to ensure that the distance between the shaft wall and the centre line of the rung is 211, at the mid span of the rung for all shaft diameters
- The angle of the proportion the bracket fixed to the manhole wall varies with chamber diameter. the angles required are as follows:-

CHAMBER DIA	ANGLE OF BRACKET
900	112.7
1050	109.1
1200	106.5
1350	104.5
1500	103.0
1800	100.7
2100	99.1
2400	98.0
2700	97.0
3000	96.2
- Ladder stringers to be one of continuous length with no joints
- All welds shall be 6mm fillet welds unless shown otherwise
- All bolts into concrete to be stainless steel expanding anchor type
- Where access is via intermediate slabs/platforms the top of the ladder shall terminate 1250 above slab/platform level
- All dimensions in millimetres
- GRP ladders shall be manufactured from pultruded sections conforming to BS EN 13706-2 and BS EN 13706-03. The surface shall be smooth with fibres embedded and sealed against penetration from dirt & water. The barcol hardness of the sections shall be at least 35 when tested in accordance with BS 2782-10



STAINLESS STEEL LADDER AND FIXINGS



- NOTES**
- All dimensions in millimetres
 - All components to be fabricated in stainless steel grade x5 Cr Ni Mo 17-12-2 to BS EN 10088: part 1
 - All fixing bolts to be a minimum of 125mm from edges of concrete
 - All handrailing joints to be formed within the balls
 - Handrails to be fixed within balls by the use of an m10 stainless steel grub screw
 - All bends in handrailing must be machine formed
 - All welds shall be 6mm fillet welds
 - Max spacing of 32mm dia handrail standards to be 1240mm
 - Side palm base for handrail standards not to be used at manhole benching level
 - 100 min height stainless steel toe plate required if side palm handrail standards used
 - Kicker plates to be installed on all intermediate landings and on benching where invert to benching is greater than 2m
 - GRP handrails and balusters shall be manufactured from pultruded sections conforming to BS EN 13706-2 and BS EN 13706-3. The surface shall be smooth with fibres embedded and sealed against penetration from dirt and water. The Barcol hardness of the sections shall be at least 35 when tested in accordance with BS 2782-10

- NOTES**
- All dimensions in millimetres
 - All components to be fabricated in stainless steel grade x5 Cr Ni Mo 17-12-2 to BS EN 10088: part 1
 - Safety chains are required in manholes with outlets greater than 525 nominal diameter
 - Safety chain shall be as specified in UUCESWI
 - Chains to be fitted in downstream side of manhole
 - Fixed ends of chains shall be to side adjacent to manhole access

CURRENT ISSUE INFORMATION

A	KF	FE	SD	FOR INFORMATION	06.04.17
VERSION	DRWN	CHKD	REVD		DATE

UNITED UTILITIES LTD
DEVELOPER SERVICES
DETAIL 9
LADDER, HANDRAILING AND SAFETY CHAIN

SCALE	NTS	SHEET SIZE	A3
DRAWING NUMBER	STND/19/009	REVISION	A