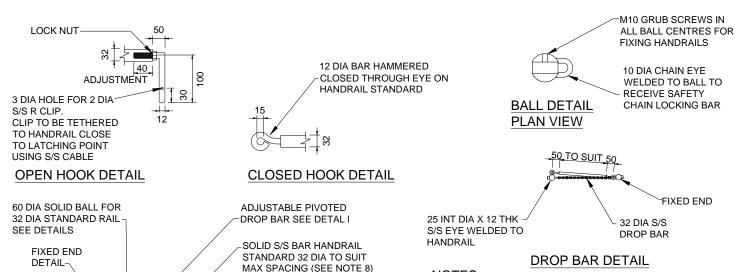


6mm DIA S/S U BOLT 32 DIA STANDARD OF SOLID -32 INNER DIAMETER HOLES FOR S/S EXPANDING M10 S/S - S/S BAR (SEE NOTE 8) -GRUB SCREW ANCHOR BOLTS AT 90 PCD TOP OF SLAB 6 THK S/S OR WALL TOE PLATE 32 DIA SOLID TOP OF SLAB S/S BAR 100 OR WALL HOLES FOR S/S _150_ EXPANDING NOM 32 INT DIA S/S TUBE MACHINED TO |+++ 125 DIA 33 INT DIA FOR 125 MIN TO EDGE HANDRAIL OF CONCRETE **DETAIL OF FLAT BASE DETAIL OF WALL FIXING** DETAIL OF SIDE PALM BASE



WALL FIXING

SEE DETAIL

1000 MAX

HOOK

/ DETAIL

TOP OF SLAF

MAX. SPACING

SEE NOTE 8

SEE DETAIL

S/S SAFETY CHAIN

STAINLESS STEEL

HANDRAILING

(DETAILS SHOWN ARE FOR HADRAILING FABRICATED FROM SOLID BAR.

TUBULAR HANDRAILING SHALL CONFORM TO UU CESW16)

OR WALL

32 DIA

SOLID S/S BAR

CORNER DETAIL

150

MAX.

MAX. SPACING

SEE NOTE 8

ELEVATION

NOTES

- All dimensions in millimetres
- 2. All components to be fabricated in stainless steel grade x5 Cr Ni Mo 17-12-2 to BS EN 10088: part 1
- 3. All fixing bolts to be a minimum of 125mm from edges of concrete
- 4. 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
- 6. All bends in handrailing must be machine formed
- 7. All welds shall be 6mm fillet welds
- 8. Max spacing of 32mm dia handrail standards to be 1240mm
- Side palm base for handrail standards not to be used at manhole benching level
- 10.100 min height stainless steel toe plate required if side palm handrail standards used
- 11. Kicker plates to be installed on all intermediate landings and on benching where invert to benching is greater than 2m
- 12. 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

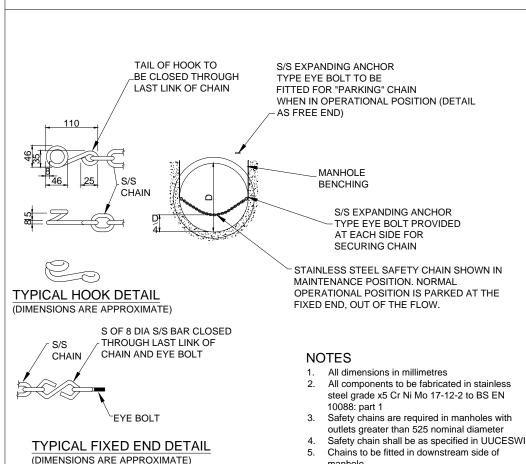
- 1. All dimensions in millimetres
- 2. Ladders shall be fixed with two stringers type d in accordance with BS EN 14396 with or without handhold
- All components to be fabricated in stainless steel grade x5
 Cr Ni Mo 17-12-2 to BS EN 10088: part 1
- The two piece adjustable bracket has been detailed 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
- 7. 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
- 10. All dimensions in millimetres
- 11. 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

Fixed ends of chains shall be to side adjacent to

manhole access



STAINLESS STEEL
SAFETY CHAINS AND FIXINGS

STAINLESS STEEL

LADDER AND FIXINGS

CURRENT ISSUE INFORMATION

 A
 KF
 FE
 SD
 FOR INFORMATION
 06.04.1

 VERSION
 DRIVIN CHIO
 REVD
 DATE



UNITED UTILITIES LTD

DEVELOPER SERVICES

DETAIL 9

LADDER, HANDRAILING AND SAFETY CHAIN

NTS	A3
DRAWING NUMBER STND/19/009	REVISION A
011121101000	

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