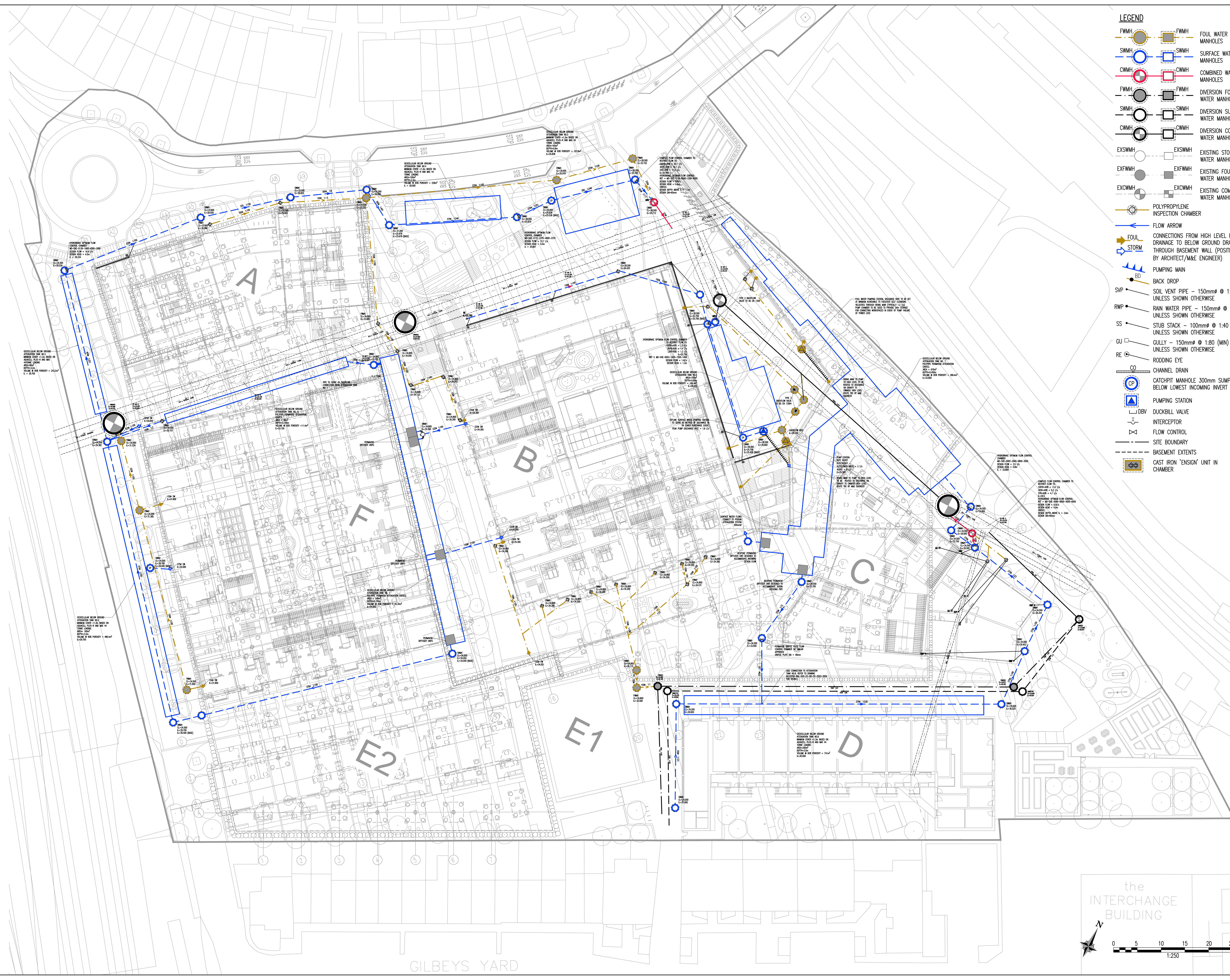




## Appendix A **Sitewide Drainage Drawings**





- LEGEND**
- FWMH FOUL WATER MANHOLES
  - SWMH SURFACE WATER MANHOLES
  - CWMH COMBINED WATER MANHOLES
  - FWMH DIVERSION FOUL WATER MANHOLES
  - SWMH DIVERSION SURFACE WATER MANHOLES
  - CWMH DIVERSION COMBINED WATER MANHOLES
  - EXSWMH EXISTING STORM WATER MANHOLES
  - EXFWMH EXISTING FOUL WATER MANHOLES
  - EXCWMH EXISTING COMBINED WATER MANHOLES
  - POLYPROPYLENE INSPECTION CHAMBER
  - FLOW ARROW
  - CONNECTIONS FROM HIGH LEVEL BASEMENT DRAINAGE TO BELOW GROUND DRAINAGE THROUGH BASEMENT WALL (POSITIONS TBC BY ARCHITECT/M&E ENGINEER)
  - PUMPING MAIN
  - BACK DROP
  - SOIL VENT PIPE - 150mm @ 1:40 (MIN) UNLESS SHOWN OTHERWISE
  - RAIN WATER PIPE - 150mm @ 1:100 (MIN) UNLESS SHOWN OTHERWISE
  - STUB STACK - 100mm @ 1:40 (MIN) UNLESS SHOWN OTHERWISE
  - GULLY - 150mm @ 1:80 (MIN) UNLESS SHOWN OTHERWISE
  - RODDING EYE
  - CHANNEL DRAIN
  - CATCHPIT MANHOLE 300mm SUMP BELOW LOWEST INCOMING INVERT LEVEL
  - PUMPING STATION
  - DUCKBILL VALVE
  - INTERCEPTOR
  - FLOW CONTROL
  - SITE BOUNDARY
  - BASEMENT EXTENTS
  - CAST IRON 'ENSIGN' UNIT IN CHAMBER

Notes

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METRES.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH RELEVANT ARCHITECT'S AND ENGINEER'S DRAWINGS AND SPECIFICATIONS.
3. THIS DRAWING HAS BEEN PRODUCED ELECTRONICALLY AND MAY HAVE BEEN PHOTO REDUCED OR ENLARGED WHEN COPIED. HENCE, DO NOT RELY ON ANY SCALES QUOTED. WORK ONLY TO FIGURED DIMENSIONS (DO NOT SCALE). ALL DIMENSIONS TO BE CHECKED ON SITE. ANY ERRORS OR OMISSIONS TO BE REPORTED TO THE ENGINEER IMMEDIATELY.

C.D.M.

SIGNIFICANT RISKS AND HAZARDS:

KEY DESIGN DECISIONS TO REDUCE OR ELIMINATE HAZARDS:

W02 15.03.21 M&E WORK IN PROGRESS  
W01 12.01.21 M&E WORK IN PROGRESS

Rev. Date By Details Of Revision

Client

ST GEORGE WEST LONDON

Project

CAMDEN GOOD YARD (PHASE2)

Title

GROUND FLOOR SITEWIDE DRAINAGE LAYOUT

WALSH

Structural and Civil Engineers  
32 Lifford Street  
London  
SE1 2LX  
T: +44(0)20 7089 6800  
E: london@walsh.co.uk  
www.walsh.co.uk

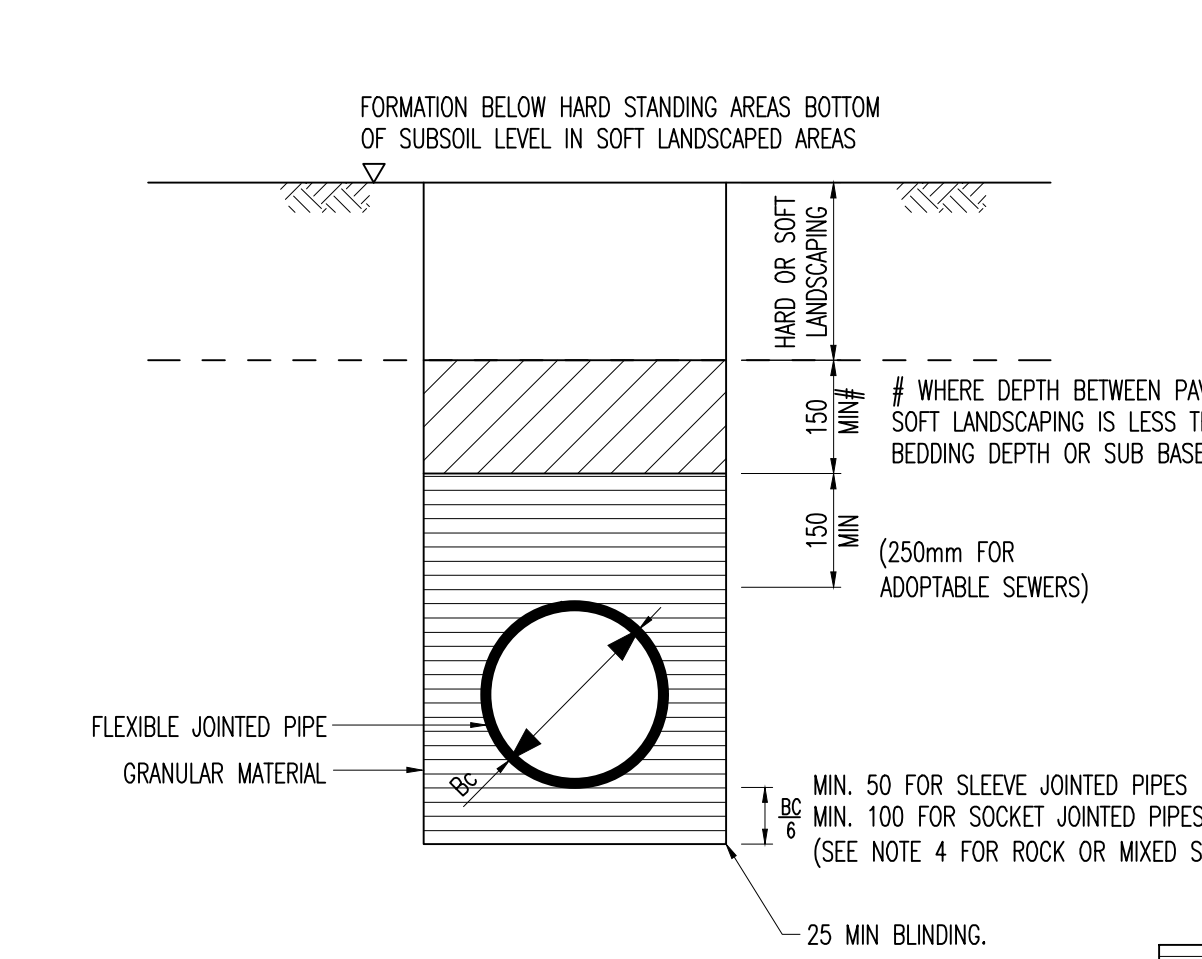
**WORK IN PROGRESS**

Drawn M&E AD Scales 1:250  
Date 12.01.21 Eng HM Chk JK Appr  
W&A Ref 5359 Submittal

Actual Dimensions - 80mm

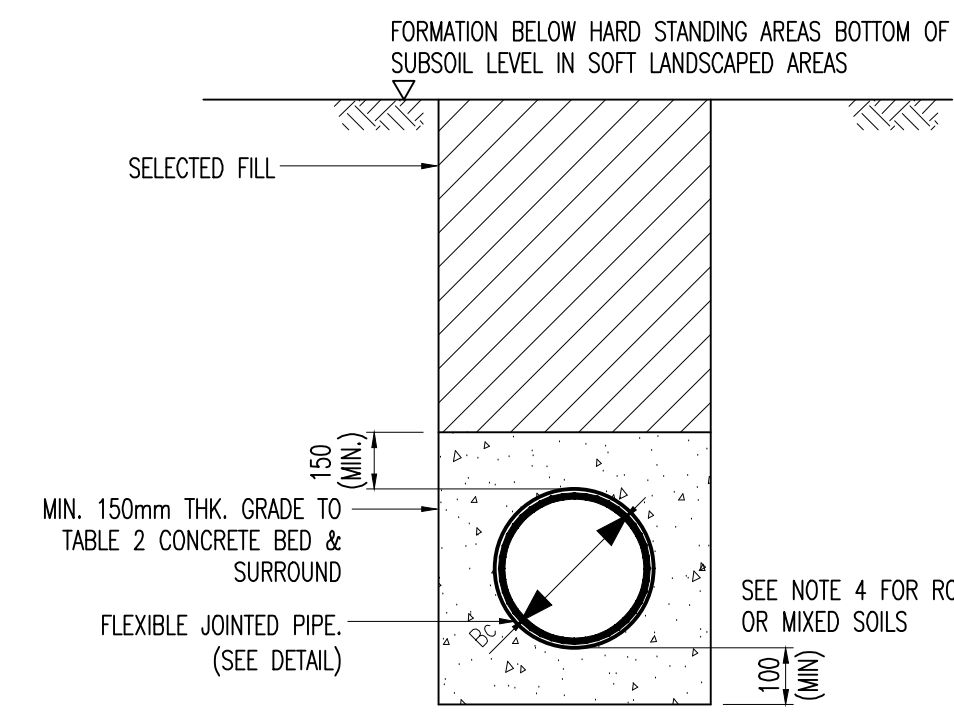
CGY00-WAL-XXX-00-DR-CV-3000 W02





### CLASS S GRANULAR BEDDING AND SURROUND

BEDDING FACTOR 2.2



### CLASS Z1 CONCRETE SURROUND

### PIPES AND PIPE BEDDING DETAILS FOR HARD & SOFT LANDSCAPING AREAS

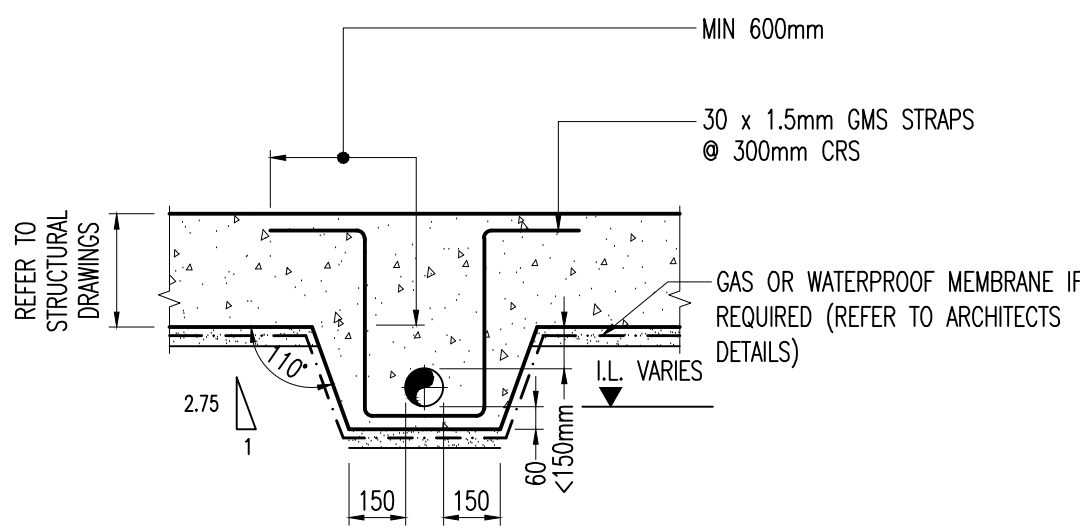
LOCATION			
COVER (DEPTH TO CROWN)	TRAFFICKED AREAS	PEDESTRIAN AREAS	UNDER BUILDING
< 1200mm	Z1	Z1	Z2
> 1200mm	S	S	Z2

#### SUGGESTED BEDDING CLASSES

(NOTE: THE ABOVE SHOULD BE USED FOR TENDER PURPOSES ONLY. REFER TO SCHEDULES FOR ACTUAL REQUIREMENTS BUT WHERE SCHEDULE REQUIREMENTS DIFFER FROM ABOVE CHECK WITH ENGINEERS. THE FOLLOWING PIPE TYPES ARE PERMITTED)

- VITRIFIED CLAY (REFER TO CIVIL SPECIFICATION CLAUSE 90-10-20/434)
- DUCTILE/CAST IRON (REFER TO CIVIL SPECIFICATION CLAUSE 90-10-20/420)
- HDPE (SURFACE WATER ONLY, REFER TO CIVIL SPECIFICATION CLAUSE 90-10-20/430)

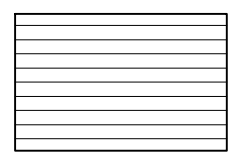
THE USE OF PLAIN & STRUCTURED WALL uPVC PIPES IS NOT PERMITTED. ASBESTOS CONTENT OR PITCH FIBRE PIPES ARE NOT PERMITTED.



### CLASS RC1 CONCRETE SURROUND (PIPE LOWER THAN BOTTOM REINFORCEMENT)

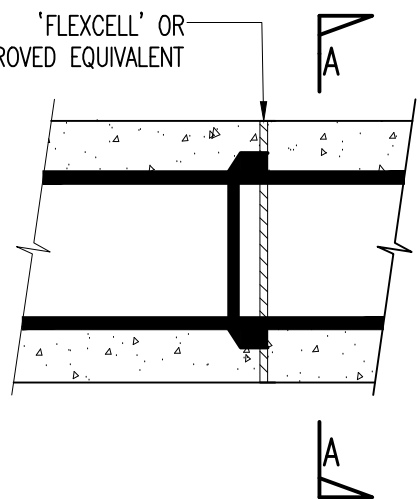
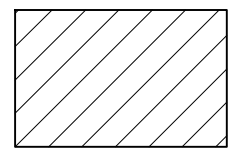
### PIPE BEDDING DETAILS UNDER STRUCTURAL SLAB

SCALE 1:20

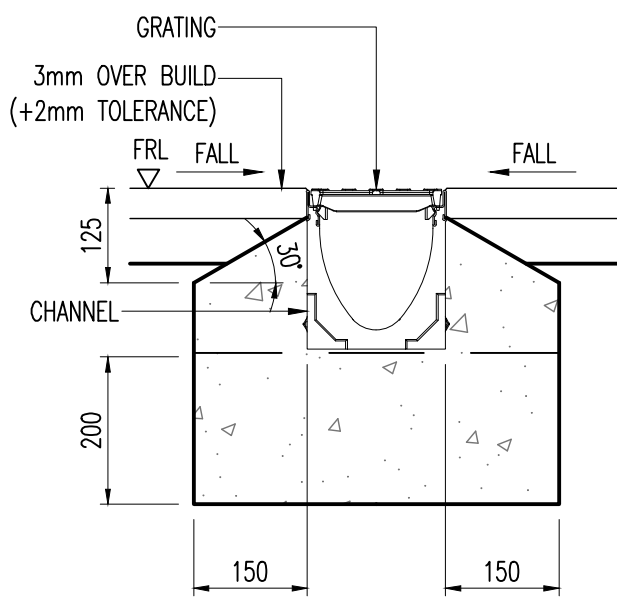


GRANULAR MATERIAL TO CONFORM TO BS EN 12620:2002 ANNEX B TABLE B.15 AND TO BE SINGLE SIZED MATERIALS OR GRADED MATERIAL FROM 5mm TO :-

- 10mm MAX FOR 100Ø PIPES
- 14mm MAX FOR 150Ø PIPES
- 20mm MAX FOR >150Ø - 600Ø PIPES
- 40mm MAX FOR >600Ø PIPES

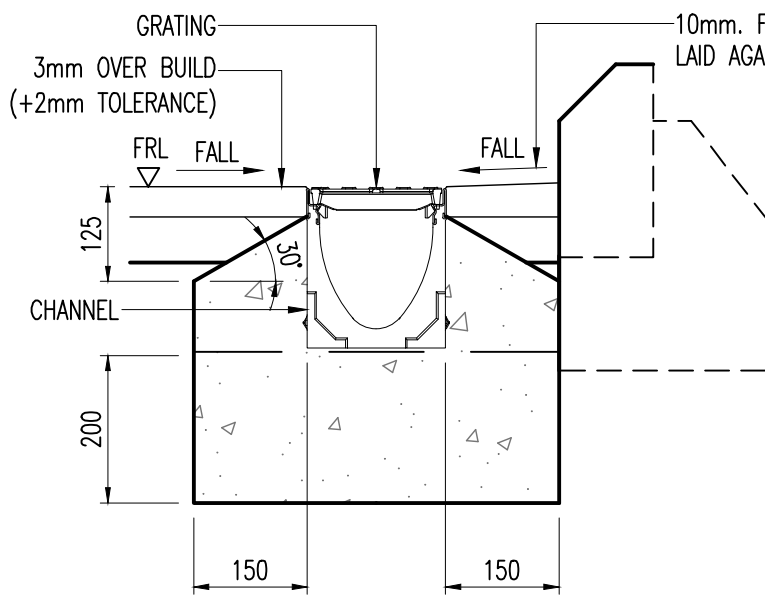


### FLEXIBLE JOINT DETAIL FOR CLASS Z1 SURROUND



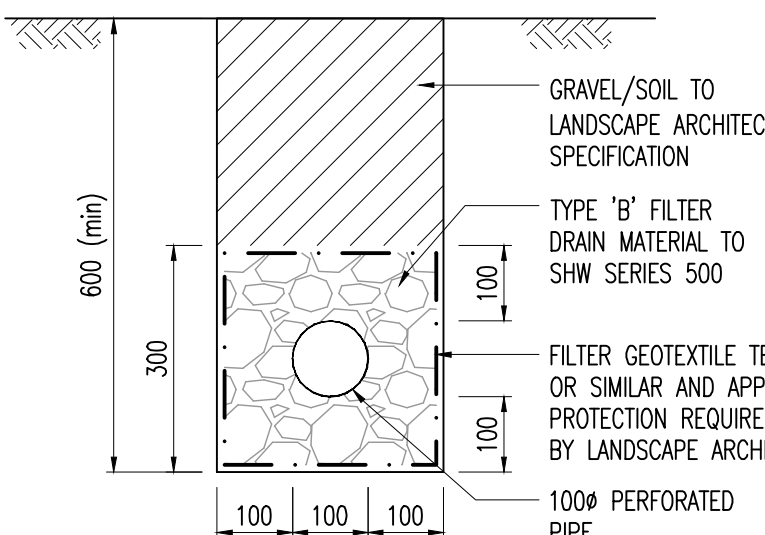
### CHANNEL DETAIL 1 (CD1)

SCALE 1:10



### CHANNEL DETAIL 2 (CD2)

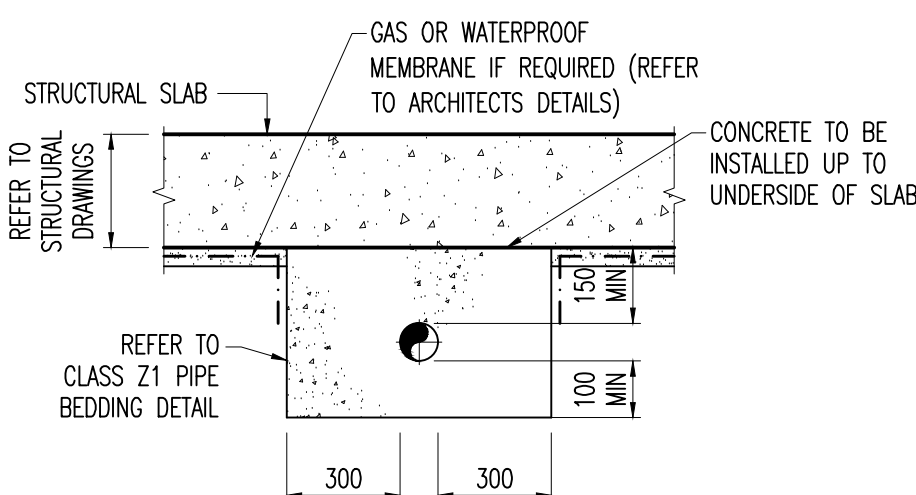
SCALE 1:10



### LAND DRAIN DETAIL

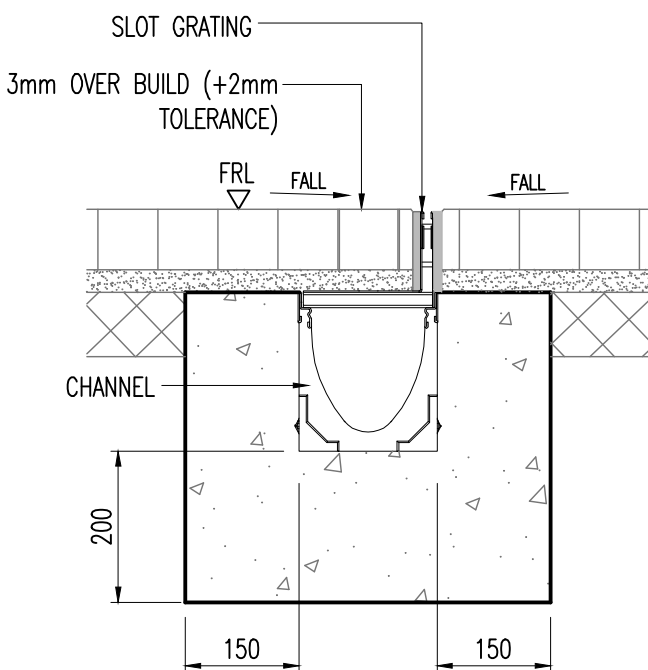
### NOTES FOR PIPES & PIPE BEDDING:

- PIPES PASSING THROUGH WALLS OR BENEATH FOUNDATIONS (SPREAD ONLY) TO HAVE R.C BRIDGE LINTELS OVER & PIPE SURROUNDED IN FLEXIBLE MATERIAL (50mm).
- CONCRETE SURROUND TO SEWER TO BE FLEXIBLY JOINTED AT EVERY JOINT NOTWITHSTANDING THE ABOVE, MAXIMUM SPACING OF FLEXIBLE JOINTS TO BE 3.0m.
- TO MAINTAIN THE FLEXIBILITY OF CONCRETE SURROUNDED SEWERS THE CONCRETE SHALL BE KEPT CLEAR OF THE JOINT BY PLACING "FLEXCELL" OR EQUIVALENT APPROVED MATERIAL. FOR PIPES >300mmØ PLACE 2No. LAYERS OF 18mm THICK THE SPIGOT OF EACH PIPE IN SUCH A MANNER AS TO ALLOW THE JOINT FULL AXIAL AND ANGULAR MOVEMENT. FOR PIPES <300mmØ PLACE 1No. LAYER 18mm THICK "FLEXCELL" OR EQUAL APPROVED. THE FLEXCELL SHALL BE PLACED IN A VERTICAL POSITION AND COVER THE CROSS SECTIONAL AREA OF THE CONCRETE BED & SURROUND TO EACH JOINT.
- INCREASE BY 100mm FOR IF TRENCH BOTTOM IS UNEVEN. FOR ROCK OR MIXED SOILS DEPTH OF GRANULAR BEDDING MATERIAL TO BE BC/4 MINIMUM 200mm.
- BACKFILL MATERIAL TO CONFORM TO DRAINAGE SPECIFICATIONS.
- FOR COST PLANNING PURPOSES, ALLOW FOR ALL PIPES UNDER BUILDINGS TO HAVE CLASS Z2 CONCRETE SURROUND. THIS BED CLASS MAY BE REVIEWED IN DETAIL BY THE ENGINEER AT A LATER STAGE AND MAY BE AMENDED ONCE THE FOLLOWING CRITERIA HAVE BEEN CONSIDERED.
  - BUILDING FOUNDATIONS ARE NOT SUBJECT TO HEAVE OR SETTLEMENT.
  - NO ORGANIC MATERIAL EXISTS DIRECTLY BELOW OR AT DEPTH OF PIPEWORK.
  - GROUND WATER TABLE WILL NOT AFFECT PIPEWORK.



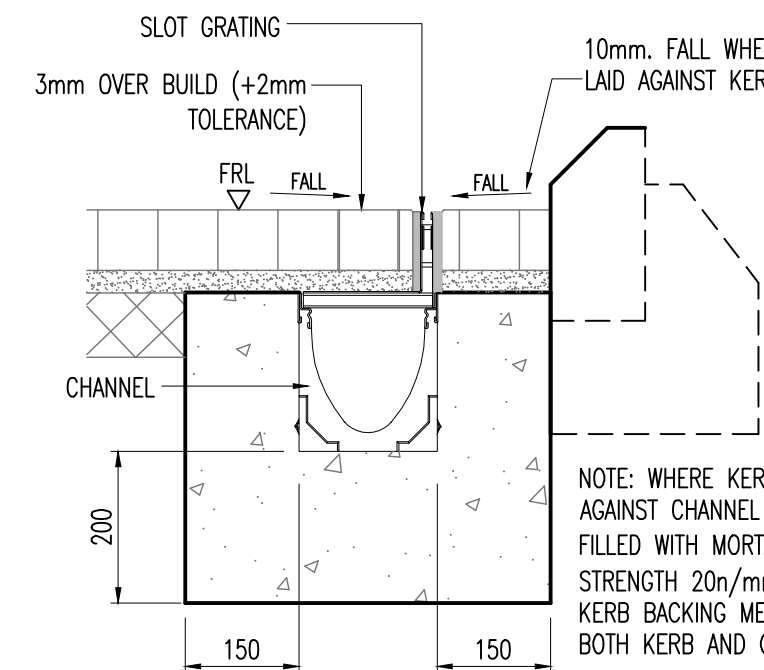
### CLASS Z2 CONCRETE SURROUND

TABLE 2: CONCRETE GRADES & CONSISTENCY CLASS						
		DESIGN CHEMICAL CLASS				
		DC-1	DC-2	DC-3	DC-4	DC-5
USAGE	CONCRETE FOR KERB/CHANNEL/EDGING FOUNDATIONS, RECESS AND HAUNCHING	GEN1/ST2 (S1)	FND2 (S1)	FND3 (S1)	FND4 (S1)	ASK ENGINEER
	CLASS Z1/Z2 SURROUND/RODDING POINT SURROUND	GEN1/ST2 (S1)	FND2 (S1)	FND3 (S1)	FND4 (S1)	ASK ENGINEER
	CONCRETE SURROUND TO GULLIES AND MANHOLES (EXCLUDING TYPES D1 AND D2)	GEN1/ST2 (S1)	FND2 (S1)	FND3 (S1)	FND4 (S1)	ASK ENGINEER
	CONCRETE TO MANHOLE BASES	GEN3 (S3)	FND2 (S3)	FND3 (S3)	FND4 (S3)	ASK ENGINEER
	CONCRETE TO TYPE D1 AND D2 MANHOLES	REFER TO STRUCTURAL DRAWINGS				



### SLOT CHANNEL DETAIL 1 (SCD1)

SCALE 1:10



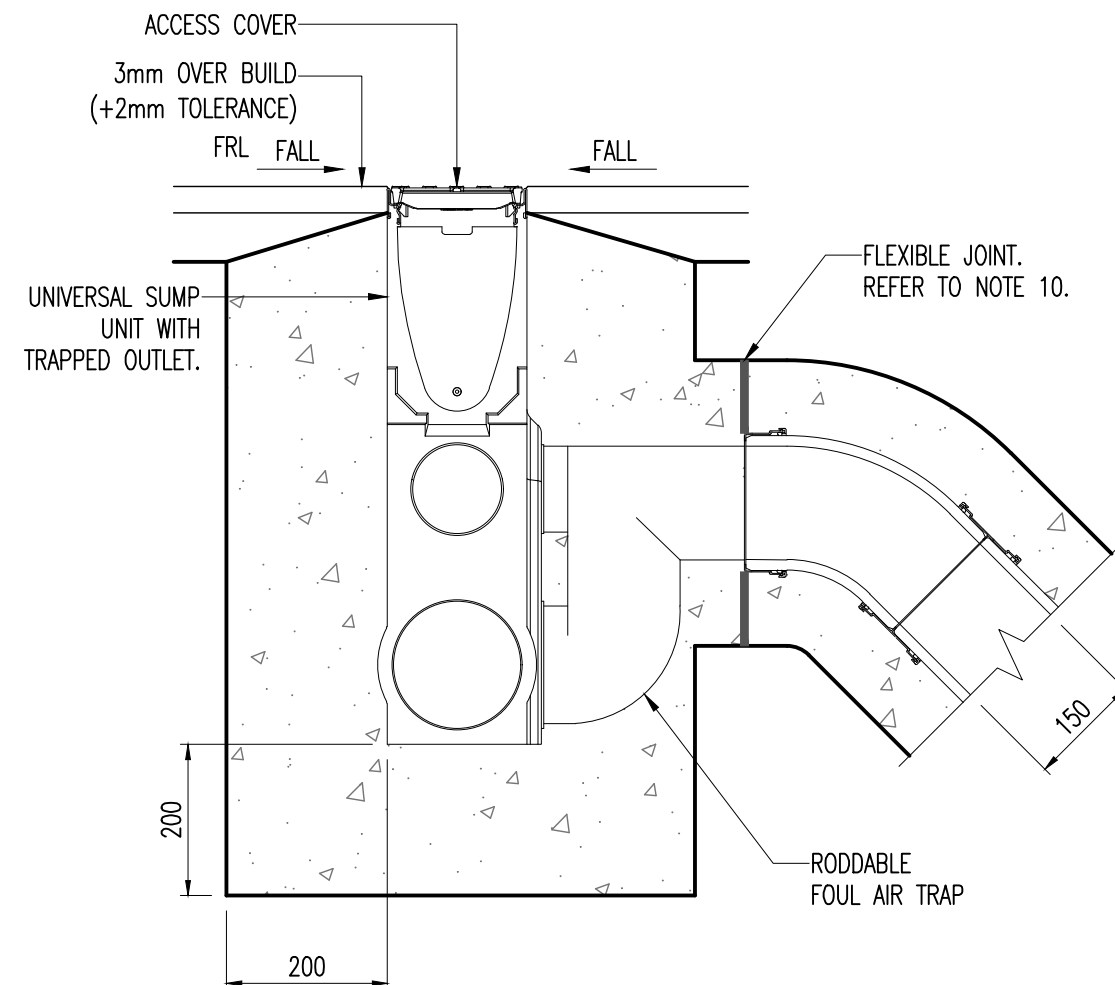
### SLOT CHANNEL DETAIL 2 (SCD2)

SCALE 1:10

### NOTES FOR CHANNEL

REFER TO CIVIL SPECIFICATION CLAUSE 90-05-20/422 AND 426

- SURFACE CHANNEL SYSTEM TO COMPRISE REINFORCED GALVANISED STEEL FRAME & GRATING.
- FRAME AND GRATING TO BE DUCTILE IRON LOAD CLASS PER TABLE 1 REFER TO GULLY SCHEDULE.
- CHANNEL TO HAVE 0.6% IN-BUILT GRADIENT, WHERE REQUIRED.
- CONCRETE SURROUND, AS INDICATED, TO BE 150mm MIN. CONCRETE STANDARD TO TABLE 2
- CHANNEL TO BE LAID IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND SPECIFICATIONS.
- INSITU BED AND SURROUND TO BE LAID IN ONE OPERATION. PLACE DOWEL BARS, AS INDICATED, BETWEEN EACH LAYER. CONCRETE IS TO BE SCABBLED AND FREE FROM DEBRIS WHEN PLACING CONCRETE IN SUBSEQUENT OPERATIONS.
- WEARING COURSE TO BE HAND LAID AND COMPACTED WHEN LAYING ADJACENT TO KERBS IN ACCORDANCE WITH THE SPECIFICATIONS. CONCRETE TO BE CLEANED FREE FROM DEBRIS AND PRIMED PRIOR TO LAYING BITUMINOUS MATERIAL.
- THE CONTRACTOR IS TO PROVIDE PROTECTION TO CHANNEL AGAINST DAMAGE FROM CONSTRUCTION TRAFFIC UP TO AND INCLUDING COMPLETION OF WEARING COURSE.
- MINIMUM 3mm, MAXIMUM 5mm OVER BUILD TO THE CHANNEL PERMITTED.
- IN AREAS OF CONCRETE HARDSTANDING TO MAINTAIN FLEXIBILITY OF THE CHANNELS, JOINTS SHALL BE PROVIDED COINCIDENT WITH THE JOINT IN THE SLAB. JOINTS SHALL COMPRISE 2 No. LAYERS OF 18mm. THICK "FLEXCELL" SEALED WITH "COLDPOR 200" OR EQUAL APPROVED.

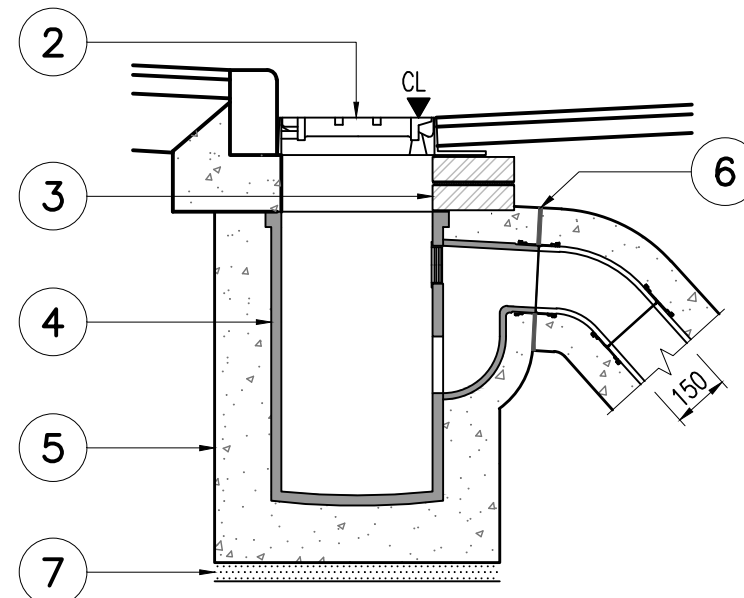


### CHANNEL SUMP DETAIL

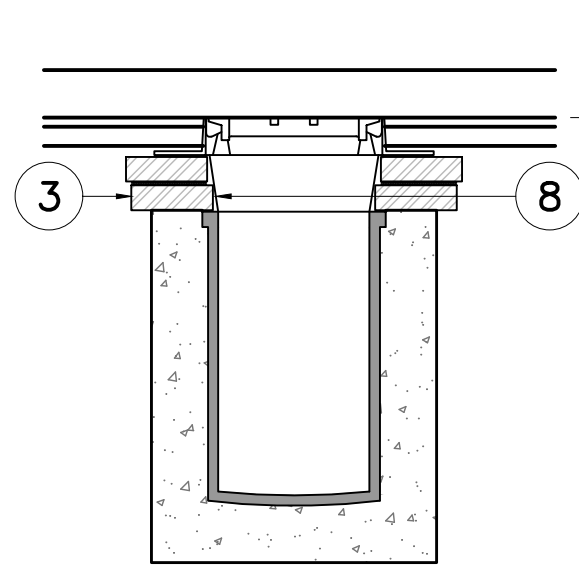
SCALE 1:10

### NOTES FOR ROAD AND YARD GULLY

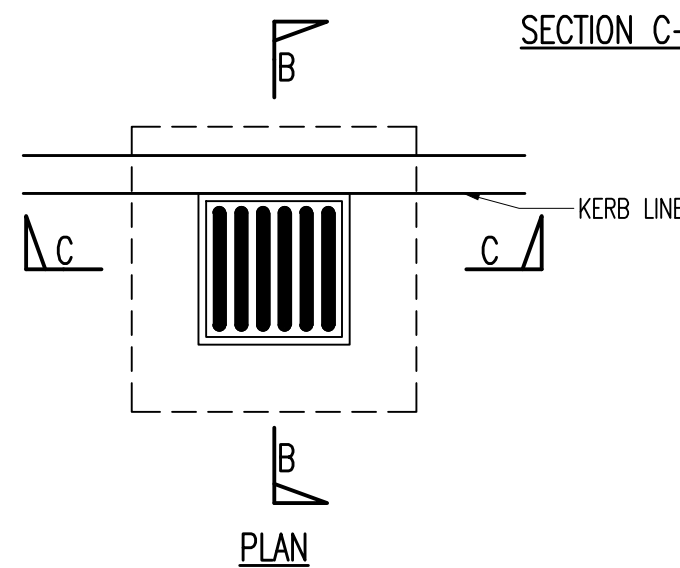
- DETAILS ARE NOT APPLICABLE FOR SEWERS OFFERED FOR ADOPTION.
- GULLY GRATINGS AND FRAMES
  - A) TYPE AND LOCATION AS SHOWN IN TABLE 1.
  - B) ALL GRATINGS AND FRAMES TO BE BEDDED IN 1:3 MORTAR.
- REGULATING BRICKWORK
  - A) ALL BRICKWORK IS TO BE CLASS B ENGINEERING BRICKWORK AND COMPLY WITH THE LATEST EDITION OF BS EN772 BEDDED ON 1:3 MORTAR.
  - B) MINIMUM 1, MAXIMUM 3 COURSES.
- GULLY POTS
  - A) POTS TO ROAD GULLIES TO BE 750mmDPx450mm DIA (900mmDPx450mm DIA IN ADOPTED ROADS). POTS TO YARD GULLIES TO BE 600mmDPx300mm DIA.
  - B) ALL GULLY POTS TO BE TRAPPED AND CONFORMING TO BS 5911-6 (ROAD & YARD) OR BS EN295 (YARD ONLY) AND SPECIFICATION.
  - C) WHERE NEW GULLIES ARE ADJACENT TO EXISTING KERBS, THE KERBS SHALL BE TAKEN UP AND REINSTATED AFTER INSTALLATION OF THE GULLY POT.
- CONCRETE SURROUND
  - A) 150mm THK. INSITU BED AND SURROUND TO BE CONCRETE GRADE PER TABLE 2.
- CONNECTIONS
  - A) TO MAINTAIN FLEXIBILITY OF GULLY CONNECTIONS THE CONCRETE SHALL BE KEPT CLEAR OF JOINTS BY PLACING 2No. LAYERS OF 18mm THICK "FLEXCELL" OR SIMILAR APPROVED MATERIAL; 1No. LAYER ON SOCKET AND 1No. LAYER ON THE SPIGOT OF EACH PIPE IN SUCH A MANNER AS TO ALLOW THE JOINT FULL AXIAL & ANGULAR MOVEMENT. ALL LATERAL CONNECTIONS TO BE SURROUNDED IN 150mm CONCRETE GRADE PER TABLE 2.
- BLINDING
  - A) CONCRETE GRADE BLINDING PER TABLE 2 50mm THK. TO BE PROVIDED WHERE NECESSARY.
- BENCHING
  - A) STEP BENCHING TO BE PROVIDED BETWEEN GULLY POT AND FRAME SUCH THAT IT SHEDS WATER INTO GULLY POT.
  - B) GRANOLITHIC BENCHING TO BE 50mm THK.



### SECTION B-B



### SECTION C-C



### ROAD AND YARD GULLY DETAIL

SCALE 1:20

TABLE 1			
GULLY GRATING & FRAME TYPES			
CLASS	BS CODE	MATERIAL	LOCATION
B125	B.S.EN124:1994	DUCTILE IRON	FOR USE IN CAR PARKS AND PEDESTRIAN AREAS WHERE OCCASIONAL VEHICULAR ACCESS IS LIKELY
C250	B.S.EN124:1994	DUCTILE IRON	FOR USE IN AREAS WHERE NOT EXTENDING MORE THAN 500mm FROM THE KERB FACE INTO THE HIGHWAY.
D400	B.S.EN124:1994	DUCTILE IRON	FOR USE IN AREAS WHERE CARS AND LORRIES HAVE ACCESS, INCLUDING CARRIAGEWAYS. HARD SHOULDERS AND PEDESTRIAN AREAS.

NOTE: WHERE A PROJECT SPECIFIC SCHEDULE PROVIDED THIS SUPERCEDES THE ABOVE TABLE

- Notes
- ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METRES.
  - THIS DRAWING TO BE READ IN CONJUNCTION WITH RELEVANT ARCHITECT'S AND ENGINEER'S DRAWINGS AND SPECIFICATIONS.
  - THIS DRAWING HAS BEEN PRODUCED ELECTRONICALLY AND MAY HAVE BEEN PHOTO REDUCED OR ENLARGED WHEN COPIED. HENCE, DO NOT RELY ON ANY SCALES QUOTED. WORK ONLY TO FIGURED DIMENSIONS (DO NOT SCALE). ALL DIMENSIONS TO BE CHECKED ON SITE. ANY ERRORS OR OMISSIONS TO BE REPORTED TO THE ENGINEER IMMEDIATELY.

Rev	Date	By	MDL	FIRST ISSUE
PO1	15.03.21			

Client

ST GEORGE WEST LONDON

Project

CAMDEN GOODS YARDS (PHASE 2 )

Title

TYPICAL DRAINAGE DETAILS  
SHEET 1 OF 3



Structural and Civil Engineers

32 Lafone Street  
London  
SE1 2LX  
t: +44(0)20 7089 6800  
e: london@walsh.co.uk  
walsh.co.uk

Status

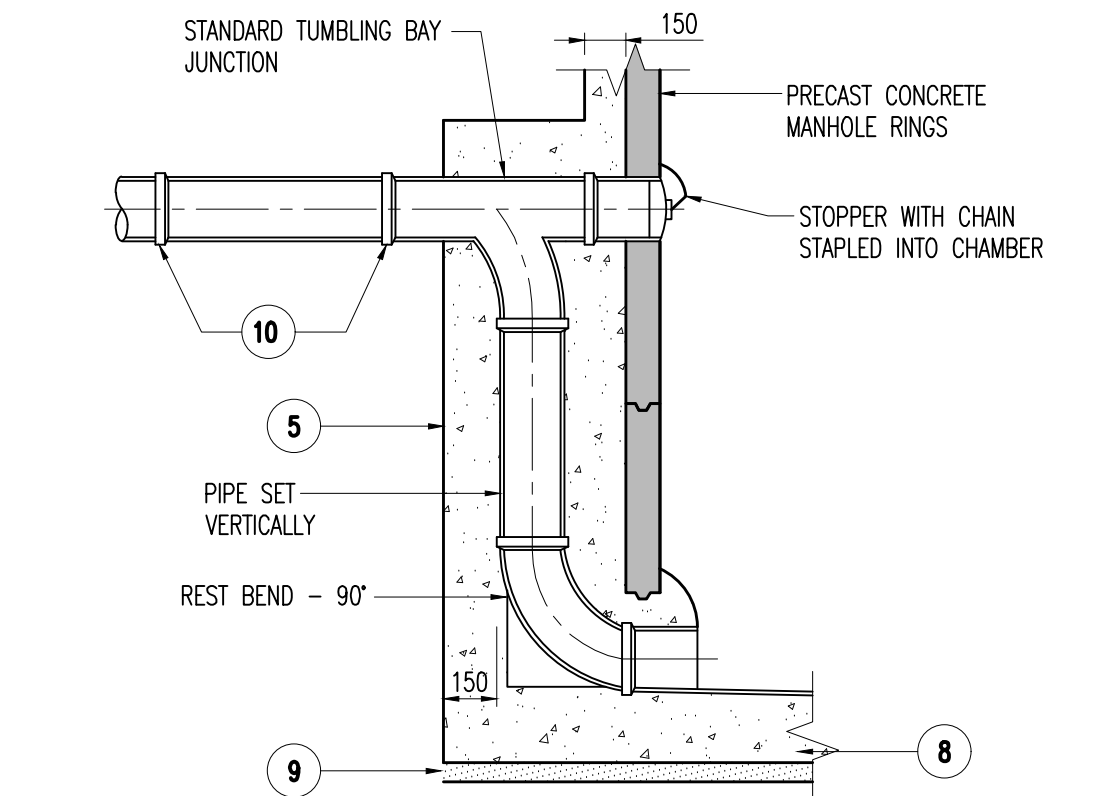
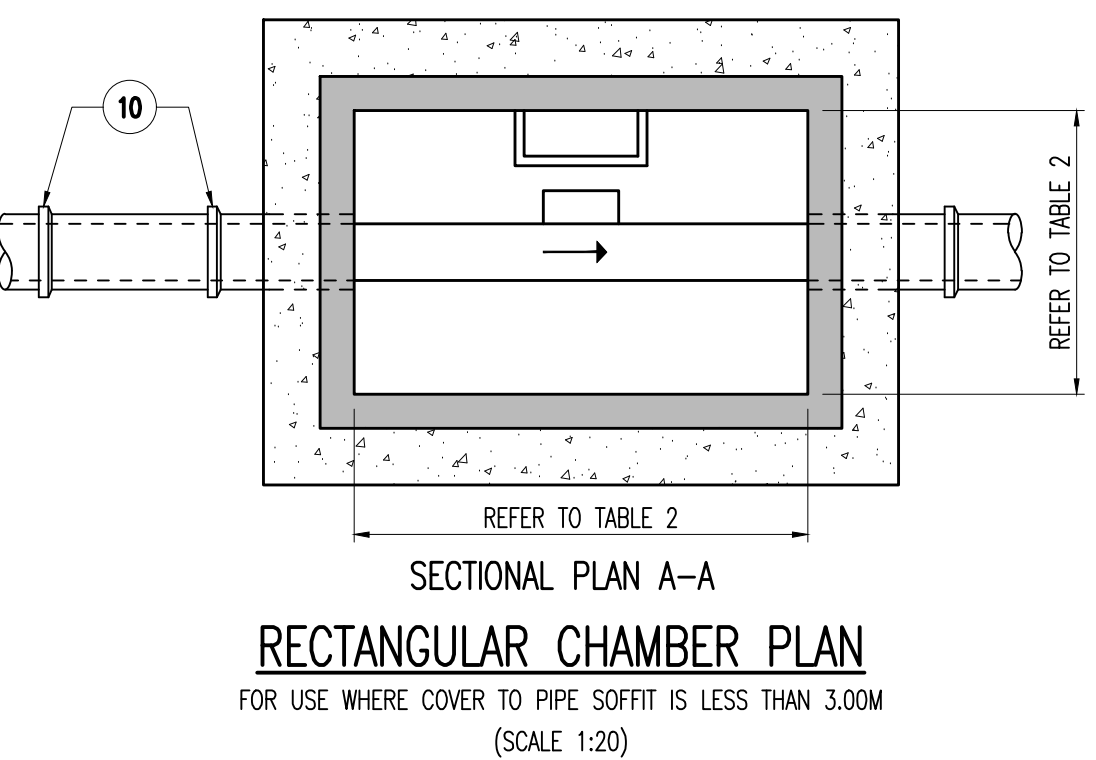
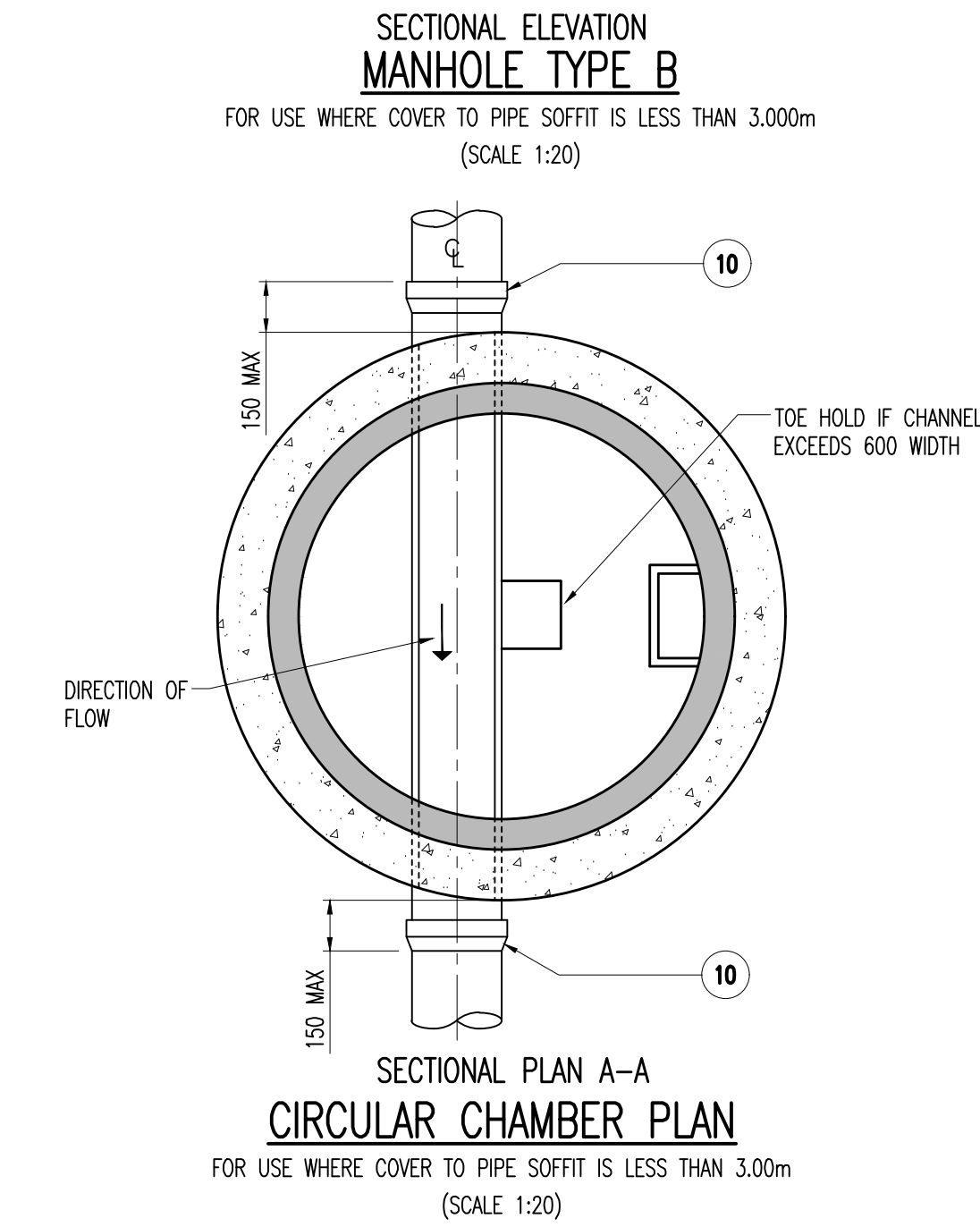
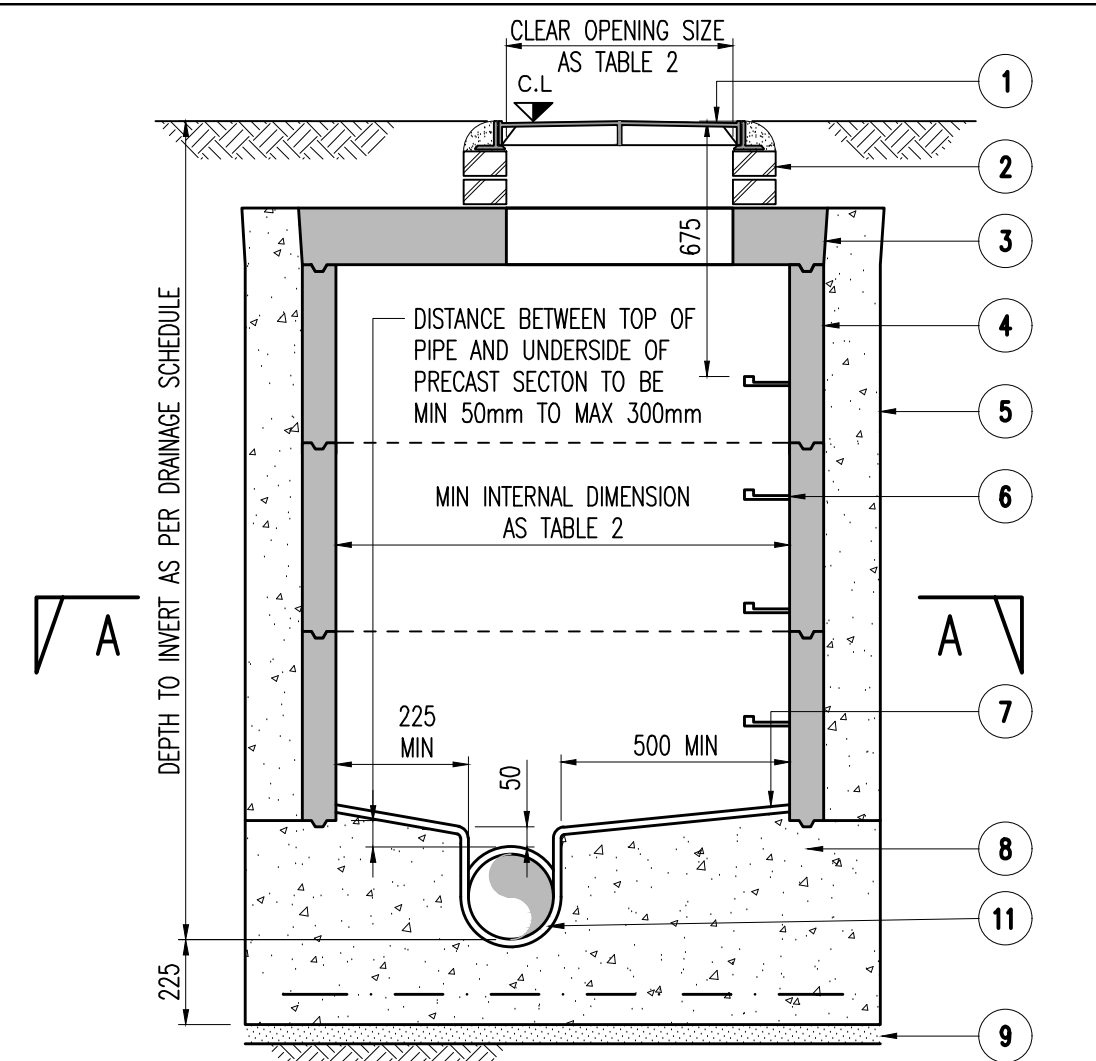
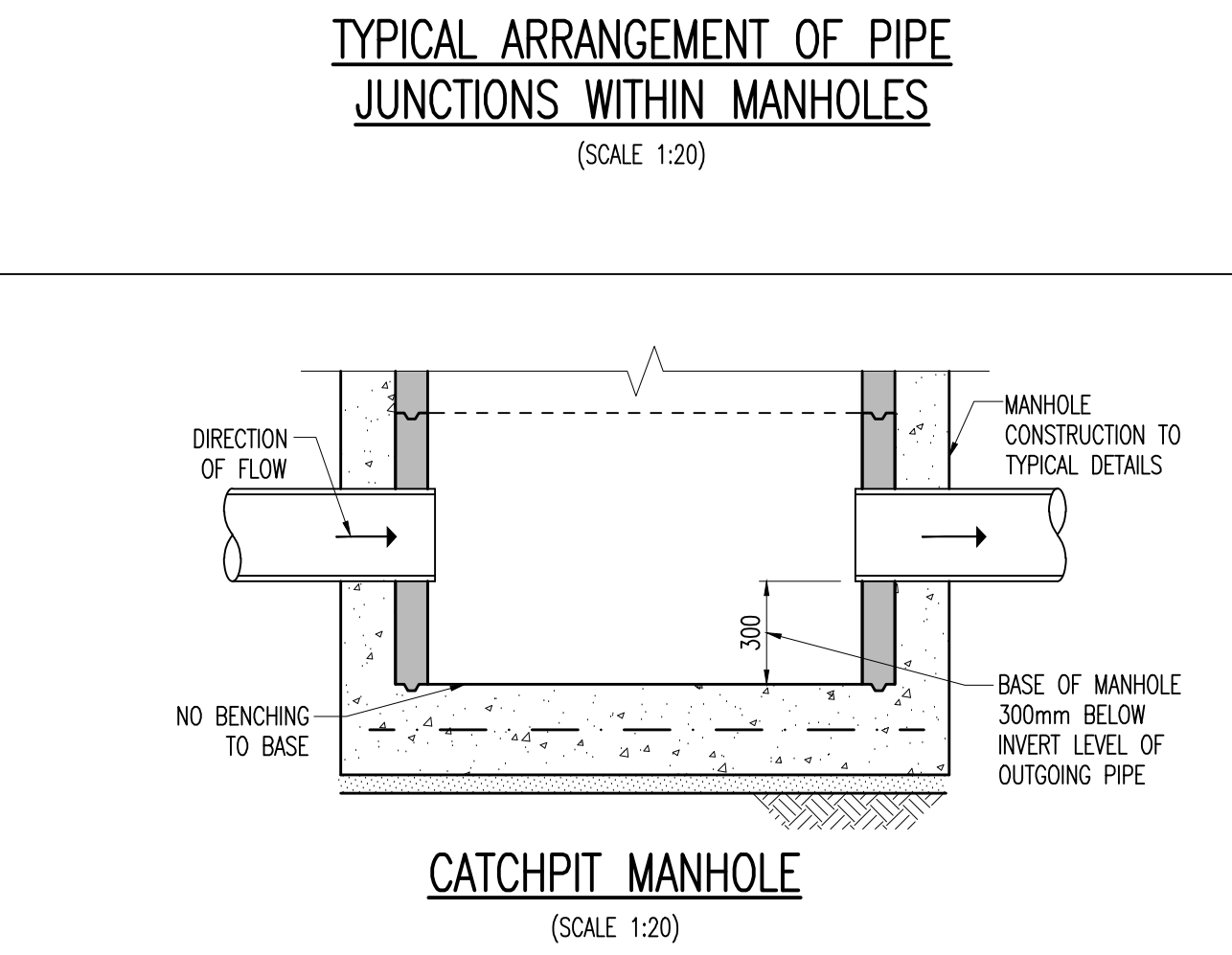
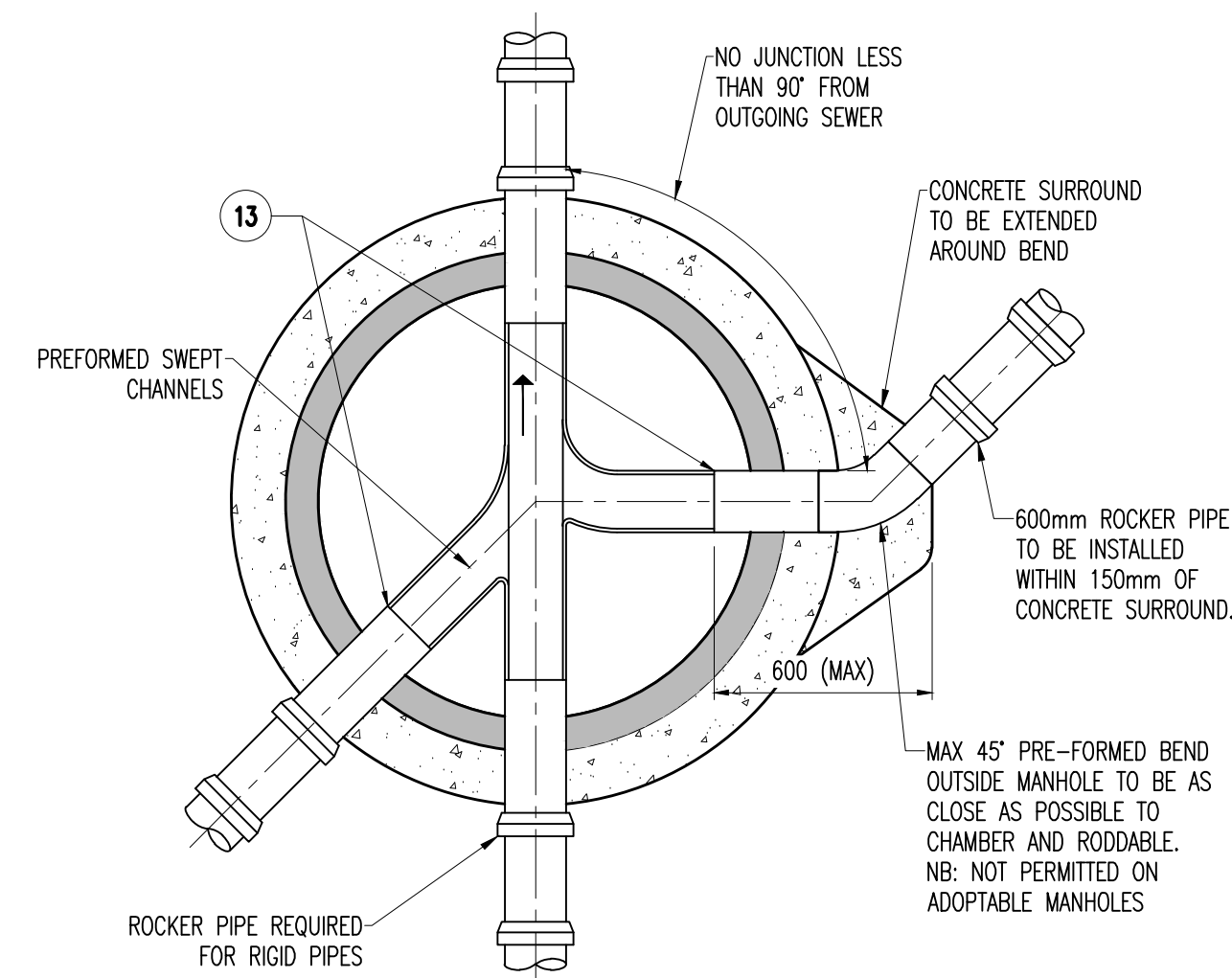
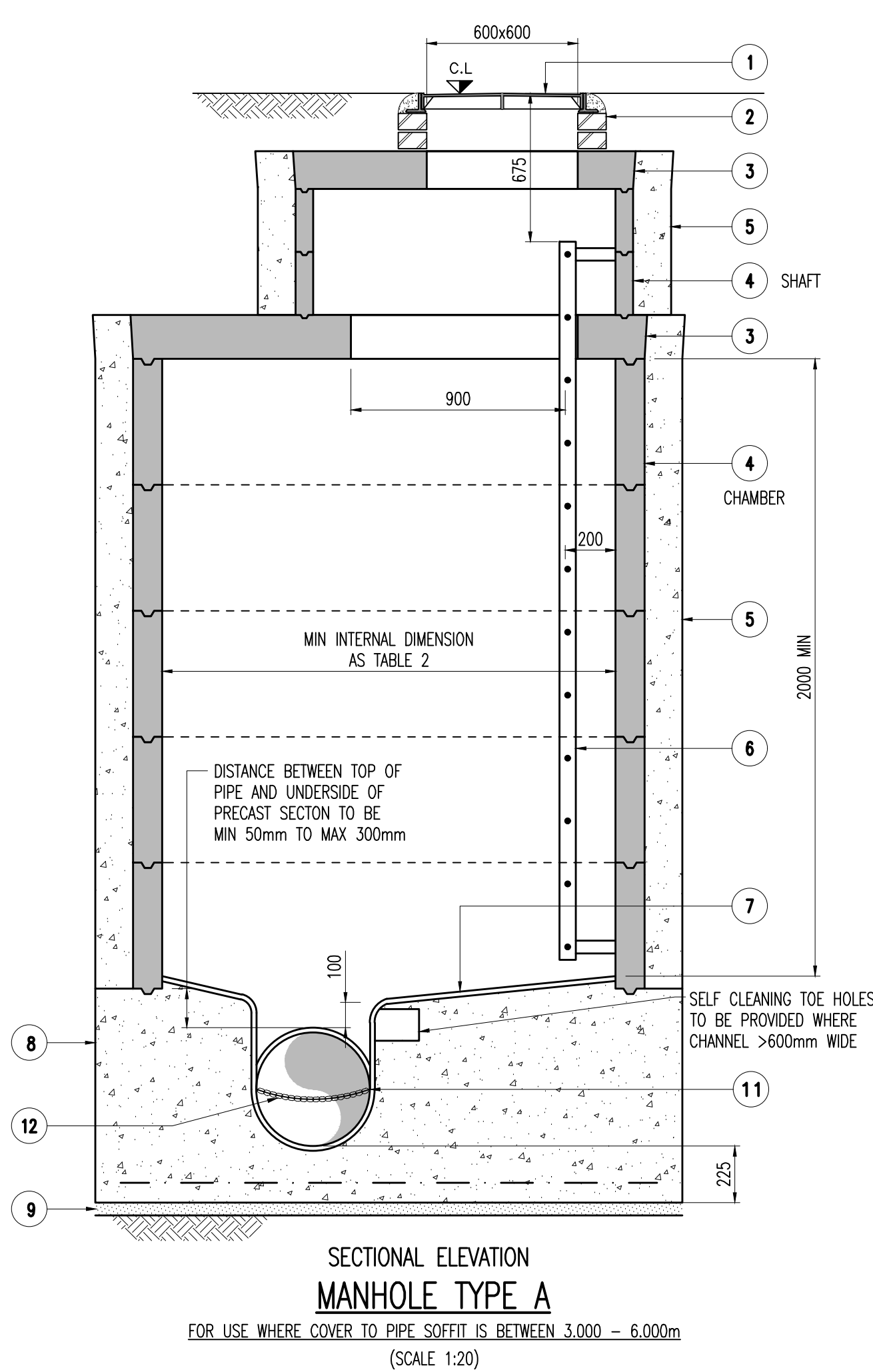
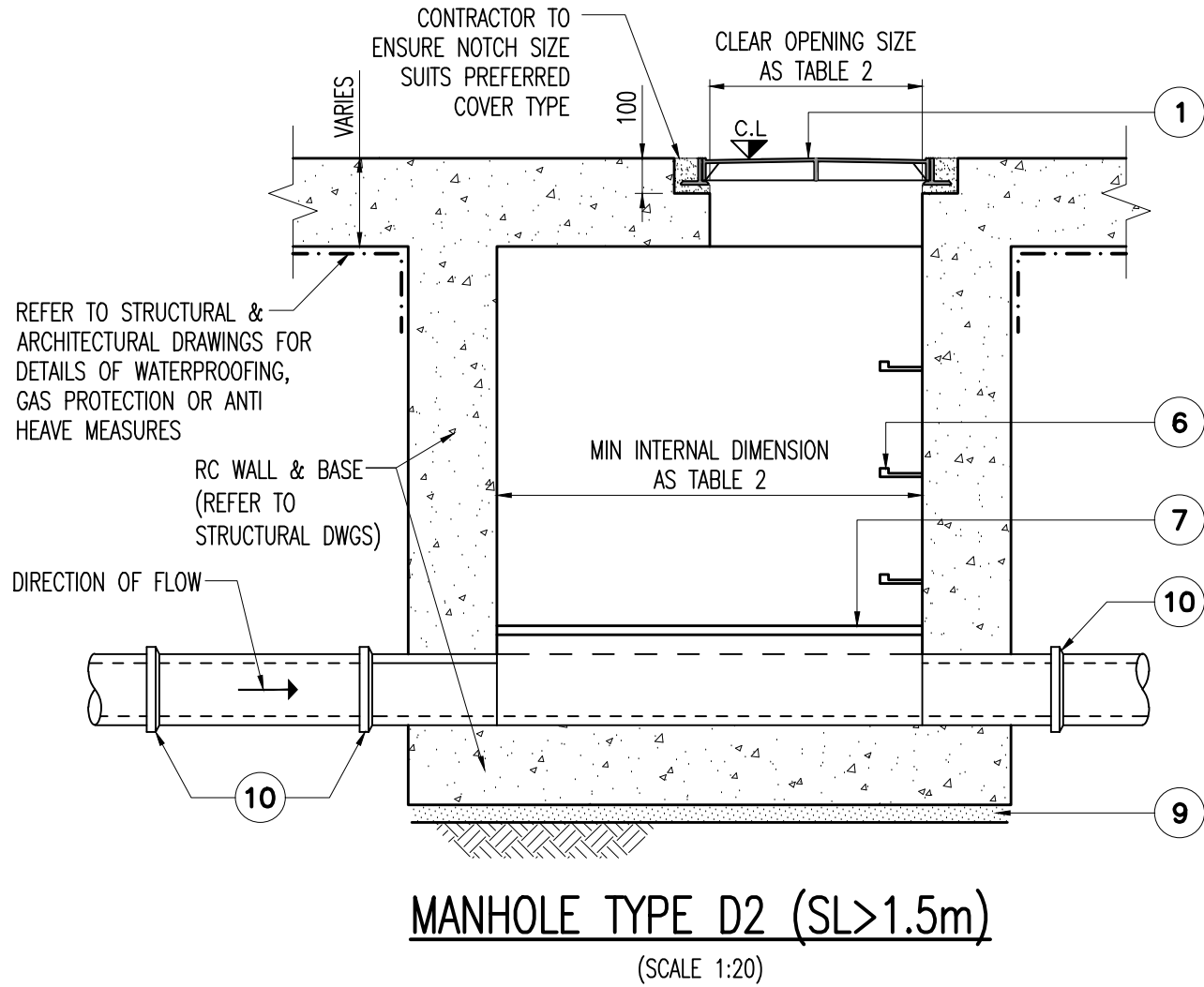
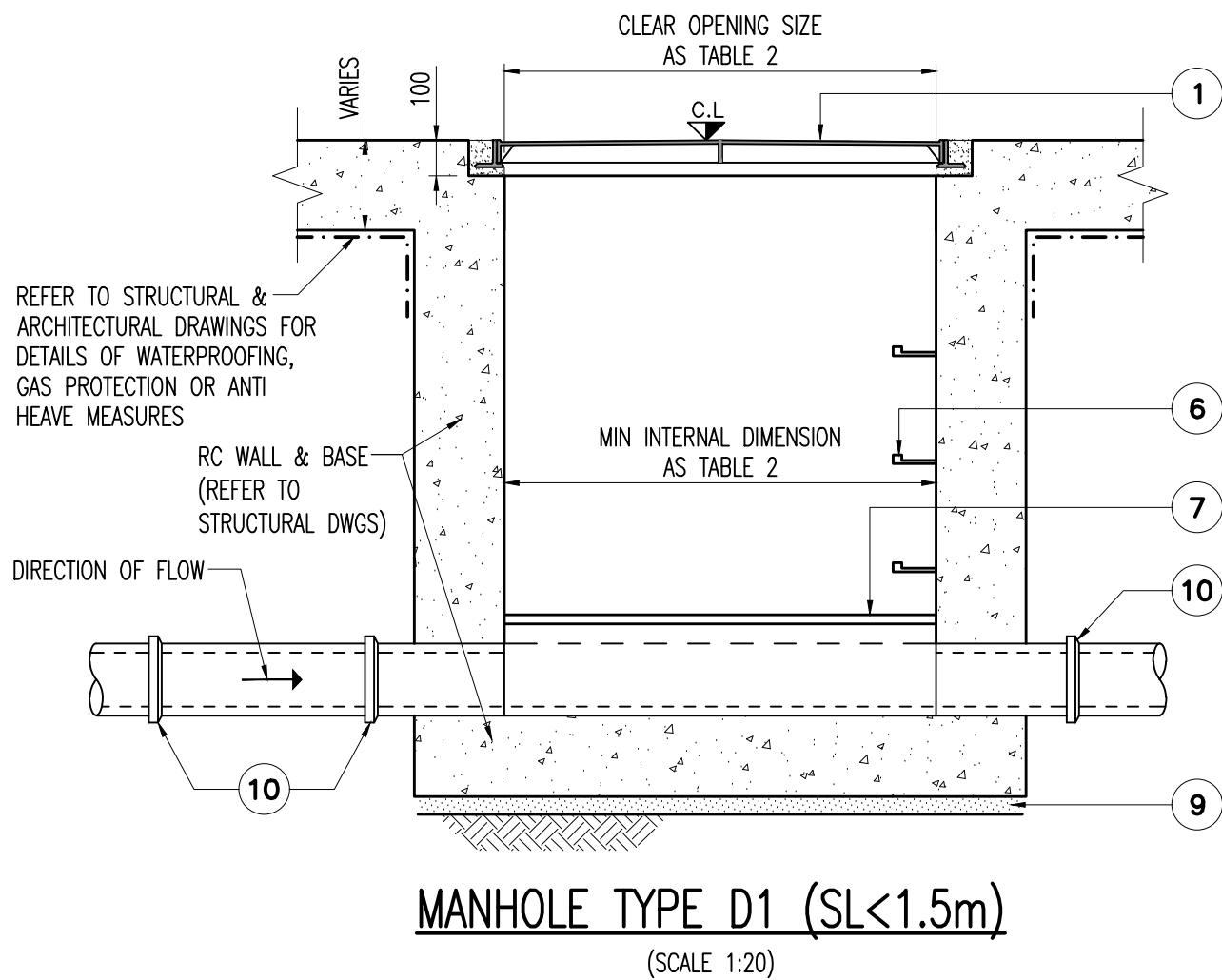
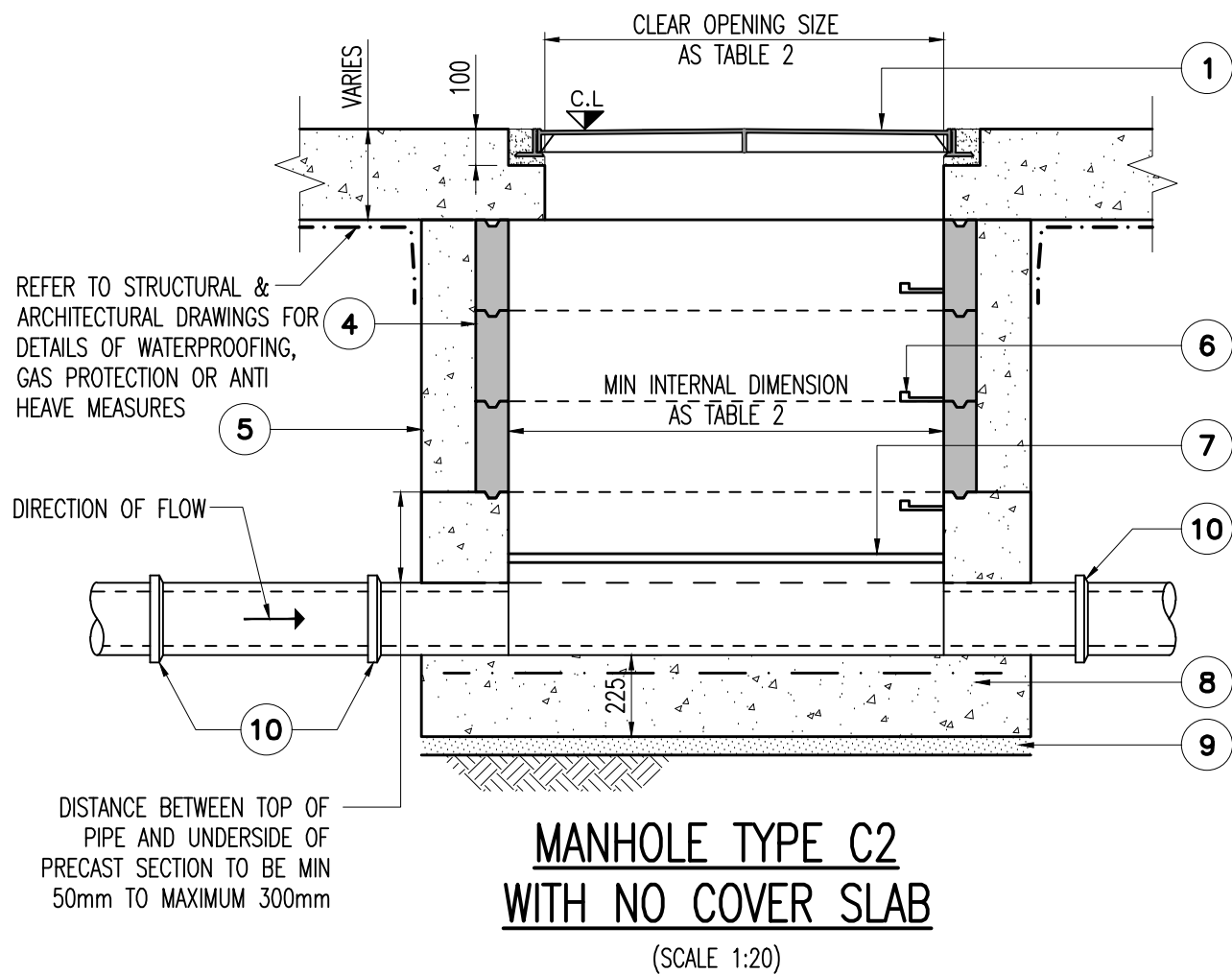
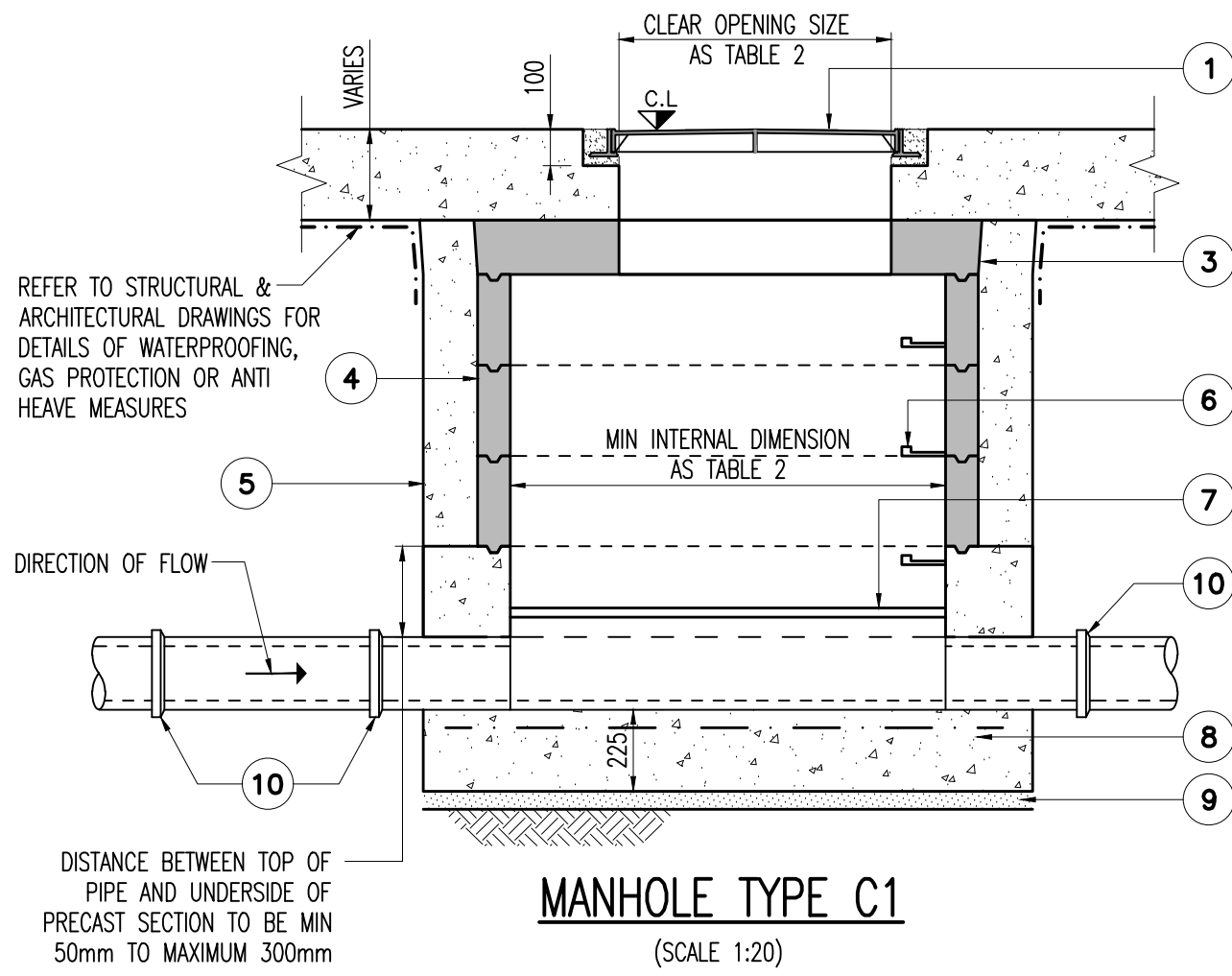
### PRELIMINARY

Drawn	MDL	A1 Scales AS SHOWN				
Date	10.03.21	Eng.	HW	Chk.	HW	App'd.
WA Ref.	5359					Suitblty.

ACTUAL DIMENSION = 80mm

Drawing No.	Rev.
CGY00-WAL-XXX-ZZ-DR-CV-3200	PO1





- 1. MANHOLE COVERS AND FRAMES**
- A) MANHOLE COVERS AND FRAMES TO COMPLY TO BS EN124. REFER TO MANHOLE SCHEDULE FOR COVER REFERENCE.
- B) MANHOLES TO HAVE CLEAR OPENINGS AS SHOWN ON TABLE 2.
- C) MANHOLE COVER AND FRAME TO BE BEDDED AND SURROUNDED IN 1:3 MORTAR.
- D) (i) IN TRAFFICKED AREAS AND VERGES ADJACENT TO ROADS USE CLASS D400 HEAVY DUTY COVERS UNLESS NOTED OTHERWISE.
- (ii) IN CAR PARKS AND VERGES SUBJECT TO SLOW MOVING COMMERCIAL VEHICLES USE CLASS B125 MEDIUM DUTY COVERS UNLESS NOTED OTHERWISE.
- (iii) FOR AREAS INACCESSIBLE TO VEHICULAR TRAFFIC USE CLASS A15 LIGHT DUTY COVERS UNLESS NOTED OTHERWISE.
- (iv) IN BLOCK PAVED AREAS MANHOLE COVER AND FRAME ASSEMBLY TO BE RECESSED UNLESS NOTED OTHERWISE.
- E) ALL INTERNAL MANHOLES ARE TO HAVE DOUBLE SEALED, MECHANICALLY FIXED COVERS. ALL EXTERNAL MANHOLES TO HAVE SINGLE SEAL COVERS UNLESS NOTED OTHERWISE.
- F) ALL MANHOLE COVERS TO HAVE CLOSED KEYWAYS.
- G) MANHOLE COVERS TO REFLECT HARDSTANDING/SOFT LANDSCAPING PROFILE

- 2. BRICKWORK REGULATING COURSES**
- A) CLASS B ENGINEERING BRICKWORK TO BS 3921
- B) REGULATING COURSES (MIN 2, MAX 4) TO BE BEDDED IN 1:3 MORTAR.
- C) FAIR FACED FINISH INTERNALLY.

**3. REINFORCED CHAMBER COVER/REDUCING SLAB/LANDING SLAB**

- A) HEAVY DUTY REINFORCED CONCRETE COVER SLAB TO BS 5911 BEDDED ON 1:3 MORTAR OR MASTIC SEALANT (TOKSTRIP BY WINN & COALES (DENSO) LTD, OR EQUAL APPROVED).
- B) REFER TO TABLE 1. BELOW FOR MINIMUM SLAB THICKNESS.

TABLE 1	
CHAMBER (mm)	COVER SLAB THICKNESS (mm)
900 DIA	135
1050 DIA	150
1200 DIA	150
1350 DIA	150
1500 DIA	175
1800 DIA	175
2100 DIA	180
2400 DIA	180
2700 DIA	205
1200 x 750	150

- 4. PRECAST CONCRETE CHAMBER/SHAFT**
- A) CIRCULAR & RECTANGULAR SECTIONS TO BS 5911
- B) ALL SECTIONS TO BE JOINTED SHALL BE MADE WATERTIGHT WITH AN APPROVED BITUMINOUS SEALANT (TOKSTRIP BY WINN & COALES (DENSO) LTD, OR EQUAL APPROVED).
- C) UNLESS NOTED OTHERWISE REFER TO TABLE 2 FOR CHAMBER SIZES.

TABLE 2: MINIMUM MANHOLE OPENING SIZES (mm)					
DEPTH TO SOFFIT FROM C.L.	DN LARGEST PIPE IN MANHOLE/MEANS OF DESCENT INTO SHAFT	MINIMUM INTERNAL DIMENSIONS		MIN. CLEAR OPENING SIZE	
		RECT.	CIRCULAR DIAMETER	RECT.	CIRC. DIA.
<1500	150	750x675	1000ø	750x675	N/A
	225	1200x675	1200ø	1200x675	N/A
	300	1200x750	1200ø	1200x675	N/A
	>300	1800 x (DN+450)	LARGER OF 1800 OR (DN+450)	1200x675	N/A
	225	1200x1000	1200ø	600x600(B)	600ø
1500	300	1200x1075	1200ø	600x600(B)	600ø
	375 to 450	1350x1225	1350ø	600x600(B)	600ø
	>450	1800 x (DN+775)	LARGER OF 1800 OR (DN+775)	600x600(B)	600ø
	STEPS	1050x800	1050ø	600x600(B)	600ø
>3000(A)	LADDER	1200x800	1200ø	600x600(B)	600ø
	WINCH	900x800	900ø	600x600(B)	600ø

- NOTES:**
- (A) MINIMUM HEIGHT OF CHAMBER IN SHAFTED MANHOLE 2000mm FROM BENCHING TO UNDERSIDE OF REDUCING SLAB.
- (B) WHERE MANHOLE IS BEING ADOPTED SOME WATER COMPANIES e.g. SOUTHERN WATER, REQUIRE OPENING SIZE TO BE INCREASED TO 675x675mm.

- 5. CONCRETE SURROUND**
- A) CONCRETE TO BE 150mm THICK
- B) CONCRETE GRADE TO BE PER TABLE 2 ON TYPICAL DRAINAGE DETAILS SHEET 1

- 6. STEP IRONS/LADDERS**
- A) (i) GALVANISED WALLABLE STEP IRONS TO BS 1247-PART 1:1990
- (ii) FIRST STEP IRON MAX 675mm FROM COVER LEVEL, THEREAFTER ALTERNATELY STAGGERED.
- (iii) MAXIMUM DISTANCE FROM BENCHING TO LAST RUNG TO BE 300mm VERTICALLY AND HORIZONTALLY 300mm.
- B) (i) WHERE DEPTH TO INVERT >2500mm PROVIDE LADDER IN PLACE OF STEP IRONS.
- (ii) GALVANISED MILD STEEL SOLID RUNG LADDERS TO BS EN 14396: 2004
- (iii) LADDER TO BE CLASS A WITHOUT SAFETY HOOP.
- (iv) STRINGERS TO BE 65x10 FLAT SPACED @ 390c/c.
- (v) SINGLE RUNGS TO BE 20mm DIA SOLID AND SPACED @ 250c/c.
- (vi) MAX DISTANCE FROM BENCHING TO LAST RUNG TO BE 250mm.
- (vii) MIN 500mm, MAX 600mm FROM COVER LEVEL TO FIRST RUNG.
- C) STEP IRONS NOT TO BE USED IN MANHOLES PROPOSED FOR ADOPTION BY SOUTHERN WATER.

- 7. GRANULITHIC RENDER**
- A) 50mm GRANULITHIC RENDER TO SURFACE OF BENCHING WITH 25mm RADIUS ROUNDINGS.
- B) GRANO CONCRETE BENCHING TO BE BROUGHT UP TO A SMOOTH FACE NEATLY SHAPED AND FINISHED TO ALL BRANCH CONNECTIONS.
- C) WHERE BENCHING IS <450mm WIDE SLOPE SHALL BE 1:10 ELSE 1:30

- 8. BASE AND BENCHING**
- A) CONCRETE TO PER TABLE 2 ON TYPICAL DRAINAGE DETAILS SHEET 1.
- B) BASE OF MANHOLES IN TRAFFICKED AREAS AND VERGES ADJACENT TO TRAFFICKED AREAS SHALL BE REINFORCED WITH A393 MESH REINFORCEMENT WITHIN TOP FACE OF BASE (COVER 50mm).
- C) BEND CONVEYING MAIN SEWERS RUNS TO BE FORMED IN LONG RADIUS BENDS TO ASSIST FLOW WITHOUT RISK OF BLOCKAGE.

- 9. BLINDING**
- A) 50mm BLINDING TO BE PER CONCRETE DESIGN CHEMICAL CLASS TABLE.

- 10. FLEXIBLE JOINTS**
- A) FIRST FLEXIBLE JOINT TO BE 150mm FROM MANHOLE FACE.
- B) SECOND FLEXIBLE JOINT TO BE MAX. 600mm FROM FIRST JOINT.
- C) FULL LENGTH FLEXIBLE JOINTED PIPES THEREAFTER.

- 11. CHANNEL PIPES**
- A) PIPES IN MANHOLE TO BE LAID WITH SOFFITS LEVEL, UNLESS NOTED OTHERWISE.
- B) ENTRY ANGLES TO MAIN CHANNEL (X°).

ENTRY ANGLE	CHANNEL SECTION
X < 45	1/2
45 < X < 90	3/4
X > 90	3/4 + EXT. BEND.

- C) CHANNELS TO BE FORMED WITH SHALLOW RADIUS BENDS TO AVOID ACCUMULATION OF DEBRIS

- 12. SAFETY CHAINS**
- A) SAFETY CHAINS, COMPLYING WITH BS 6405:1985 – CLASS 2, CHAINS TO BE FIXED WITH M12 BOLTS.

**13. MANHOLE BRANCHED CONNECTIONS.**

- A) ALL PIPE BRANCH INVERT LEVELS TO BE SET TO TABLE 3 EXCEPT WHERE CATCHPITS ARE USED

TABLE 3									
MAIN RUNø	BRANCHø	(CONNECTION LEVEL ABOVE MAIN CHANNEL INVERT)							
	100ø	150ø	225ø	300ø	375ø	450ø	525ø		
100ø	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
150ø	75	75	N/A	N/A	N/A	N/A	N/A	N/A	
225ø	125	75	0	N/A	N/A	N/A	N/A	N/A	
300ø	200	150	75	0	N/A	N/A	N/A	N/A	
375ø	275	225	150	75	0	N/A	N/A	N/A	
450ø	350	300	225	150	75	0	N/A	N/A	
525ø	425	375	250	225	150	75	0	N/A	

NB: DIMENSIONS SHOWN IS STEP IN INVERT LEVEL WHERE BRANCH IS 'X'mm HIGHER THAN MAIN CHANNEL INVERT LEVEL.

- Notes**
1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METRES.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH RELEVANT ARCHITECT'S AND ENGINEER'S DRAWINGS AND SPECIFICATIONS.
3. THIS DRAWING HAS BEEN PRODUCED ELECTRONICALLY AND MAY HAVE BEEN PHOTO REDUCED OR ENLARGED WHEN COPIED. HENCE, DO NOT RELY ON ANY SCALES QUOTED. WORK ONLY TO FIGURED DIMENSIONS (DO NOT SCALE). ALL DIMENSIONS TO BE CHECKED ON SITE. ANY ERRORS OR OMISSIONS TO BE REPORTED TO THE ENGINEER IMMEDIATELY.

Rev.	Date	By	MDL	FIRST ISSUE
Details Of Revision				

ST.GEORGE WEST LONDON

CAMDEN GOODS YARD (PHASE 2)

TYPICAL DRAINAGE DETAILS  
SHEET 2 OF 3

**W WALSH**

Structural and Civil Engineers

32 Lafone Street  
London  
SE1 2LX  
t: +44(0)20 7089 6800  
e: london@walsh.co.uk  
walsh.co.uk

Status					
PRELIMINARY					
Drawn	MDL	A1 Scales AS SHOWN			
Date	10.03.21	Eng.	H	Chk.	HW
WA Ref.	5359				Suitability.
<div>ACTUAL DIMENSION = 80mm</div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>					