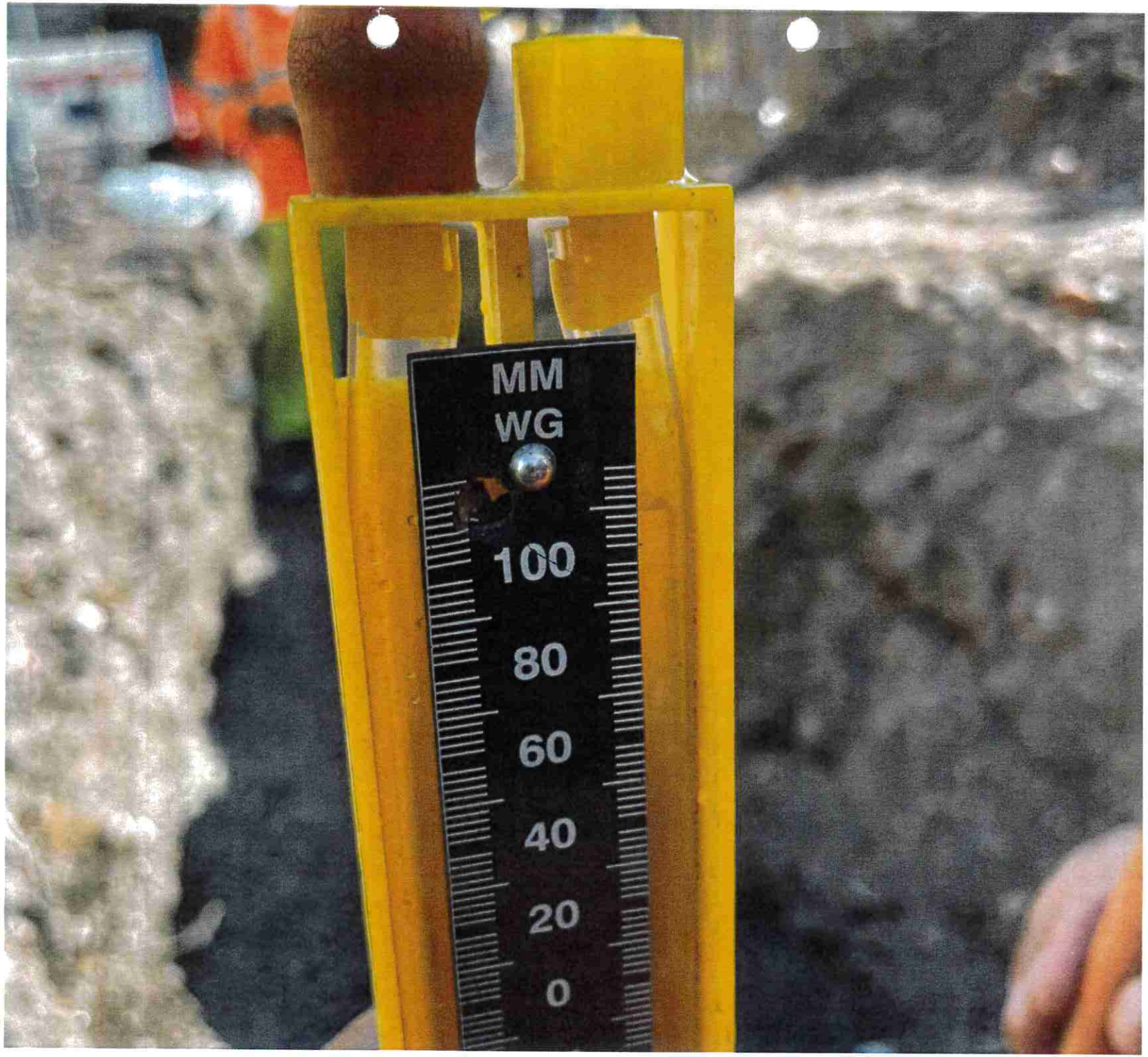



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Drainage and Manholes

CHECKSHEET

Contract:	**One Victoria**	Contract no.:	**204**		**QA10**
Inspection details					
Description:	F104 Drainage Runs				
Check sheet details					
Drawing references used:	**204-CIV-00-XX-DR-C-30001**				
Has setting out check sheet been signed off?	Yes	☐			
Details of drainage and manholes to be installed:					
Material:	Foul Brown Smooth Pipe		Size:	**150/100**	
Excavation support method:	**N/A - Trench To Be Stepped**				
Concrete grade where applicable	GEN3N / mm2				
Where special installation instructions are to be followed, particularly for interceptors, give brief details. :	N/A				
All materials and plant available on site?	Yes	☐			
Area released for construction:	Initials:	J.W	Date:	**03.10.23**	

Drainage pipes laid to correct depth and gradient?	Yes	☒	No	☐
Correct P Gravel installed as per specification?	Yes	☒	No	☐
Concrete base installed to specification?	Yes	☐	N/A	☒
Channels / branches / haunching to specification?	Yes	☒	N/A	☐
M/H rings / concrete surround or poly chamber or brickwork to specification?	Yes	☒	N/A	☐
Step irons / ladder rung irons / ladder to specification?	Yes	☐	N/A	☒
Air/ water test carried out to specification?	Yes	☒	No	☐
Inspection carried out by Building Control?	Yes	☒	No	☐
Area correctly backfilled?	Yes	☒	N/A	☐
Actual installed position recorded for as-built drawing?	Yes	☒	N/A	☐
Manhole / chamber / interceptor clean and cover(s) installed at correct level?	Yes	☐	N/A	☐

Area released for next activity:

This check sheet has been issued with the purpose to progress 'the works'.
All work is subject to a final inspection and customer approval at the date of project handover.
This checklist is flexible to allow full checking process by all parties.

Drainage and Manholes checked, approved and released for next activity:

PRINT NAME	COMPANY NAME Torsion, Sub-contractor or third party sign off (delete as applicable)	PRINT JOB TITLE:	SIGNATURE:	DATE:
Aiden Bougourd	**Torsion**	**Engineer**		03.10.23
Jaiden Watts	**Spencer's**	**Engineer**		03.10.23

Drainage and Manholes

CHECKSHEET

Drainage guidance

Preparation

- Check risk assessment measures are implemented and method statement is understood by all
- The site team will obtain and use appropriate permits to work from the client, utilities, local authorities or other
- Existing services, which may present hazard or danger, will be identified and appropriate protective measures taken
- Obtain the clients or appropriate authorities instructions regarding the protection, support or other action required to any existing service located in or adjacent to the work. Plan for any temporary support
- Plan plant requirements, methods of work and produce appropriate method statements.

Excavation for services

- Dig by hand or machine in accordance with any permits
- Support excavation as per method statement. Adhere to designed shoring systems produced
- Give the client or building control reasonable opportunity to inspect the excavated formation.

Laying of services

- Concrete grades for services work will be specified or shown on drawings
- Free draining bedding media will be placed in the trench and pipes laid to specific gradients. Ensure that the barrel of the pipe is fully supported by the granular surround
- Measures will be taken to prevent material entering the pipe run
- Air tests will be carried out prior to backfill to ensure that joints are not leaking
- After backfill, each drainage run will be checked, tested and witnessed as required and recorded.

Air tests

In the absence of any specified tests the following procedure will be adopted:

- Seal the ends of the pipe and any junction pipes. Note that the pipelines should not be left with plugs in where there is a risk of trench filling with water before it is backfilled, or floatation may occur
- Attach a u-tube (manometer) and a means of applying the air pressure to one of the plugs
- Apply pressure either by mouth or by a hand pump to achieve a pressure slightly more than 100mm of water in the u-tube
- Allow about five minutes for stabilisation of air temp
- Adjust air pressure to 100mm of water
- Without further pumping, the head of water should not fall by more than 25mm in a period of five minutes
- Should a pipeline marginally fail an air test, it should be re-tested using water.

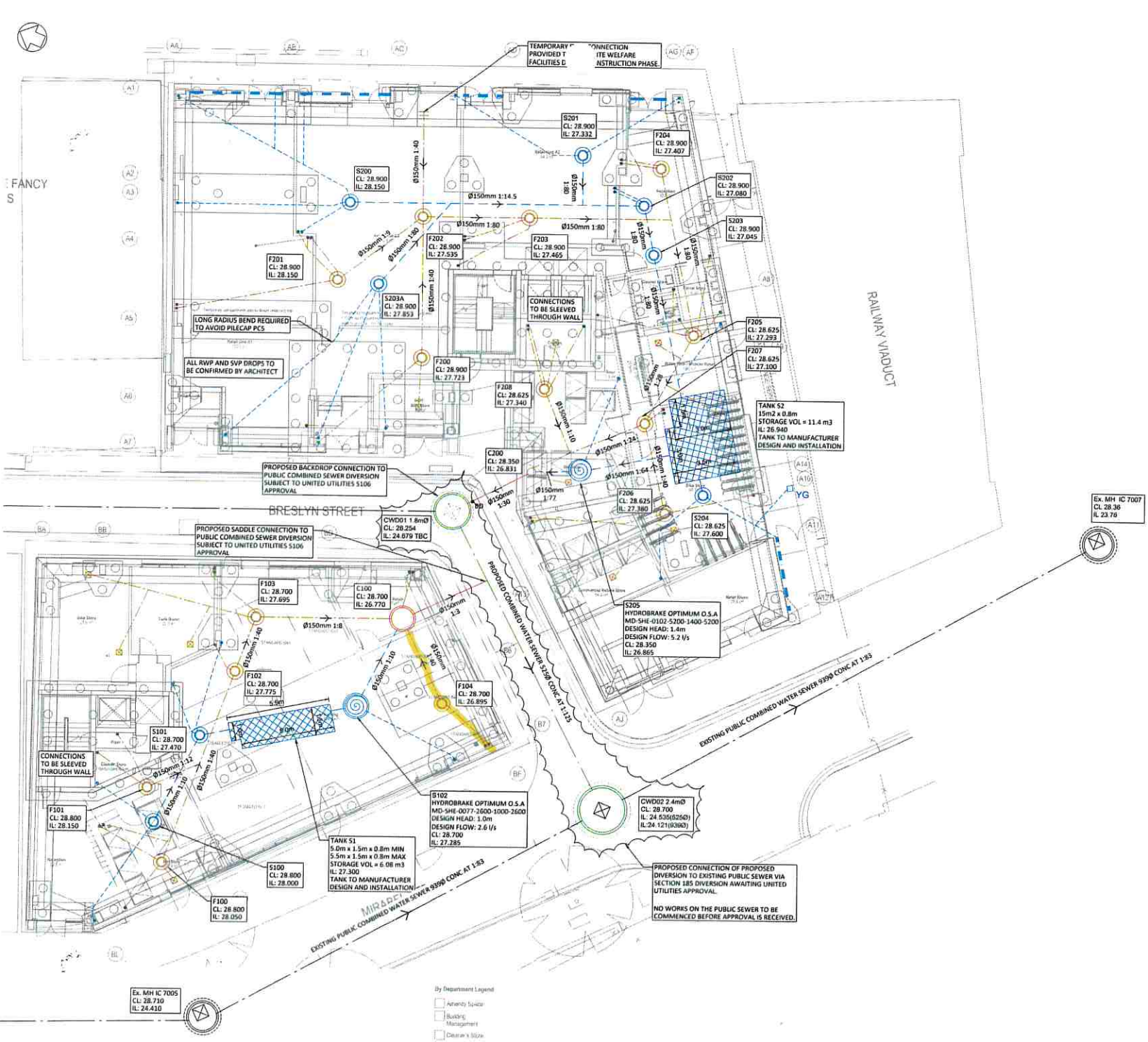
Water test (use only when specified or when air test fails)

The following test procedure will be adopted:

- Fit an expanding plug, suitable to resist the full hydrostatic head, at the lower end of the pipe and in any branches if necessary. The pipes may need strutting to prevent movement
- Fit a similar plug and strutting at the higher end but with access for hose and standpipe
- Fill the system with water ensuring that these are no pockets of entrapped air
- Fill the standpipe to requisite level
- Leave for at least two hours to enable the pipe to become saturated, topping up as necessary
- After the absorption period measure the loss of water from the system be noting the amount of water needed to maintain the level in the standpipe over a further period of 30 minutes, the standpipe being topped up at regular intervals of five minutes.

Finishing of services

- Manholes will be inspected and where specified tested and recorded
- Where specified or instructed by the client or statutory bodies, provide markers, warning tape, colour coding on pipes, or coloured concrete to identify the position of underground services
- When they differ from working drawings, record the position and orientation of pipe junctions, service crossings, land drains etc.



HEALTH & SAFETY: THE WORKS SHALL BE CARRIED OUT BY SPECIALIST COMPETENT AND EXPERIENCED CONTRACTORS. ALL OPERATIVES SHALL HAVE RECEIVED FULL AND APPROPRIATE TRAINING WITH APPROPRIATE QUALIFICATIONS FOR THE OPERATIONS THEY ARE REQUIRED TO UNDERTAKE. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT HEALTH & SAFETY REGULATIONS.

DRAINAGE NOTES
ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER FOR ACTION PRIOR TO CONSTRUCTION.

ALL DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY AND IN CONJUNCTION WITH ALL RELEVANT BRITISH STANDARDS, CODES OF PRACTICE AND 'DESIGN AND CONSTRUCTION GUIDANCE FOR FOUL AND SURFACE WATER SEWERS' AND ADDENDUMS AS APPROPRIATE.
ALL DRAINAGE SHALL COMPLY WITH THE TYPICAL DRAINAGE CONSTRUCTION DETAILS AND THE REQUIREMENTS OF BS EN 752.

ACCESS COVERS AND FRAMES SHALL COMPLY WITH THE LOADINGS SPECIFIED AND TO BS EN 124 AND KITEMARKED OR IF RECESSED COVERS ARE SPECIFIED THEN IN ACCORDANCE WITH FACTA ASSOCIATION EQUIVALENT.

ALL INTERNAL COVERS TO BE DOUBLE SEALED RECESSED COVERS TO ACCEPT PROPOSED FLOOR FINISHES.

THE PROPOSED BUILDING OUTLINES SHOWN ON THIS DRAWING ARE FOR INFORMATION ONLY. REFER TO ARCHITECTS PLANS FOR SETTING OUT INFORMATION AND DETAILS.

FOR SETTING OUT DIMENSIONS OF SS'S, SVP'S, RWP'S, FLOOR GULLY & OTHER DRAINAGE 'POP UP' LOCATIONS, REFER TO ARCHITECTS OR MECHANICAL & ELECTRICAL ENGINEERS DRAWINGS. LOCATION OF EXTERNAL CHANNEL DRAINS AND GULLY LOCATIONS / REQUIREMENTS TO BE CONFIRMED BY ARCHITECT.
ALL DRAINAGE PIPEWORK SHOWN SHALL BE 100MM DIAMETER FOR FOUL AND 150MM FOR SURFACE WATER UNLESS NOTED OTHERWISE.
ALL DRAINAGE PIPEWORK SHALL BE LAID SOFFIT TO SOFFIT UNLESS NOTED OTHERWISE.

ALL UNDERSLAB DRAINAGE SHALL BE LAID AT GRADIENTS OF 1:80 MIN. FOR FOUL PIPEWORK AND 1:100 MIN. FOR SURFACE WATER UNLESS NOTED OTHERWISE. ALL UNDERSLAB DRAINAGE SHALL BE CLEAR OF FOUNDATIONS UNLESS SHOWN OTHERWISE.
ALL BENDS IN PIPEWORK TO BE AS LARGE A RADIUS AS POSSIBLE (EXCLUDING CONNECTIONS TO CHAMBERS) TO ENSURE FREE FLOW. SHORT RADIUS BENDS TO BE AGREED WITH DRAINAGE ENGINEER.

ALL SURFACE WATER DROP DOWN POSITIONS SHALL HAVE A BEND SET AT INVERT LEVEL NO GREATER THAN 1.3M BELOW FINISH FLOOR LEVEL.

AT LEAST ONE SOIL PIPE AT THE HEAD OF EACH FOUL RUN SHALL BE VENTED TO THE ATMOSPHERE. ALL SVP'S, SS'S AND RWP DOWNPIPES SHALL BE ACCESSIBLE AT GROUND LEVEL FOR RODDING PURPOSES.

COVER LEVELS SHOWN ON THIS DRAWING ARE APPROXIMATE AND SHALL BE ADJUSTED TO SUIT LEVELS ON SITE BY CONTRACTOR. COVERS SHALL BE ORIENTATED TO SUIT PAVEMENT FINISHES WHERE APPROPRIATE.
ALL COVER LEVELS ARE TO BE CONFIRMED BY THE ARCHITECT

ALL PRIVATE DRAINAGE PIPEWORK FOR FOUL AND SURFACE WATER SYSTEMS HAVE BEEN DESIGNED ON THE BASIS OF UPVC TO BS EN 1401-1, UNLESS NOTED OTHERWISE.

CONCRETE ENCASEMENT OF THE PIPEWORK SHALL BE REQUIRED WHERE VERTICAL CLEARANCE BETWEEN TWO PIPES CROSSING IS LESS THAN 300MM.
WHERE NEW DRAINAGE IS SITUATED WITHIN 5 METRES OF NEW OR EXISTING TREES THE PIPEWORK SHALL BE ENCASED IN CONCRETE TO REDUCE THE RISK OF ROOT INGRESS.

ALL DRAINAGE CONNECTING TO THE PUBLIC SEWER NETWORK SHALL NOT COMMENCE UNTIL RECEIPT OF THE APPROVAL FROM THE DRAINAGE AUTHORITY AND SHALL COMPLY WITH REQUIREMENTS USING VITRIFIED CLAY PIPEWORK TO BS EN 295 WITH PLAIN SLEEVED OR SOCKETED FLEXIBLE JOINTS SUBJECT TO APPROVAL.

WHERE DRAINAGE WORKS ARE CARRIED OUT IN THE PUBLIC HIGHWAY THE RELEVANT NECESSARY APPROVALS AND ROAD OPENING NOTICES SHALL BE OBTAINED FROM THE HIGHWAY AUTHORITY AND UTILITY COMPANIES.

PRIOR TO CONSTRUCTION THE FLOW CONTROL MANUFACTURER'S DRAWING AND HYDRAULIC TABLE SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL

PRIOR TO CONSTRUCTION THE ATTENUATION TANK MANUFACTURER'S DRAWINGS SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL

UPON COMPLETION ALL NEW DRAINAGE INSTALLATION TOGETHER WITH ANY EXISTING DRAINAGE RETAINED SHALL BE JETTED AND CCTV SURVEYED UPON COMPLETION. CONTRACTOR TO ENSURE THAT THE DRAINAGE SYSTEM IS FULLY OPERATIONAL, FREE OF EXCESS DEBRIS/SILT AND ALL IDENTIFIED FAULTS RECTIFIED.

Standard Notes

1. This drawing is to be read in conjunction with all relevant Architect's and Engineer's drawings and the specification.
2. This drawing should not be scaled.
3. All dimensions are to be verified by the contractor on site.
4. All discrepancies should be reported to the C.A. prior to the commencement of the works.

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Notes and Keys

TOPOGRAPHICAL SURVEY BY SURVEY SOLUTIONS RECEIVED ON: 07.09.22 DRG NO: 41020MCLS-01

ALL DRAINAGE PROPOSALS ARE SUBJECT TO CONFIRMATION OF EXISTING SEWER LEVELS

ALL RWP AND SVP DROPS TO BE CONFIRMED BY ARCHITECT

ALL POP UP REST BENDS ARE SET MIN 450mm BELOW SSL

WHERE POP UPS ARE LOCATED ON PILECAPS / GROUND BEAMS AND A CONTINUOUS GRADE CANNOT BE ACHIEVED PIPE SHOULD BE SET AT A MIN 1:40 GRADIENT UNTIL CLEAR OF PILECAP FOOTPRINT WITH A BEND TO ALLOW FOR STEEP GRADIENT CONNECTION TO DOWNSTREAM INSPECTION CHAMBER. REFER TO TYPICAL DETAIL ON DRAWING C-31001

- FOUL SEWER 100mm DIAMETER UNLESS OTHERWISE NOTED
- STORM SEWER 150mm DIAMETER UNLESS OTHERWISE NOTED
- COMBINED SEWER 150mm DIAMETER UNLESS OTHERWISE NOTED
- EXISTING PUBLIC COMBINED SEWER
- PROPOSED S185 CW SEWER DIVERSION
- FOUL SEWER INSPECTION CHAMBER 450mm DIAMETER
- STORM SEWER INSPECTION CHAMBER 450mm DIAMETER
- SW FLOW CONTROL CHAMBER
- COMBINED SEWER INSPECTION CHAMBER / MANHOLE
- STUB STACK
- SVP
- RWP
- FLOOR GULLY
- SLOT DRAIN ACO M100D WITH BRICKSLOT ST GRATING
- YG YARD GULLY

Date	Rev	Description	Drawn	Chkd
24.08.23	C04	S203 REINSTATED, S203A REFERENCE UPDATED	ZG	CK
21.08.23	C03	POP UP LOCATIONS UPDATED	ZG	CK
03.08.23	C02	PROPOSED DIVERSION UPDATED	ZG	JF
11.07.23	C01	ISSUED FOR CONSTRUCTION	ZG	CK
08.12.22	P07	RWP ADDED/LAYOUT AMENDED	CD	ZG
29.11.22	P06	DRAINAGE UPDATED	CD	CK
25.11.22	P05	DRAINAGE UPDATED	ZG	CK
07.11.22	P04	DRAINAGE UPDATED	CD	CK
18.10.22	P03	UPDATED FFLs AND DRAINAGE	CD	CK
12.09.22	P02	COORDINATED WITH M&E DESIGN	ZG	CK
04.07.22	P01	FOR INFORMATION	CD	CK

Civic Engineers

MANCHESTER LONDON LEEDS

Project
ONE VICTORIA MANCHESTER

Title
DRAINAGE GENERAL ARRAGEMENT

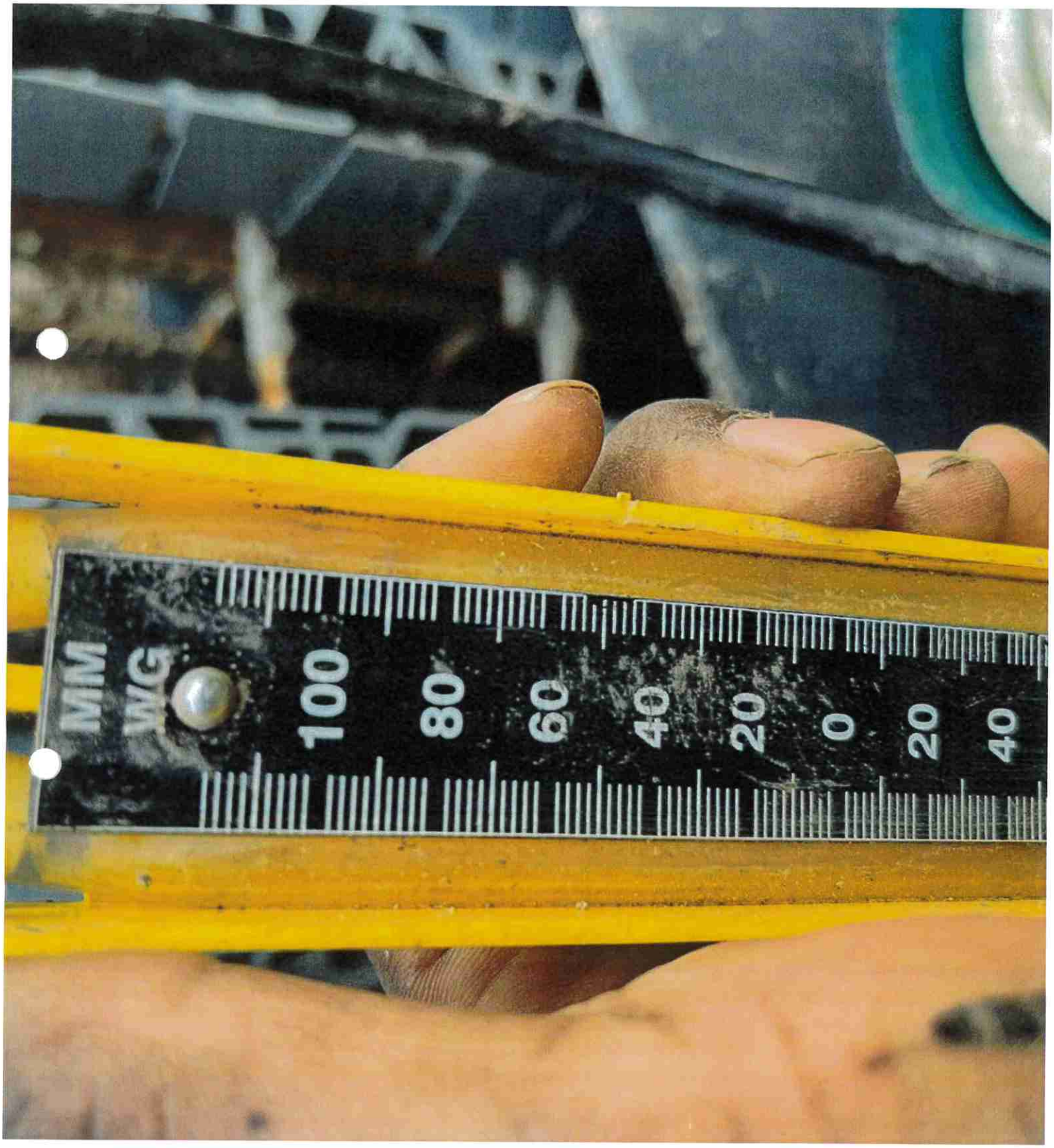
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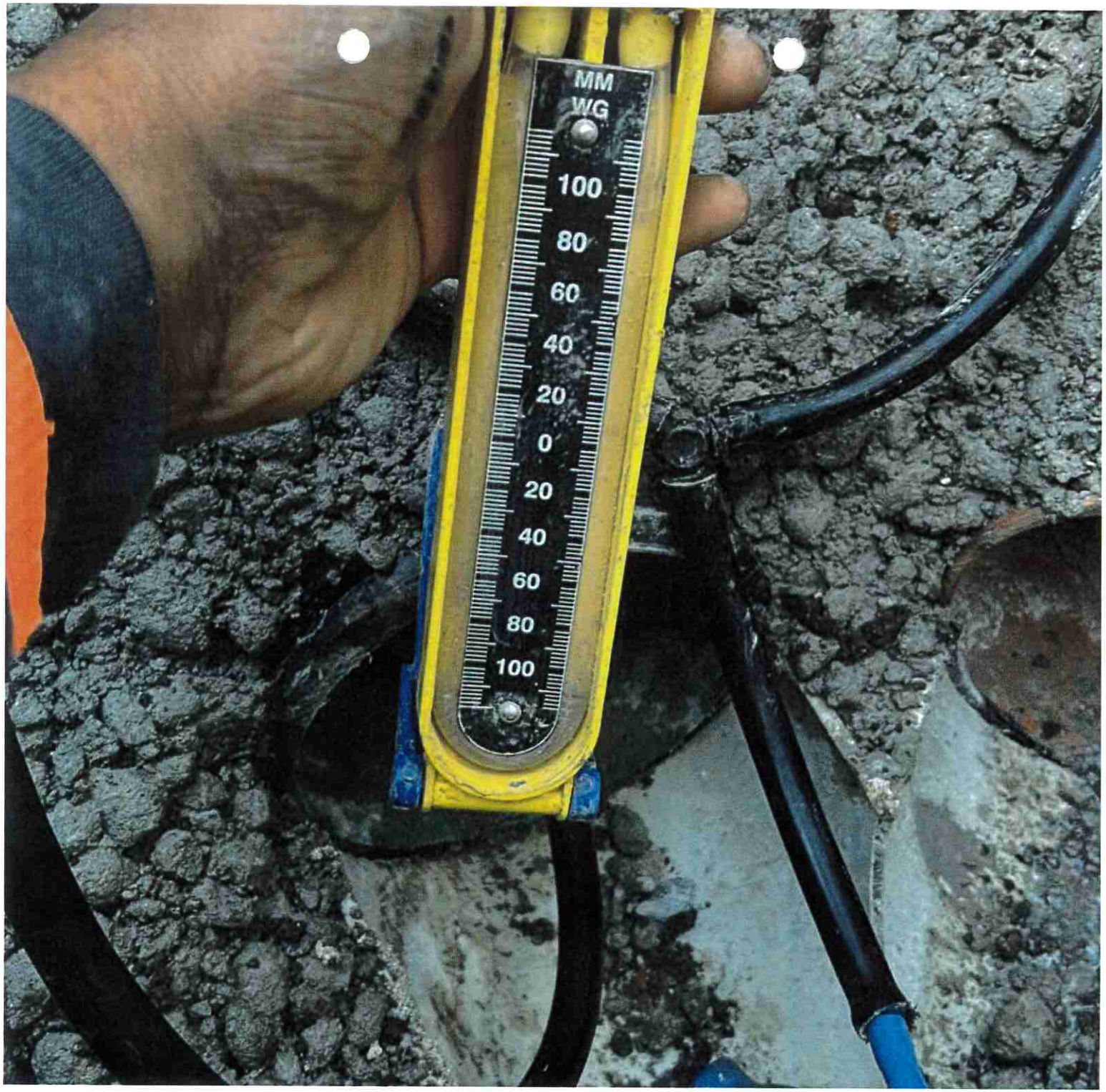
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756-02	1:100	04.07.22	CD	CK	----

Drawing Number: 204-CIV-00-XX-DR-C-30001
Revision: C04




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Drainage and Manholes

CHECKSHEET

Contract:	**One Victoria**	Contract no.:	**204**		**QA9**
Inspection details					
Description:	C100 Drainage Runs				
Check sheet details					
Drawing references used:	**204-CIV-00-XX-DR-C-30001**				
Has setting out check sheet been signed off?	Yes ☒				
Details of drainage and manholes to be installed:					
Material:	Surface Water ridged Pipe	Size:	**150/100**		
Excavation support method:	**N/A - Trench To Be Stepped**				
Concrete grade where applicable	GEN3N / mm2				
Where special installation instructions are to be followed, particularly for interceptors, give brief details. :	N/A				
All materials and plant available on site?	Yes ☒				
Area released for construction:	Initials:	J.W	Date:	**02.10.23**	

Drainage pipes laid to correct depth and gradient?	Yes ☒	No ☐		
Correct P Gravel installed as per specification?	Yes ☒	No ☐		
Concrete base installed to specification?	Yes ☐	N/A ☒		
Channels / branches / haunching to specification?	Yes ☒	N/A ☐		
M/H rings / concrete surround or poly chamber or brickwork to specification?	Yes ☒	N/A ☐		
Step irons / ladder rung irons / ladder to specification?	Yes ☐	N/A ☒		
Air/ water test carried out to specification? need evidence	Yes ☒	No ☐		
Inspection carried out by Building Control?	Yes ☒	No ☐		
Area correctly backfilled?	Yes ☒	N/A ☐		
Actual installed position recorded for as-built drawing?	Yes ☒	N/A ☐		
Manhole / chamber / interceptor clean and cover(s) installed at correct level?	Yes ☐	N/A ☐		

Area released for next activity:

This check sheet has been issued with the purpose to progress 'the works'.
All work is subject to a final inspection and customer approval at the date of project handover.
This checklist is flexible to allow full checking process by all parties.

Drainage and Manholes checked, approved and released for next activity:

PRINT NAME	COMPANY NAME Torsion, Sub-contractor or third party sign off (delete as applicable)	PRINT JOB TITLE:	SIGNATURE:	DATE:
Aiden Bougourd	**Torsion**	**Engineer**		**02.10.23**
Jaiden Watts	**Spencer's**	**Engineer**		**02.10.23**

Drainage and Manholes

CHECKSHEET

Drainage guidance

Preparation
- Check risk assessment measures are implemented and method statement is understood by all
- The site team will obtain and use appropriate permits to work from the client, utilities, local authorities or other
- Existing services, which may present hazard or danger, will be identified and appropriate protective measures taken
- Obtain the clients or appropriate authorities instructions regarding the protection, support or other action required to any existing service located in or adjacent to the work. Plan for any temporary support
- Plan plant requirements, methods of work and produce appropriate method statements.

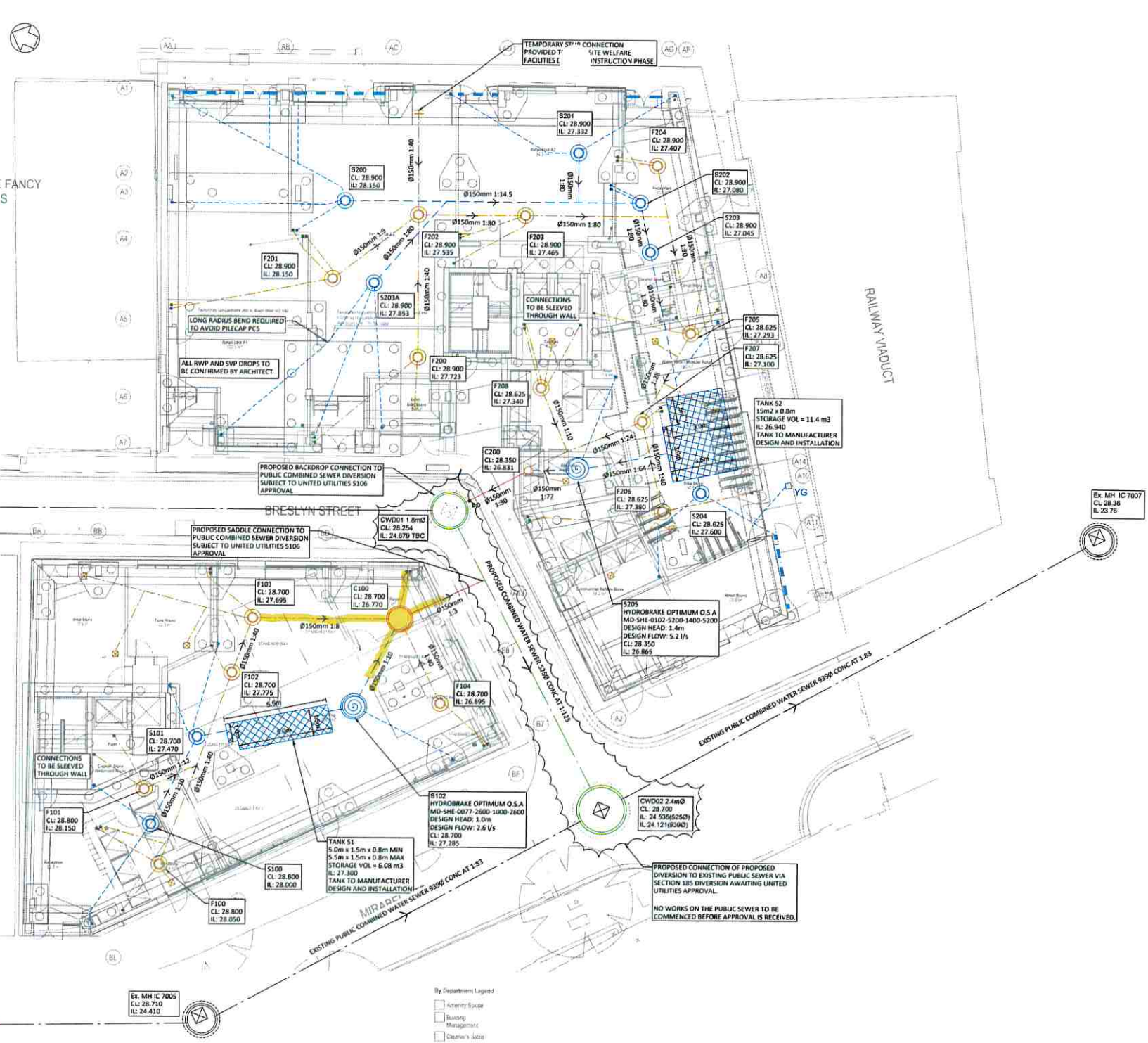
Excavation for services
- Dig by hand or machine in accordance with any permits
- Support excavation as per method statement. Adhere to designed shoring systems produced
- Give the client or building control reasonable opportunity to inspect the excavated formation.

Laying of services
- Concrete grades for services work will be specified or shown on drawings
- Free draining bedding media will be placed in the trench and pipes laid to specific gradients. Ensure that the barrel of the pipe is fully supported by the granular surround
- Measures will be taken to prevent material entering the pipe run
- Air tests will be carried out prior to backfill to ensure that joints are not leaking
- After backfill, each drainage run will be checked, tested and witnessed as required and recorded.

Air tests
In the absence of any specified tests the following procedure will be adopted:
- Seal the ends of the pipe and any junction pipes. Note that the pipelines should not be left with plugs in where there is a risk of trench filling with water before it is backfilled, or floatation may occur
- Attach a u-tube (manometer) and a means of applying the air pressure to one of the plugs
- Apply pressure either by mouth or by a hand pump to achieve a pressure slightly more than 100mm of water in the u-tube
- Allow about five minutes for stabilisation of air temp
- Adjust air pressure to 100mm of water
- Without further pumping, the head of water should not fall by more than 25mm in a period of five minutes
- Should a pipeline marginally fail an air test, it should be re-tested using water.

Water test (use only when specified or when air test fails)
The following test procedure will be adopted:
- Fit an expanding plug, suitable to resist the full hydrostatic head, at the lower end of the pipe and in any branches if necessary. The pipes may need strutting to prevent movement
- Fit a similar plug and strutting at the higher end but with access for hose and standpipe
- Fill the system with water ensuring that these are no pockets of entrapped air
- Fill the standpipe to requisite level
- Leave for at least two hours to enable the pipe to become saturated, topping up as necessary
- After the absorption period measure the loss of water from the system be noting the amount of water needed to maintain the level in the standpipe over a further period of 30 minutes, the standpipe being topped up at regular intervals of five minutes.

Finishing of services
- Manholes will be inspected and where specified tested and recorded
- Where specified or instructed by the client or statutory bodies, provide markers, warning tape, colour coding on pipes, or coloured concrete to identify the position of underground services
- When they differ from working drawings, record the position and orientation of pipe junctions, service crossings, land drains etc.



HEALTH & SAFETY: THE WORKS SHALL BE CARRIED OUT BY SPECIALIST COMPETENT AND EXPERIENCED CONTRACTORS. ALL OPERATIVES SHALL HAVE RECEIVED FULL AND APPROPRIATE TRAINING WITH APPROPRIATE QUALIFICATIONS FOR THE OPERATIONS THEY ARE REQUIRED TO UNDERTAKE. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT HEALTH & SAFETY REGULATIONS.

DRAINAGE NOTES
ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER FOR ACTION PRIOR TO CONSTRUCTION.

ALL DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY AND IN CONJUNCTION WITH ALL RELEVANT BRITISH STANDARDS, CODES OF PRACTICE AND 'DESIGN AND CONSTRUCTION GUIDANCE FOR FOUL AND SURFACE WATER SEWERS' AND ADDENDUMS AS APPROPRIATE.
ALL DRAINAGE SHALL COMPLY WITH THE TYPICAL DRAINAGE CONSTRUCTION DETAILS AND THE REQUIREMENTS OF BS EN 752.

ACCESS COVERS AND FRAMES SHALL COMPLY WITH THE LOADINGS SPECIFIED AND TO BS EN 124 AND KITEMARKED OR IF RECESSED COVERS ARE SPECIFIED THEN IN ACCORDANCE WITH FACTA ASSOCIATION EQUIVALENT.

ALL INTERNAL COVERS TO BE DOUBLE SEALED RECESSED COVERS TO ACCEPT PROPOSED FLOOR FINISHES.

THE PROPOSED BUILDING OUTLINES SHOWN ON THIS DRAWING ARE FOR INFORMATION ONLY. REFER TO ARCHITECTS PLANS FOR SETTING OUT INFORMATION AND DETAILS.

FOR SETTING OUT DIMENSIONS OF SS'S, SVP'S, RWP'S, FLOOR GULLY & OTHER DRAINAGE 'POP UP' LOCATIONS, REFER TO ARCHITECTS OR MECHANICAL & ELECTRICAL ENGINEERS DRAWINGS. LOCATION OF EXTERNAL CHANNEL DRAINS AND GULLY LOCATIONS / REQUIREMENTS TO BE CONFIRMED BY ARCHITECT.
ALL DRAINAGE PIPEWORK SHOWN SHALL BE 300MM DIAMETER FOR FOUL AND 150MM FOR SURFACE WATER UNLESS NOTED OTHERWISE.
ALL DRAINAGE PIPEWORK SHALL BE LAID SOFFIT TO SOFFIT UNLESS NOTED OTHERWISE.

ALL UNDERSLAB DRAINAGE SHALL BE LAID AT GRADIENTS OF 1:80 MIN. FOR FOUL PIPEWORK AND 1:100 MIN. FOR SURFACE WATER UNLESS NOTED OTHERWISE. ALL UNDERSLAB DRAINAGE SHALL BE CLEAR OF FOUNDATIONS UNLESS SHOWN OTHERWISE.
ALL BENDS IN PIPEWORK TO BE AS LARGE A RADIUS AS POSSIBLE (EXCLUDING CONNECTIONS TO CHAMBERS) TO ENSURE FREE FLOW. SHORT RADIUS BENDS TO BE AGREED WITH DRAINAGE ENGINEER.

ALL SURFACE WATER DROP DOWN POSITIONS SHALL HAVE A BEND SET AT INVERT LEVEL NO GREATER THAN 1.3M BELOW FINISH FLOOR LEVEL.

AT LEAST ONE SOIL PIPE AT THE HEAD OF EACH FOUL RUN SHALL BE VENTED TO THE ATMOSPHERE. ALL SVPS, SSS AND RWP DOWNPIPES SHALL BE ACCESSIBLE AT GROUND LEVEL FOR RODDING PURPOSES.

COVER LEVELS SHOWN ON THIS DRAWING ARE APPROXIMATE AND SHALL BE ADJUSTED TO SUIT LEVELS ON SITE BY CONTRACTOR. COVERS SHALL BE ORIENTATED TO SUIT PAVEMENT FINISHES WHERE APPROPRIATE.
ALL COVER LEVELS ARE TO BE CONFIRMED BY THE ARCHITECT.

ALL PRIVATE DRAINAGE PIPEWORK FOR FOUL AND SURFACE WATER SYSTEMS HAVE BEEN DESIGNED ON THE BASIS OF UPVC TO BS EN 1401-1, UNLESS NOTED OTHERWISE.

CONCRETE ENCASEMENT OF THE PIPEWORK SHALL BE REQUIRED WHERE VERTICAL CLEARANCE BETWEEN TWO PIPES CROSSING IS LESS THAN 300MM.
WHERE NEW DRAINAGE IS SITUATED WITHIN 5 METRES OF NEW OR EXISTING TREES THE PIPEWORK SHALL BE ENCASED IN CONCRETE TO REDUCE THE RISK OF ROOT INGRESS.

ALL DRAINAGE CONNECTING TO THE PUBLIC SEWER NETWORK SHALL NOT COMMENCE UNTIL RECEIPT OF THE APPROVAL FROM THE DRAINAGE AUTHORITY AND SHALL COMPLY WITH REQUIREMENTS USING VITRIFIED CLAY PIPEWORK TO BS EN 295 WITH PLAIN SLEEVED OR SOCKETED FLEXIBLE JOINTS SUBJECT TO APPROVAL.

WHERE DRAINAGE WORKS ARE CARRIED OUT IN THE PUBLIC HIGHWAY THE RELEVANT NECESSARY APPROVALS AND ROAD OPENING NOTICES SHALL BE OBTAINED FROM THE HIGHWAY AUTHORITY AND UTILITY COMPANIES.

PRIOR TO CONSTRUCTION THE FLOW CONTROL MANUFACTURER'S DRAWING AND HYDRAULIC TABLE SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL

PRIOR TO CONSTRUCTION THE ATTENUATION TANK MANUFACTURER'S DRAWINGS SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL

UPON COMPLETION ALL NEW DRAINAGE INSTALLATION TOGETHER WITH ANY EXISTING DRAINAGE RETAINED SHALL BE JETTED AND CCTV SURVEYED UPON COMPLETION.
CONTRACTOR TO ENSURE THAT THE DRAINAGE SYSTEM IS FULLY OPERATIONAL, FREE OF EXCESS DEBRIS/SILT AND ALL IDENTIFIED FAULTS RECTIFIED.

Standard Notes

1. This drawing is to be read in conjunction with all relevant Architect's and Engineer's drawings and the specification.
2. This drawing should not be scaled.
3. All dimensions are to be verified by the contractor on site.
4. All discrepancies should be reported to the C.A. prior to the commencement of the works.

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Notes and Keys

TOPOGRAPHICAL SURVEY BY SURVEY SOLUTIONS. RECEIVED ON: 07.09.22 DRG NO: 41020MCLS-01

ALL DRAINAGE PROPOSALS ARE SUBJECT TO CONFIRMATION OF EXISTING SEWER LEVELS

ALL RWP AND SVP DROPS TO BE CONFIRMED BY ARCHITECT

ALL POP UP REST BENDS ARE SET MIN 450mm BELOW SSL

WHERE POP UPS ARE LOCATED ON PILECAPS / GROUND BEAMS AND A CONTINUOUS GRADE CANNOT BE ACHIEVED PIPE SHOULD BE SET AT A MIN 1:40 GRADIENT UNTIL CLEAR OF PILECAP FOOTPRINT WITH A BEND TO ALLOW FOR STEEP GRADIENT CONNECTION TO DOWNSTREAM INSPECTION CHAMBER. REFER TO TYPICAL DETAIL ON DRAWING C-31001

- FOUL SEWER 100mm DIAMETER UNLESS OTHERWISE NOTED
- STORM SEWER 150mm DIAMETER UNLESS OTHERWISE NOTED
- COMBINED SEWER 150mm DIAMETER UNLESS OTHERWISE NOTED
- EXISTING PUBLIC COMBINED SEWER
- PROPOSED S185 CW SEWER DIVERSION
- FOUL SEWER INSPECTION CHAMBER 450mm DIAMETER
- STORM SEWER INSPECTION CHAMBER 450mm DIAMETER
- SW FLOW CONTROL CHAMBER
- COMBINED SEWER INSPECTION CHAMBER / MANHOLE
- STUB STACK
- SVP
- RWP
- FLOOR GULLY
- SLOT DRAIN ACO M100D WITH BRICKSLOT ST GRATING
- YG YARD GULLY

Date	Rev	Description	Drawn	Chkd
24.08.23	C04	S201 REINSTATED, SUDS REFERENCE UPDATED	ZG	CK
21.08.23	C03	POP UP LOCATIONS UPDATED	ZG	CK
03.08.23	C02	PROPOSED DIVERSION UPDATED	ZG	JF
11.07.23	C01	ISSUED FOR CONSTRUCTION	ZG	CK
06.12.22	P07	RWP ADDED/LAYOUT AMENDED	CD	ZG
29.11.22	P06	DRAINAGE UPDATED	CD	CK
25.11.22	P05	DRAINAGE UPDATED	ZG	CK
02.11.22	P04	DRAINAGE UPDATED	CD	CK
18.10.22	P03	UPDATED FFLs AND DRAINAGE	CD	CK
12.09.22	P02	COORDINATED WITH M&E DESIGN	ZG	CK
04.07.22	P01	FOR INFORMATION	CD	CK

Civic Engineers
MANCHESTER CLWYD SOUTH WALES
www.civicengineers.com

Project
ONE VICTORIA MANCHESTER

Title
DRAINAGE GENERAL ARRAGEMENT

Status
CONSTRUCTION

Project Number	Scale @ A1	Date Created	Drawn	Checked	Suitable
756-02	1:100	04.07.22	CD	CK	----

Drawing Number
204-CIV-00-XX-DR-C-30001

Revision
C04





Drainage and Manholes

CHECKSHEET

Contract:	**One Victoria**	Contract no.:	**204**		**QA9**
Inspection details					
Description:	S102 Drainage Runs				
Check sheet details					
Drawing references used:	**204-CIV-00-XX-DR-C-30001**				
Has setting out check sheet been signed off?	Yes	☒			
Details of drainage and manholes to be installed:					
Material:	Surface Water ridged Pipe		Size:	**150/100**	
Excavation support method:		**N/A - Trench To Be Stepped**			
Concrete grade where applicable		GEN3N / mm2			
Where special installation instructions are to be followed, particularly for interceptors, give brief details. :		N/A			
All materials and plant available on site?		Yes	☒		
Area released for construction:	Initials:	J.W	Date:	**29.09.23**	

Drainage pipes laid to correct depth and gradient?	Yes	☒	No	☐
Correct P Gravel installed as per specification?	Yes	☒	No	☐
Concrete base installed to specification?	Yes	☐	N/A	☒
Channels / branches / haunching to specification?	Yes	☒	N/A	☐
M/H rings / concrete surround or poly chamber or brickwork to specification?	Yes	☒	N/A	☐
Step irons / ladder rung irons / ladder to specification?	Yes	☐	N/A	☒
Air/ water test carried out to specification? need evidence	Yes	☒	No	☐
Inspection carried out by Building Control?	Yes	☒	No	☐
Area correctly backfilled?	Yes	☒	N/A	☐
Actual installed position recorded for as-built drawing?	Yes	☒	N/A	☐
Manhole / chamber / interceptor clean and cover(s) installed at correct level?	Yes	☐	N/A	☐

Area released for next activity:

This check sheet has been issued with the purpose to progress 'the works'.
All work is subject to a final inspection and customer approval at the date of project handover.
This checklist is flexible to allow full checking process by all parties.

Drainage and Manholes checked, approved and released for next activity:

PRINT NAME	COMPANY NAME Torsion, Sub-contractor or third party sign off (delete as applicable)	PRINT JOB TITLE:	SIGNATURE:	DATE:
Aiden Bougourd	**Torsion**	**Engineer**		29.09.23
Jaiden Watts	**Spencer's**	**Engineer**		29.09.23

Drainage and Manholes

CHECKSHEET

Drainage guidance

Preparation

- Check risk assessment measures are implemented and method statement is understood by all
- The site team will obtain and use appropriate permits to work from the client, utilities, local authorities or other
- Existing services, which may present hazard or danger, will be identified and appropriate protective measures taken
- Obtain the clients or appropriate authorities instructions regarding the protection, support or other action required to any existing service located in or adjacent to the work. Plan for any temporary support
- Plan plant requirements, methods of work and produce appropriate method statements.

Excavation for services

- Dig by hand or machine in accordance with any permits
- Support excavation as per method statement. Adhere to designed shoring systems produced
- Give the client or building control reasonable opportunity to inspect the excavated formation.

Laying of services

- Concrete grades for services work will be specified or shown on drawings
- Free draining bedding media will be placed in the trench and pipes laid to specific gradients. Ensure that the barrel of the pipe is fully supported by the granular surround
- Measures will be taken to prevent material entering the pipe run
- Air tests will be carried out prior to backfill to ensure that joints are not leaking
- After backfill, each drainage run will be checked, tested and witnessed as required and recorded.

Air tests

In the absence of any specified tests the following procedure will be adopted:

- Seal the ends of the pipe and any junction pipes. Note that the pipelines should not be left with plugs in where there is a risk of trench filling with water before it is backfilled, or floatation may occur
- Attach a u-tube (manometer) and a means of applying the air pressure to one of the plugs
- Apply pressure either by mouth or by a hand pump to achieve a pressure slightly more than 100mm of water in the u-tube
- Allow about five minutes for stabilisation of air temp
- Adjust air pressure to 100mm of water
- Without further pumping, the head of water should not fall by more than 25mm in a period of five minutes
- Should a pipeline marginally fail an air test, it should be re-tested using water.

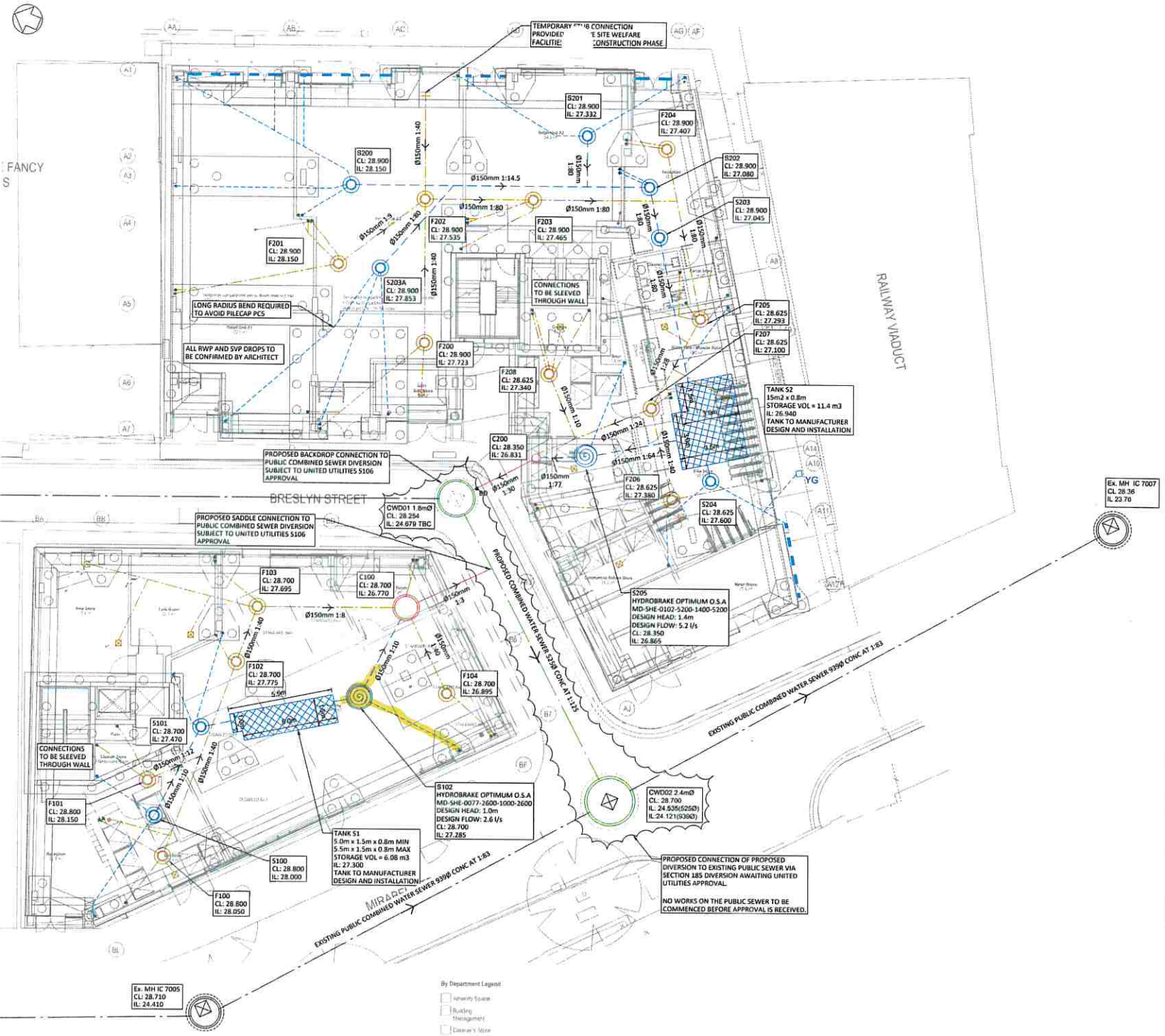
Water test (use only when specified or when air test fails)

The following test procedure will be adopted:

- Fit an expanding plug, suitable to resist the full hydrostatic head, at the lower end of the pipe and in any branches if necessary. The pipes may need strutting to prevent movement
- Fit a similar plug and strutting at the higher end but with access for hose and standpipe
- Fill the system with water ensuring that these are no pockets of entrapped air
- Fill the standpipe to requisite level
- Leave for at least two hours to enable the pipe to become saturated, topping up as necessary
- After the absorption period measure the loss of water from the system be noting the amount of water needed to maintain the level in the standpipe over a further period of 30 minutes, the standpipe being topped up at regular intervals of five minutes.

Finishing of services

- Manholes will be inspected and where specified tested and recorded
- Where specified or instructed by the client or statutory bodies, provide markers, warning tape, colour coding on pipes, or coloured concrete to identify the position of underground services
- When they differ from working drawings, record the position and orientation of pipe junctions, service crossings, land drains etc.



HEALTH & SAFETY: THE WORKS SHALL BE CARRIED OUT BY SPECIALIST COMPETENT AND EXPERIENCED CONTRACTORS. ALL OPERATIVES SHALL HAVE RECEIVED FULL AND APPROPRIATE TRAINING WITH APPROPRIATE QUALIFICATIONS FOR THE OPERATIONS THEY ARE REQUIRED TO UNDERTAKE. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT HEALTH & SAFETY REGULATIONS.

DRAINAGE NOTES
ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER FOR ACTION PRIOR TO CONSTRUCTION.

ALL DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY AND IN CONJUNCTION WITH ALL RELEVANT BRITISH STANDARDS, CODES OF PRACTICE AND 'DESIGN AND CONSTRUCTION GUIDANCE FOR FOUL AND SURFACE WATER SEWERS' AND ADDENDUMS AS APPROPRIATE.
ALL DRAINAGE SHALL COMPLY WITH THE TYPICAL DRAINAGE CONSTRUCTION DETAILS AND THE REQUIREMENTS OF BS EN 752.

ACCESS COVERS AND FRAMES SHALL COMPLY WITH THE LOADINGS SPECIFIED AND TO BS EN 124 AND KITEMARKED OR IF RECESSED COVERS ARE SPECIFIED THEN IN ACCORDANCE WITH FACTA ASSOCIATION EQUIVALENT.

ALL INTERNAL COVERS TO BE DOUBLE SEALED RECESSED COVERS TO ACCEPT PROPOSED FLOOR FINISHES.

THE PROPOSED BUILDING OUTLINES SHOWN ON THIS DRAWING ARE FOR INFORMATION ONLY. REFER TO ARCHITECTS PLANS FOR SETTING OUT INFORMATION AND DETAILS.

FOR SETTING OUT DIMENSIONS OF SS'S, SVP'S, RWP'S, FLOOR GULLY & OTHER DRAINAGE 'POP UP' LOCATIONS, REFER TO ARCHITECTS OR MECHANICAL & ELECTRICAL ENGINEERS DRAWINGS. LOCATION OF EXTERNAL CHANNEL DRAINS AND GULLY LOCATIONS / REQUIREMENTS TO BE CONFIRMED BY ARCHITECT.
ALL DRAINAGE PIPEWORK SHOWN SHALL BE 100MM DIAMETER FOR FOUL AND 150MM FOR SURFACE WATER UNLESS NOTED OTHERWISE.
ALL DRAINAGE PIPEWORK SHALL BE LAID SOFFIT TO SOFFIT UNLESS NOTED OTHERWISE.

ALL UNDERSLAB DRAINAGE SHALL BE LAID AT GRADIENTS OF 1:80 MIN. FOR FOUL PIPEWORK AND 1:100 MIN. FOR SURFACE WATER UNLESS NOTED OTHERWISE. ALL UNDERSLAB DRAINAGE SHALL BE CLEAR OF FOUNDATIONS UNLESS SHOWN OTHERWISE.
ALL BENDS IN PIPEWORK TO BE AS LARGE A RADIUS AS POSSIBLE (EXCLUDING CONNECTIONS TO CHAMBERS) TO ENSURE FREE FLOW. SHORT RADIUS BENDS TO BE AGREED WITH DRAINAGE ENGINEER.

ALL SURFACE WATER DROP DOWN POSITIONS SHALL HAVE A BEND SET AT INVERT LEVEL NO GREATER THAN 1.3M BELOW FINISH FLOOR LEVEL.

AT LEAST ONE SOIL PIPE AT THE HEAD OF EACH FOUL RUN SHALL BE VENTED TO THE ATMOSPHERE. ALL SVPS, SSS AND RWP DOWNPIPES SHALL BE ACCESSIBLE AT GROUND LEVEL FOR RODDING PURPOSES.

COVER LEVELS SHOWN ON THIS DRAWING ARE APPROXIMATE AND SHALL BE ADJUSTED TO SUIT LEVELS ON SITE BY CONTRACTOR. COVERS SHALL BE ORIENTATED TO SUIT PAVEMENT FINISHES WHERE APPROPRIATE.
ALL COVER LEVELS ARE TO BE CONFIRMED BY THE ARCHITECT

ALL PRIVATE DRAINAGE PIPEWORK FOR FOUL AND SURFACE WATER SYSTEMS HAVE BEEN DESIGNED ON THE BASIS OF UPVC TO BS EN 1401-1, UNLESS NOTED OTHERWISE.

CONCRETE ENCASEMENT OF THE PIPEWORK SHALL BE REQUIRED WHERE VERTICAL CLEARANCE BETWEEN TWO PIPES CROSSING IS LESS THAN 300MM.
WHERE NEW DRAINAGE IS SITUATED WITHIN 5 METRES OF NEW OR EXISTING TREES THE PIPEWORK SHALL BE ENCASED IN CONCRETE TO REDUCE THE RISK OF ROOT INGRESS.

ALL DRAINAGE CONNECTING TO THE PUBLIC SEWER NETWORK SHALL NOT COMMENCE UNTIL RECEIPT OF THE APPROVAL FROM THE DRAINAGE AUTHORITY AND SHALL COMPLY WITH REQUIREMENTS USING VITRIFIED CLAY PIPEWORK TO BS EN 295 WITH PLAIN SLEEVED OR SOCKETED FLEXIBLE JOINTS SUBJECT TO APPROVAL.

WHERE DRAINAGE WORKS ARE CARRIED OUT IN THE PUBLIC HIGHWAY THE RELEVANT NECESSARY APPROVALS AND ROAD OPENING NOTICES SHALL BE OBTAINED FROM THE HIGHWAY AUTHORITY AND UTILITY COMPANIES.

PRIOR TO CONSTRUCTION THE FLOW CONTROL MANUFACTURER'S DRAWING AND HYDRAULIC TABLE SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL

PRIOR TO CONSTRUCTION THE ATTENUATION TANK MANUFACTURER'S DRAWINGS SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL

UPON COMPLETION ALL NEW DRAINAGE INSTALLATION TOGETHER WITH ANY EXISTING DRAINAGE RETAINED SHALL BE JETTED AND CCTV SURVEYED UPON COMPLETION. CONTRACTOR TO ENSURE THAT THE DRAINAGE SYSTEM IS FULLY OPERATIONAL, FREE OF EXCESS DEBRIS/SILT AND ALL IDENTIFIED FAULTS RECTIFIED.

Standard Notes

1. This drawing is to be read in conjunction with all relevant Architect's and Engineer's drawings and the specification.
2. This drawing should not be scaled.
3. All dimensions are to be verified by the contractor on site.
4. All discrepancies should be reported to the C.A. prior to the commencement of the works.

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Notes and Keys

TOPOGRAPHICAL SURVEY BY SURVEY SOLUTIONS. RECEIVED ON: 07.09.22 DRG NO: 41020MCLS-01

ALL DRAINAGE PROPOSALS ARE SUBJECT TO CONFIRMATION OF EXISTING SEWER LEVELS

ALL RWP AND SVP DROPS TO BE CONFIRMED BY ARCHITECT

ALL POP UP REST BENDS ARE SET MIN 450mm BELOW SSL

WHERE POP UPS ARE LOCATED ON PILECAPS / GROUND BEAMS AND A CONTINUOUS GRADE CANNOT BE ACHIEVED PIPE SHOULD BE SET AT A MIN 1:40 GRADIENT UNTIL CLEAR OF PILECAP FOOTPRINT WITH A BEND TO ALLOW FOR STEEP GRADIENT CONNECTION TO DOWNSTREAM INSPECTION CHAMBER. REFER TO TYPICAL DETAIL ON DRAWING C-31001

- FOUL SEWER 100mm DIAMETER UNLESS OTHERWISE NOTED
- STORM SEWER 150mm DIAMETER UNLESS OTHERWISE NOTED
- COMBINED SEWER 150mm DIAMETER UNLESS OTHERWISE NOTED
- EXISTING PUBLIC COMBINED SEWER
- PROPOSED S185 CW SEWER DIVERSION
- FOUL SEWER INSPECTION CHAMBER 450mm DIAMETER
- STORM SEWER INSPECTION CHAMBER 450mm DIAMETER
- SW FLOW CONTROL CHAMBER
- COMBINED SEWER INSPECTION CHAMBER / MANHOLE
- STUB STACK
- SVP
- RWP
- FLOOR GULLY
- SLOT DRAIN ACO M100D WITH BRICKSLOT ST GRATING
- YG YARD GULLY

Date	Rev	Description	Drawn	Chkd
24.08.23	C04	S201 RE-ORIENTATED, S200A REFERENCE UPDATED	ZG	CK
21.08.23	C03	POP UP LOCATIONS UPDATED	ZG	CK
03.08.23	C02	PROPOSED DIVERSION UPDATED	ZG	JF
13.07.23	C01	ISSUED FOR CONSTRUCTION	ZG	CK
08.12.22	P07	RWP ADDED/LAYOUT AMENDED	CD	ZG
29.11.22	P06	DRAINAGE UPDATED	CD	CK
25.11.22	P05	DRAINAGE UPDATED	ZG	CK
02.11.22	P04	DRAINAGE UPDATED	CD	CK
18.10.22	P03	UPDATED FFLs AND DRAINAGE	CD	CK
12.09.22	P02	COORDINATED WITH M&E DESIGN	ZG	CK
04.07.22	P01	FOR INFORMATION	CD	CK

Civic Engineers

Project
ONE VICTORIA MANCHESTER

Title
DRAINAGE GENERAL ARRAGEMENT

Status
CONSTRUCTION

Project Number	Scale @ A1	Date Created	Drawn	Checked	Suitability
756-02	1:100	04.07.22	CD	CK	----

Drawing Number
204-CIV-00-XX-DR-C-30001

Revision
C04











Drainage and Manholes

CHECKSHEET

Contract:	**One Victoria**	Contract no.:	**204**		**QA8**
Inspection details					
Description:	Foul Sewer F103 Drainage Runs				
Check sheet details					
Drawing references used:	**204-CIV-00-XX-DR-C-30001**				
Has setting out check sheet been signed off?	Yes	☒			
Details of drainage and manholes to be installed:					
Material:	Foul Pipe PPIC		Size:	**150/100**	
Excavation support method:		**N/A Trench To Be Stepped**			
Concrete grade where applicable		GEN3N / mm2			
Where special installation instructions are to be followed, particularly for interceptors, give brief details. :		N/A			
All materials and plant available on site?		Yes	☒		
Area released for construction:	Initials:	J.W	Date:	**22.09.23**	

Drainage pipes laid to correct depth and gradient?	Yes	☒	No	☐
Correct P Gravel installed as per specification?	Yes	☒	No	☐
Concrete base installed to specification?	Yes	☐	N/A	☒
Channels / branches / haunching to specification?	Yes	☒	N/A	☐
M/H rings / concrete surround or poly chamber or brickwork to specification?	Yes	☒	N/A	☐
Step irons / ladder rung irons / ladder to specification?	Yes	☐	N/A	☒
Air/ water test carried out to specification?	Yes	☒	No	☐
Inspection carried out by Building Control?	Yes	☒	No	☐
Area correctly backfilled?	Yes	☒	N/A	☐
Actual installed position recorded for as-built drawing?	Yes	☒	N/A	☐
Manhole / chamber / interceptor clean and cover(s) installed at correct level?	Yes	☐	N/A	☐

Area released for next activity:

This check sheet has been issued with the purpose to progress 'the works'.
All work is subject to a final inspection and customer approval at the date of project handover.
This checklist is flexible to allow full checking process by all parties.

Drainage and Manholes checked, approved and released for next activity:

PRINT NAME	COMPANY NAME Torsion, Sub-contractor or third party sign off (delete as applicable)	PRINT JOB TITLE:	SIGNATURE:	DATE:
Aiden Bougourd	**Torsion**	**Engineer**		
Jaiden Watts	**Spencer's**	**Engineer**		

Drainage and Manholes

CHECKSHEET

Drainage guidance

Preparation

- Check risk assessment measures are implemented and method statement is understood by all
- The site team will obtain and use appropriate permits to work from the client, utilities, local authorities or other
- Existing services, which may present hazard or danger, will be identified and appropriate protective measures taken
- Obtain the clients or appropriate authorities instructions regarding the protection, support or other action required to any existing service located in or adjacent to the work. Plan for any temporary support
- Plan plant requirements, methods of work and produce appropriate method statements.

Excavation for services

- Dig by hand or machine in accordance with any permits
- Support excavation as per method statement. Adhere to designed shoring systems produced
- Give the client or building control reasonable opportunity to inspect the excavated formation.

Laying of services

- Concrete grades for services work will be specified or shown on drawings
- Free draining bedding media will be placed in the trench and pipes laid to specific gradients. Ensure that the barrel of the pipe is fully supported by the granular surround
- Measures will be taken to prevent material entering the pipe run
- Air tests will be carried out prior to backfill to ensure that joints are not leaking
- After backfill, each drainage run will be checked, tested and witnessed as required and recorded.

Air tests

In the absence of any specified tests the following procedure will be adopted:

- Seal the ends of the pipe and any junction pipes. Note that the pipelines should not be left with plugs in where there is a risk of trench filling with water before it is backfilled, or floatation may occur
- Attach a u-tube (manometer) and a means of applying the air pressure to one of the plugs
- Apply pressure either by mouth or by a hand pump to achieve a pressure slightly more than 100mm of water in the u-tube
- Allow about five minutes for stabilisation of air temp
- Adjust air pressure to 100mm of water
- Without further pumping, the head of water should not fall by more than 25mm in a period of five minutes
- Should a pipeline marginally fail an air test, it should be re-tested using water.

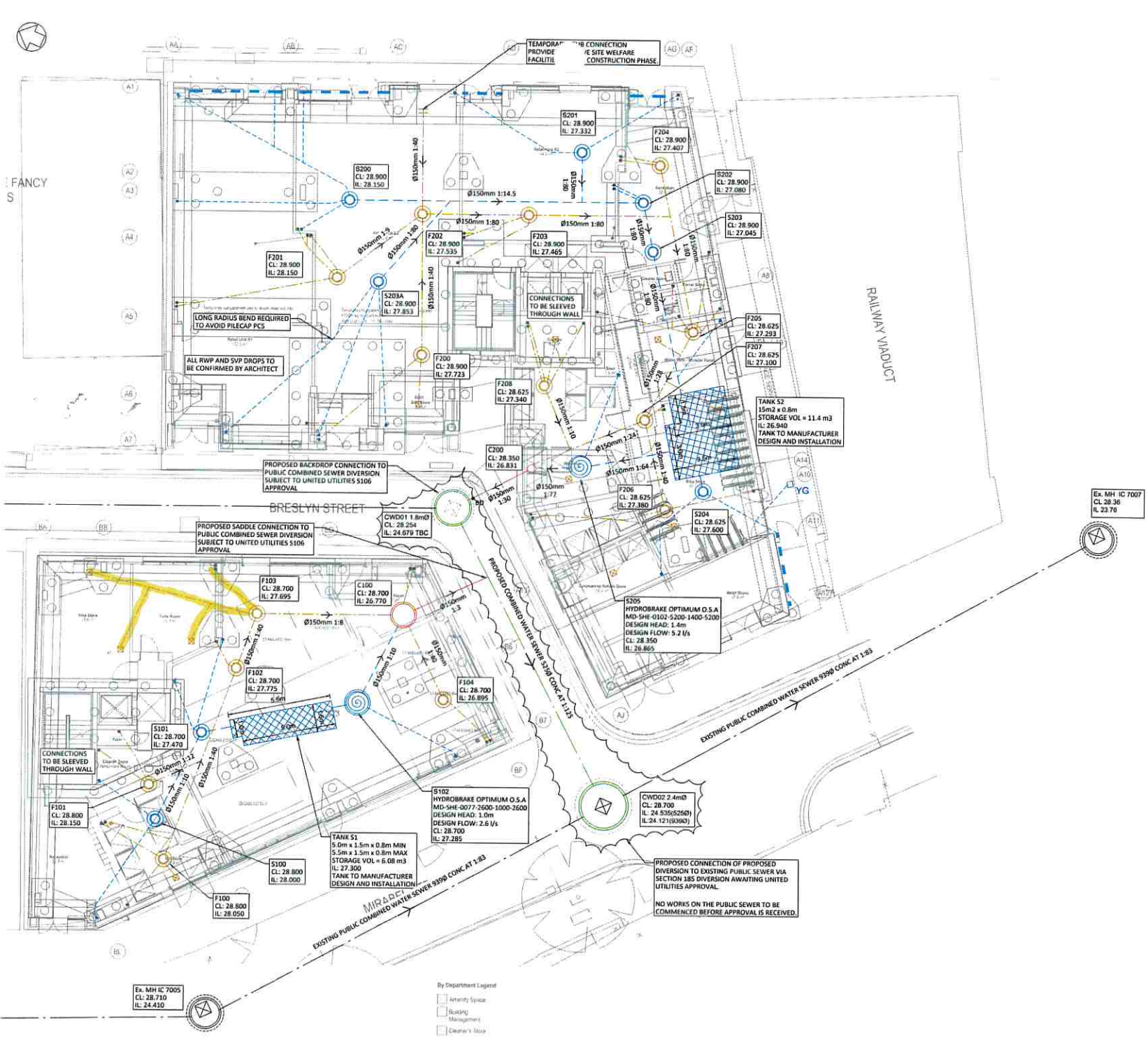
Water test (use only when specified or when air test fails)

The following test procedure will be adopted:

- Fit an expanding plug, suitable to resist the full hydrostatic head, at the lower end of the pipe and in any branches if necessary. The pipes may need strutting to prevent movement
- Fit a similar plug and strutting at the higher end but with access for hose and standpipe
- Fill the system with water ensuring that these are no pockets of entrapped air
- Fill the standpipe to requisite level
- Leave for at least two hours to enable the pipe to become saturated, topping up as necessary
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Finishing of services

- Manholes will be inspected and where specified tested and recorded
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DRAINAGE NOTES

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ALL SURFACE WATER DROP DOWN POSITIONS SHALL HAVE A BEND SET AT INVERT LEVEL NO GREATER THAN 1.3M BELOW FINISH FLOOR LEVEL.

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WHERE NEW DRAINAGE IS SITUATED WITHIN 5 METRES OF NEW OR EXISTING TREES THE PIPEWORK SHALL BE ENCASED IN CONCRETE TO REDUCE THE RISK OF ROOT INGRESS.

ALL DRAINAGE CONNECTING TO THE PUBLIC SEWER NETWORK SHALL NOT COMMENCE UNTIL RECEIPT OF THE APPROVAL FROM THE DRAINAGE AUTHORITY AND SHALL COMPLY WITH REQUIREMENTS USING VITRIFIED CLAY PIPEWORK TO BS EN 295 WITH PLAIN SLEEVED OR SOCKETED FLEXIBLE JOINTS SUBJECT TO APPROVAL.

WHERE DRAINAGE WORKS ARE CARRIED OUT IN THE PUBLIC HIGHWAY THE RELEVANT NECESSARY APPROVALS AND ROAD OPENING NOTICES SHALL BE OBTAINED FROM THE HIGHWAY AUTHORITY AND UTILITY COMPANIES.

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Standard Notes

1. This drawing is to be read in conjunction with all relevant Architect's and Engineer's drawings and the specification.
2. This drawing should not be scaled.
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4. All discrepancies should be reported to the C.A. prior to the commencement of the works.

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Notes and Keys

TOPOGRAPHICAL SURVEY BY SURVEY SOLUTIONS RECEIVED ON: 07.09.22 DRG NO: 41020MCLS-01

ALL DRAINAGE PROPOSALS ARE SUBJECT TO CONFIRMATION OF EXISTING SEWER LEVELS

ALL RWP AND SVP DROPS TO BE CONFIRMED BY ARCHITECT

ALL POP UP REST BENDS ARE SET MIN 450mm BELOW SSL

WHERE POP UPS ARE LOCATED ON PILECAPS / GROUND BEAMS AND A CONTINUOUS GRADE CANNOT BE ACHIEVED PIPE SHOULD BE SET AT A MIN 1:40 GRADIENT UNTIL CLEAR OF PILECAP FOOTPRINT WITH A BEND TO ALLOW FOR STEEP GRADIENT CONNECTION TO DOWNSTREAM INSPECTION CHAMBER. REFER TO TYPICAL DETAIL ON DRAWING C-31001

- FOUL SEWER 100mm DIAMETER UNLESS OTHERWISE NOTED
- STORM SEWER 150mm DIAMETER UNLESS OTHERWISE NOTED
- COMBINED SEWER 150mm DIAMETER UNLESS OTHERWISE NOTED
- EXISTING PUBLIC COMBINED SEWER
- PROPOSED S185 CW SEWER DIVERSION
- FOUL SEWER INSPECTION CHAMBER 450mm DIAMETER
- STORM SEWER INSPECTION CHAMBER 450mm DIAMETER
- SW FLOW CONTROL CHAMBER
- COMBINED SEWER INSPECTION CHAMBER / MANHOLE
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- RWP
- FLOOR GULLY
- SLOT DRAIN ACO M100D WITH BRICKSLOT ST GRATING
- YG YARD GULLY

Date	Rev	Description	Drawn	Chkd
24.08.23	C04	S203 REINSTATED, S203A REFERENCE UPDATED	ZG	CK
21.08.23	C03	POP UP LOCATIONS UPDATED	ZG	CK
03.08.23	C02	PROPOSED DIVERSION UPDATED	ZG	JP
11.07.23	C01	ISSUED FOR CONSTRUCTION	ZG	CK
08.12.22	P07	RWP ADDED/LAYOUT AMENDED	CD	ZG
29.11.22	P06	DRAINAGE UPDATED	CD	CK
25.11.22	P05	DRAINAGE UPDATED	ZG	CK
02.11.22	P04	DRAINAGE UPDATED	CD	CK
18.10.22	P03	UPDATED FFLs AND DRAINAGE	CD	CK
12.09.22	P02	COORDINATED WITH M&E DESIGN	ZG	CK
04.07.22	P01	FOR INFORMATION	CD	CK

Civic Engineers

MANCHESTER LONDON LEEDS BIRMINGHAM

www.civicengineers.com

Project
ONE VICTORIA MANCHESTER

Title
DRAINAGE GENERAL ARRAGEMENT

Status
CONSTRUCTION

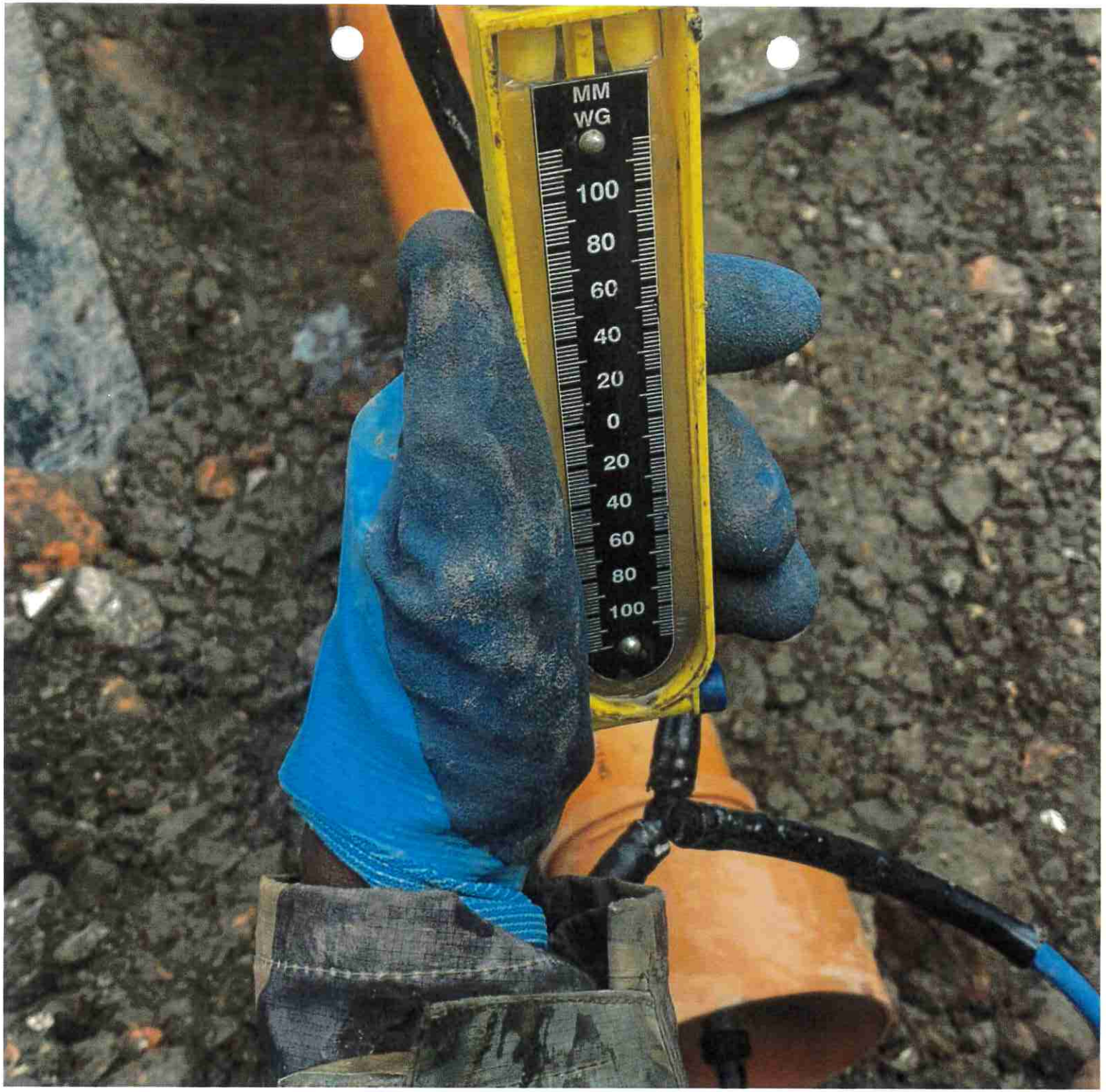
Project Number	Scale @ A1	Date Created	Drawn	Checked	Suitable
756-02	1:100	04.07.22	CD	CK	----

Drawing Number: 204-CIV-00-XX-DR-C-30001

Revision: C04






MM
WG
100
80
60
40
20
0
20
40
60
80
100





Drainage and Manholes

CHECKSHEET

Contract:	**One Victoria**	Contract no.:	**204**		**QA7**
Inspection details					
Description:	Foul Sewer F101 Drainage Runs				
Check sheet details					
Drawing references used:	**204-CIV-00-XX-DR-C-30001**				
Has setting out check sheet been signed off?	Yes ☐				
Details of drainage and manholes to be installed:					
Material:	Foul Pipe PPIC	Size:	**150/100**		
Excavation support method:	**N/A Trench To Be Stepped**				
Concrete grade where applicable	GEN3N / mm2				
Where special installation instructions are to be followed, particularly for interceptors, give brief details. :	N/A				
All materials and plant available on site?	Yes ☐				
Area released for construction:	Initials:	J.W	Date:	**21.09.23**	

Drainage pipes laid to correct depth and gradient?	Yes ☐	No ☐		
Correct P Gravel installed as per specification?	Yes ☐	No ☐		
Concrete base installed to specification?	Yes ☐	N/A ☐		
Channels / branches / haunching to specification?	Yes ☐	N/A ☐		
M/H rings / concrete surround or poly chamber or brickwork to specification?	Yes ☐	N/A ☐		
Step irons / ladder rung irons / ladder to specification?	Yes ☐	N/A ☐		
Air/ water test carried out to specification? need Evidence	Yes ☐	No ☐		
Inspection carried out by Building Control?	Yes ☐	No ☐		
Area correctly backfilled?	Yes ☐	N/A ☐		
Actual installed position recorded for as-built drawing?	Yes ☐	N/A ☐		
Manhole / chamber / interceptor clean and cover(s) installed at correct level?	Yes ☐	N/A ☐		

Area released for next activity:

This check sheet has been issued with the purpose to progress 'the works'.
All work is subject to a final inspection and customer approval at the date of project handover.
This checklist is flexible to allow full checking process by all parties.

Drainage and Manholes checked, approved and released for next activity:

PRINT NAME	COMPANY NAME Torsion, Sub-contractor or third party sign off (delete as applicable)	PRINT JOB TITLE:	SIGNATURE:	DATE:
Aiden Bougourd	**Torsion**	**Engineer**		
Jaiden Watts	**Spencer's**	**Engineer**		

Drainage and Manholes

CHECKSHEET

Drainage guidance

Preparation
- Check risk assessment measures are implemented and method statement is understood by all
- The site team will obtain and use appropriate permits to work from the client, utilities, local authorities or other
- Existing services, which may present hazard or danger, will be identified and appropriate protective measures taken
- Obtain the clients or appropriate authorities instructions regarding the protection, support or other action required to any existing service located in or adjacent to the work. Plan for any temporary support
- Plan plant requirements, methods of work and produce appropriate method statements.

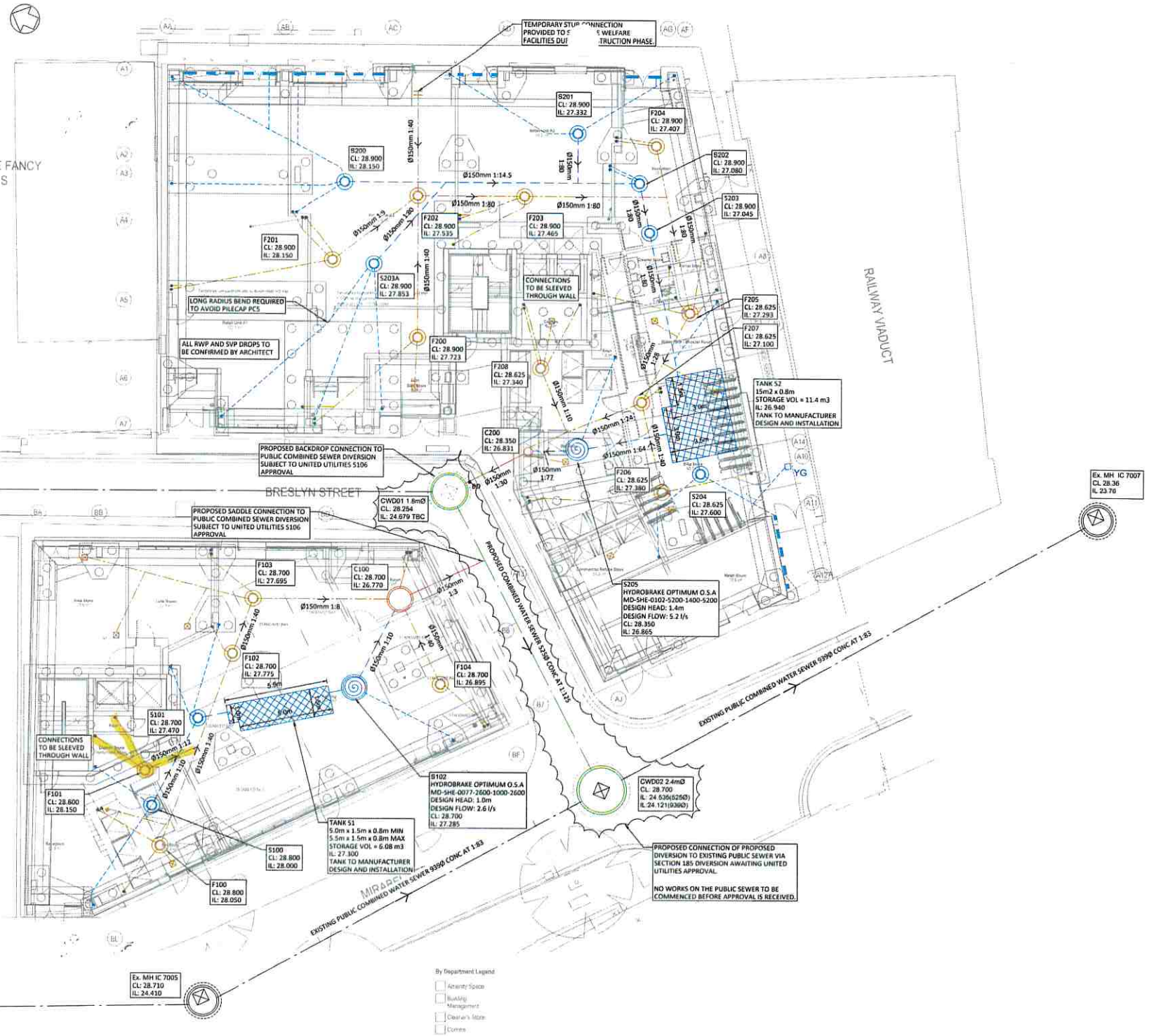
Excavation for services
- Dig by hand or machine in accordance with any permits
- Support excavation as per method statement. Adhere to designed shoring systems produced
- Give the client or building control reasonable opportunity to inspect the excavated formation.

Laying of services
- Concrete grades for services work will be specified or shown on drawings
- Free draining bedding media will be placed in the trench and pipes laid to specific gradients. Ensure that the barrel of the pipe is fully supported by the granular surround
- Measures will be taken to prevent material entering the pipe run
- Air tests will be carried out prior to backfill to ensure that joints are not leaking
- After backfill, each drainage run will be checked, tested and witnessed as required and recorded.

Air tests
In the absence of any specified tests the following procedure will be adopted:
- Seal the ends of the pipe and any junction pipes. Note that the pipelines should not be left with plugs in where there is a risk of trench filling with water before it is backfilled, or floatation may occur
- Attach a u-tube (manometer) and a means of applying the air pressure to one of the plugs
- Apply pressure either by mouth or by a hand pump to achieve a pressure slightly more than 100mm of water in the u-tube
- Allow about five minutes for stabilisation of air temp
- Adjust air pressure to 100mm of water
- Without further pumping, the head of water should not fall by more than 25mm in a period of five minutes
- Should a pipeline marginally fail an air test, it should be re-tested using water.

Water test (use only when specified or when air test fails)
The following test procedure will be adopted:
- Fit an expanding plug, suitable to resist the full hydrostatic head, at the lower end of the pipe and in any branches if necessary. The pipes may need strutting to prevent movement
- Fit a similar plug and strutting at the higher end but with access for hose and standpipe
- Fill the system with water ensuring that these are no pockets of entrapped air
- Fill the standpipe to requisite level
- Leave for at least two hours to enable the pipe to become saturated, topping up as necessary
- After the absorption period measure the loss of water from the system be noting the amount of water needed to maintain the level in the standpipe over a further period of 30 minutes, the standpipe being topped up at regular intervals of five minutes.

Finishing of services
- Manholes will be inspected and where specified tested and recorded
- Where specified or instructed by the client or statutory bodies, provide markers, warning tape, colour coding on pipes, or coloured concrete to identify the position of underground services
- When they differ from working drawings, record the position and orientation of pipe junctions, service crossings, land drains etc.



HEALTH & SAFETY: THE WORKS SHALL BE CARRIED OUT BY SPECIALIST COMPETENT AND EXPERIENCED CONTRACTORS. ALL OPERATIVES SHALL HAVE RECEIVED FULL AND APPROPRIATE TRAINING WITH APPROPRIATE QUALIFICATIONS FOR THE OPERATIONS THEY ARE REQUIRED TO UNDERTAKE. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT HEALTH & SAFETY REGULATIONS.

DRAINAGE NOTES
ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER FOR ACTION PRIOR TO CONSTRUCTION.

ALL DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY AND IN CONJUNCTION WITH ALL RELEVANT BRITISH STANDARDS, CODES OF PRACTICE AND 'DESIGN AND CONSTRUCTION GUIDANCE FOR FOUL AND SURFACE WATER SEWERS' AND ADDENDUMS AS APPROPRIATE.
ALL DRAINAGE SHALL COMPLY WITH THE TYPICAL DRAINAGE CONSTRUCTION DETAILS AND THE REQUIREMENTS OF BS EN 752.

ACCESS COVERS AND FRAMES SHALL COMPLY WITH THE LOADINGS SPECIFIED AND TO BS EN 124 AND KITEMARKED OR IF RECESSED COVERS ARE SPECIFIED THEN IN ACCORDANCE WITH FACTA ASSOCIATION EQUIVALENT.

ALL INTERNAL COVERS TO BE DOUBLE SEALED RECESSED COVERS TO ACCEPT PROPOSED FLOOR FINISHES.

THE PROPOSED BUILDING OUTLINES SHOWN ON THIS DRAWING ARE FOR INFORMATION ONLY. REFER TO ARCHITECTS PLANS FOR SETTING OUT INFORMATION AND DETAILS.

FOR SETTING OUT DIMENSIONS OF SS'S, SVP'S, RWP'S, FLOOR GULLY & OTHER DRAINAGE 'POP UP' LOCATIONS, REFER TO ARCHITECTS OR MECHANICAL & ELECTRICAL ENGINEERS DRAWINGS. LOCATION OF EXTERNAL CHANNEL DRAINS AND GULLY LOCATIONS / REQUIREMENTS TO BE CONFIRMED BY ARCHITECT.
ALL DRAINAGE PIPEWORK SHOWN SHALL BE 100MM DIAMETER FOR FOUL AND 150MM FOR SURFACE WATER UNLESS NOTED OTHERWISE.
ALL DRAINAGE PIPEWORK SHALL BE LAID SOFFIT TO SOFFIT UNLESS NOTED OTHERWISE.

ALL UNDERSLAB DRAINAGE SHALL BE LAID AT GRADIENTS OF 1:80 MIN. FOR FOUL PIPEWORK AND 1:100 MIN. FOR SURFACE WATER UNLESS NOTED OTHERWISE. ALL UNDERSLAB DRAINAGE SHALL BE CLEAR OF FOUNDATIONS UNLESS SHOWN OTHERWISE.
ALL BENDS IN PIPEWORK TO BE AS LARGE A RADIUS AS POSSIBLE (EXCLUDING CONNECTIONS TO CHAMBERS) TO ENSURE FREE FLOW. SHORT RADIUS BENDS TO BE AGREED WITH DRAINAGE ENGINEER.

ALL SURFACE WATER DROP DOWN POSITIONS SHALL HAVE A BEND SET AT INVERT LEVEL NO GREATER THAN 1.3M BELOW FINISH FLOOR LEVEL.

AT LEAST ONE SOIL PIPE AT THE HEAD OF EACH FOUL RUN SHALL BE VENTED TO THE ATMOSPHERE. ALL SVPS, SSS AND RWP DOWNPIPES SHALL BE ACCESSIBLE AT GROUND LEVEL FOR RODDING PURPOSES.

COVER LEVELS SHOWN ON THIS DRAWING ARE APPROXIMATE AND SHALL BE ADJUSTED TO SUIT LEVELS ON SITE BY CONTRACTOR. COVERS SHALL BE ORIENTATED TO SUIT PAVEMENT FINISHES WHERE APPROPRIATE.
ALL COVER LEVELS ARE TO BE CONFIRMED BY THE ARCHITECT

ALL PRIVATE DRAINAGE PIPEWORK FOR FOUL AND SURFACE WATER SYSTEMS HAVE BEEN DESIGNED ON THE BASIS OF UPVC TO BS EN 1401-1, UNLESS NOTED OTHERWISE.

CONCRETE ENCASEMENT OF THE PIPEWORK SHALL BE REQUIRED WHERE VERTICAL CLEARANCE BETWEEN TWO PIPES CROSSING IS LESS THAN 300MM.
WHERE NEW DRAINAGE IS SITUATED WITHIN 5 METRES OF NEW OR EXISTING TREES THE PIPEWORK SHALL BE ENCASED IN CONCRETE TO REDUCE THE RISK OF ROOT INGRESS.

ALL DRAINAGE CONNECTING TO THE PUBLIC SEWER NETWORK SHALL NOT COMMENCE UNTIL RECEIPT OF THE APPROVAL FROM THE DRAINAGE AUTHORITY AND SHALL COMPLY WITH REQUIREMENTS USING VITRIFIED CLAY PIPEWORK TO BS EN 295 WITH PLAIN SLEEVED OR SOCKETED FLEXIBLE JOINTS SUBJECT TO APPROVAL.

WHERE DRAINAGE WORKS ARE CARRIED OUT IN THE PUBLIC HIGHWAY THE RELEVANT NECESSARY APPROVALS AND ROAD OPENING NOTICES SHALL BE OBTAINED FROM THE HIGHWAY AUTHORITY AND UTILITY COMPANIES.

PRIOR TO CONSTRUCTION THE FLOW CONTROL MANUFACTURER'S DRAWING AND HYDRAULIC TABLE SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL

PRIOR TO CONSTRUCTION THE ATTENUATION TANK MANUFACTURER'S DRAWINGS SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL

UPON COMPLETION ALL NEW DRAINAGE INSTALLATION TOGETHER WITH ANY EXISTING DRAINAGE RETAINED SHALL BE JETTED AND CCTV SURVEYED UPON COMPLETION. CONTRACTOR TO ENSURE THAT THE DRAINAGE SYSTEM IS FULLY OPERATIONAL, FREE OF EXCESS DEBRIS/SILT AND ALL IDENTIFIED FAULTS RECTIFIED.

Standard Notes

1. This drawing is to be read in conjunction with all relevant Architect's and Engineer's drawings and the specification.
2. This drawing should not be scaled.
3. All dimensions are to be verified by the contractor on site.
4. All discrepancies should be reported to the C.A. prior to the commencement of the works.

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Notes and Keys

TOPOGRAPHICAL SURVEY BY SURVEY SOLUTIONS. RECEIVED ON: 07.09.22 DRG NO: 41020MCLS-01

ALL DRAINAGE PROPOSALS ARE SUBJECT TO CONFIRMATION OF EXISTING SEWER LEVELS

ALL RWP AND SVP DROPS TO BE CONFIRMED BY ARCHITECT

ALL POP UP REST BENDS ARE SET MIN 450mm BELOW SSL

WHERE POP UPS ARE LOCATED ON PILECAPS / GROUND BEAMS AND A CONTINUOUS GRADE CANNOT BE ACHIEVED PIPE SHOULD BE SET AT A MIN 1:40 GRADIENT UNTIL CLEAR OF PILECAP FOOTPRINT WITH A BEND TO ALLOW FOR STEEP GRADIENT CONNECTION TO DOWNSTREAM INSPECTION CHAMBER. REFER TO TYPICAL DETAIL ON DRAWING C-31001

- FOUL SEWER 100mm DIAMETER UNLESS OTHERWISE NOTED
- STORM SEWER 150mm DIAMETER UNLESS OTHERWISE NOTED
- COMBINED SEWER 150mm DIAMETER UNLESS OTHERWISE NOTED
- EXISTING PUBLIC COMBINED SEWER
- PROPOSED S185 CW SEWER DIVERSION
- FOUL SEWER INSPECTION CHAMBER 450mm DIAMETER
- STORM SEWER INSPECTION CHAMBER 450mm DIAMETER
- SW FLOW CONTROL CHAMBER
- COMBINED SEWER INSPECTION CHAMBER / MANHOLE
- STUB STACK
- SVP
- RWP
- FLOOR GULLY
- SLOT DRAIN ACO M100D WITH BRICKSLOT ST GRATING
- YG YARD GULLY

Date	Rev	Description	Drawn	Chkd
24.08.23	C04	S203 IN/OUT ASSD, S203A REFERENCE UPDATED	ZG	CK
21.08.23	C03	POP UP LOCATIONS UPDATED	ZG	CK
01.08.23	C02	PROPOSED DIVERSION UPDATED	ZG	JP
13.07.23	C01	ISSUED FOR CONSTRUCTION	ZG	CK
06.12.22	P07	RWP ADDED/LAYOUT AMENDED	CD	ZG
29.11.22	P06	DRAINAGE UPDATED	CD	CK
25.11.22	P05	DRAINAGE UPDATED	ZG	CK
02.11.22	P04	DRAINAGE UPDATED	CD	CK
18.10.22	P03	UPDATED FFLs AND DRAINAGE	CD	CK
12.09.22	P02	COORDINATED WITH MBE DESIGN	ZG	CK
04.07.22	P01	FOR INFORMATION	CD	CK

Civic Engineers

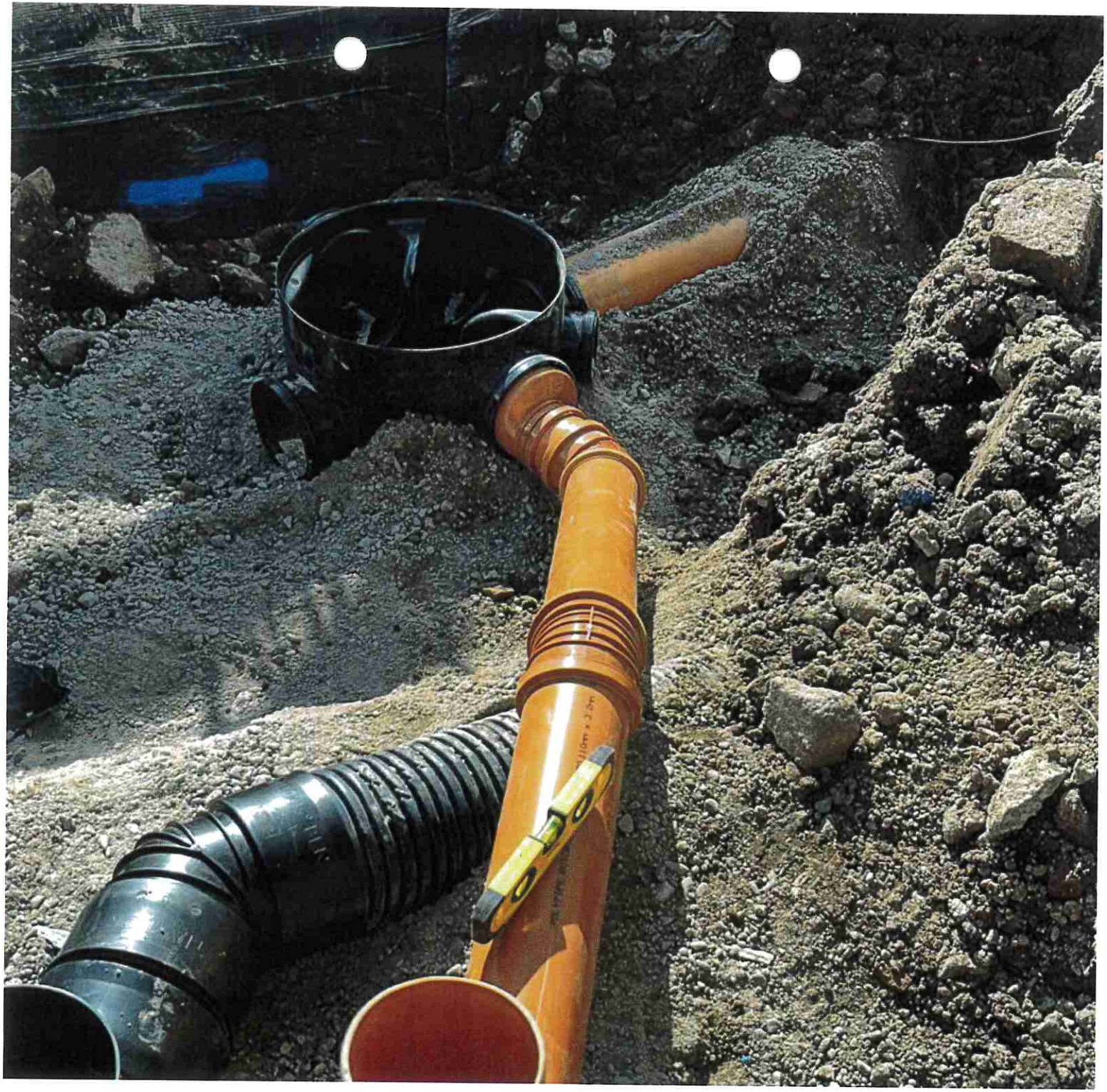
Project
ONE VICTORIA MANCHESTER

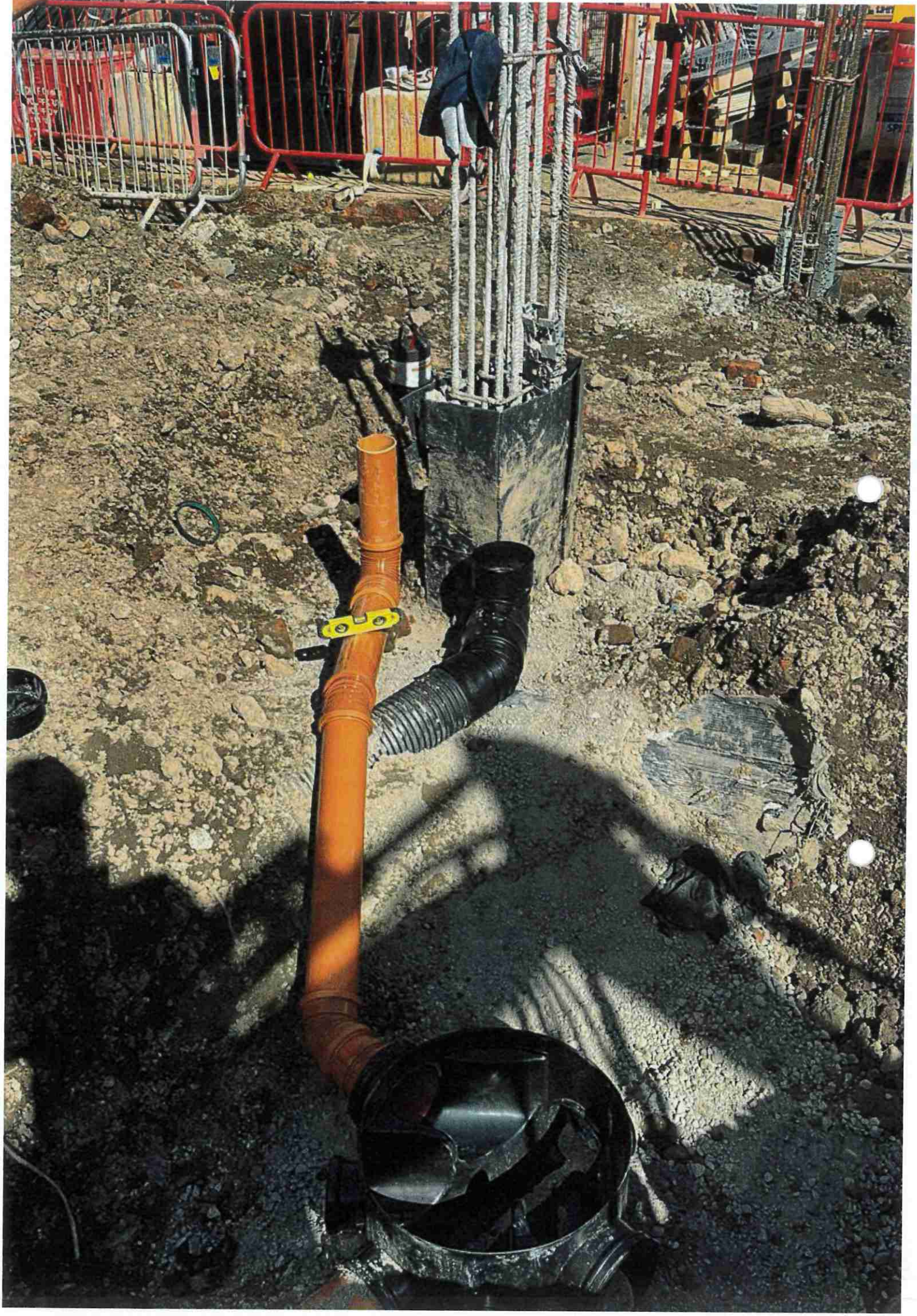
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DRAINAGE GENERAL ARRAGEMENT

Status
CONSTRUCTION

Project Number	Scale @ A1	Date Created	Drawn	Checked	Suitable
756-02	1:100	04.07.22	CD	CK	----

Drawing Number: 204-CIV-00-XX-DR-C-30001
Revision: C04





Drainage and Manholes

CHECKSHEET

Contract:	**One Victoria**	Contract no.:	**204**		**QA6**
Inspection details					
Description:	Foul Sewer F102 Drainage Run				
Check sheet details					
Drawing references used:	**204-CIV-00-XX-DR-C-30001**				
Has setting out check sheet been signed off?	Yes	☒			
Details of drainage and manholes to be installed:					
Material:	Foul Pipe PPIC		Size:	**150/100**	
Excavation support method:		**N/A Trench To Be Stepped**			
Concrete grade where applicable		GEN3N / mm2			
Where special installation instructions are to be followed, particularly for interceptors, give brief details. :		N/A			
All materials and plant available on site?		Yes	☒		
Area released for construction:	Initials:	J.W	Date:	**21.09.23**	

Drainage pipes laid to correct depth and gradient?	Yes	☒	No	☐
Correct P Gravel installed as per specification?	Yes	☒	No	☐
Concrete base installed to specification?	Yes	☐	N/A	☒
Channels / branches / haunching to specification?	Yes	☒	N/A	☐
M/H rings / concrete surround or poly chamber or brickwork to specification?	Yes	☒	N/A	☐
Step irons / ladder rung irons / ladder to specification?	Yes	☐	N/A	☒
Air/ water test carried out to specification? need evidence	Yes	☒	No	☐
Inspection carried out by Building Control?	Yes	☒	No	☐
Area correctly backfilled?	Yes	☒	N/A	☐
Actual installed position recorded for as-built drawing?	Yes	☒	N/A	☐
Manhole / chamber / interceptor clean and cover(s) installed at correct level?	Yes	☐	N/A	☐

Area released for next activity:

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All work is subject to a final inspection and customer approval at the date of project handover.
This checklist is flexible to allow full checking process by all parties.

Drainage and Manholes checked, approved and released for next activity:

PRINT NAME	COMPANY NAME Torsion, Sub-contractor or third party sign off (delete as applicable)	PRINT JOB TITLE:	SIGNATURE:	DATE:
Aiden Bougourd	**Torsion**	**Engineer**		
Jaiden Watts	**Spencer's**	**Engineer**		

Drainage and Manholes

CHECKSHEET

Drainage guidance

Preparation
- Check risk assessment measures are implemented and method statement is understood by all
- The site team will obtain and use appropriate permits to work from the client, utilities, local authorities or other
- Existing services, which may present hazard or danger, will be identified and appropriate protective measures taken
- Obtain the clients or appropriate authorities instructions regarding the protection, support or other action required to any existing service located in or adjacent to the work. Plan for any temporary support
- Plan plant requirements, methods of work and produce appropriate method statements.

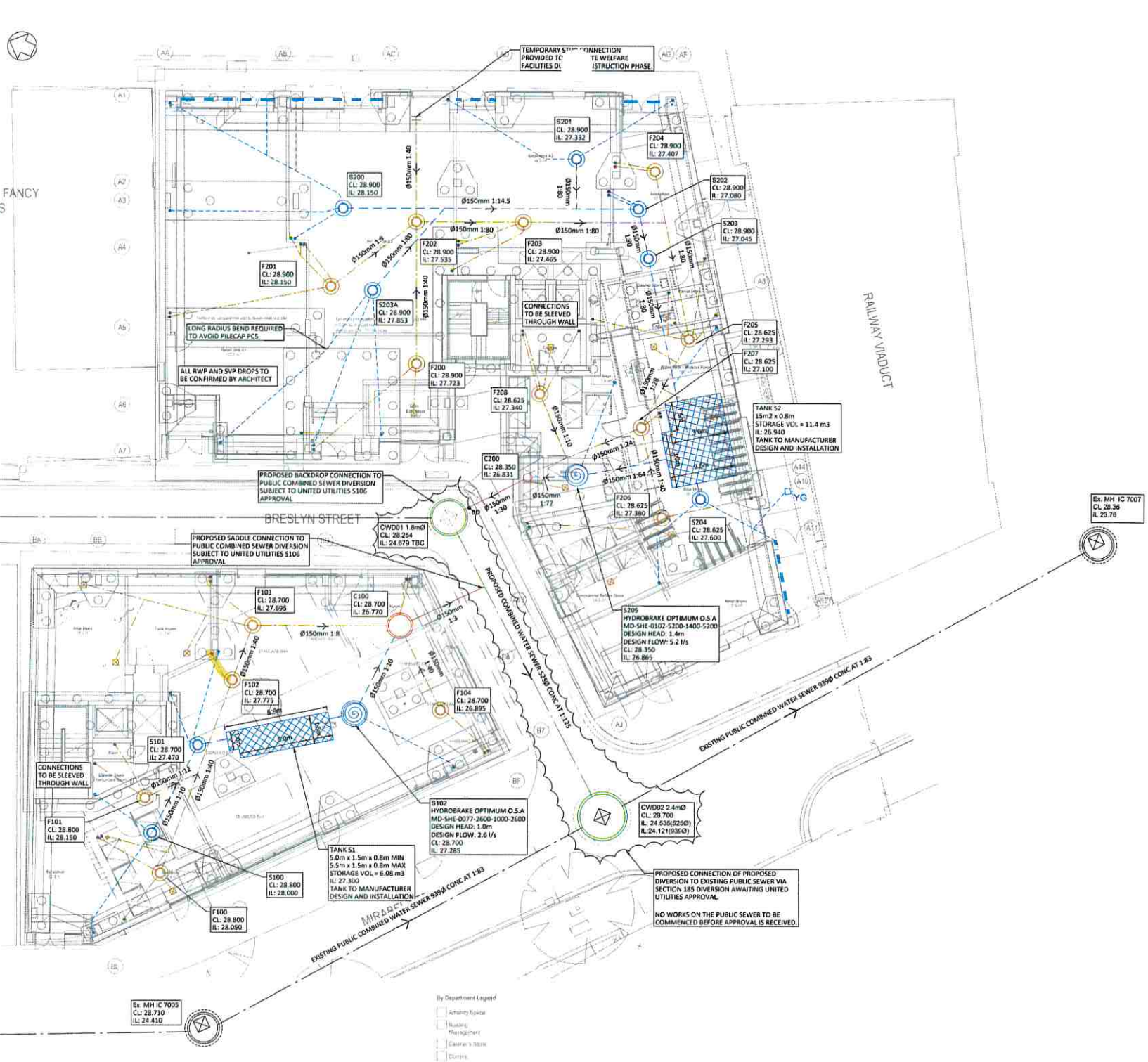
Excavation for services
- Dig by hand or machine in accordance with any permits
- Support excavation as per method statement. Adhere to designed shoring systems produced
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Laying of services
- Concrete grades for services work will be specified or shown on drawings
- Free draining bedding media will be placed in the trench and pipes laid to specific gradients. Ensure that the barrel of the pipe is fully supported by the granular surround
- Measures will be taken to prevent material entering the pipe run
- Air tests will be carried out prior to backfill to ensure that joints are not leaking
- After backfill, each drainage run will be checked, tested and witnessed as required and recorded.

Air tests
In the absence of any specified tests the following procedure will be adopted:
- Seal the ends of the pipe and any junction pipes. Note that the pipelines should not be left with plugs in where there is a risk of trench filling with water before it is backfilled, or floatation may occur
- Attach a u-tube (manometer) and a means of applying the air pressure to one of the plugs
- Apply pressure either by mouth or by a hand pump to achieve a pressure slightly more than 100mm of water in the u-tube
- Allow about five minutes for stabilisation of air temp
- Adjust air pressure to 100mm of water
- Without further pumping, the head of water should not fall by more than 25mm in a period of five minutes
- Should a pipeline marginally fail an air test, it should be re-tested using water.

Water test (use only when specified or when air test fails)
The following test procedure will be adopted:
- Fit an expanding plug, suitable to resist the full hydrostatic head, at the lower end of the pipe and in any branches if necessary. The pipes may need strutting to prevent movement
- Fit a similar plug and strutting at the higher end but with access for hose and standpipe
- Fill the system with water ensuring that these are no pockets of entrapped air
- Fill the standpipe to requisite level
- Leave for at least two hours to enable the pipe to become saturated, topping up as necessary
- After the absorption period measure the loss of water from the system be noting the amount of water needed to maintain the level in the standpipe over a further period of 30 minutes, the standpipe being topped up at regular intervals of five minutes.

Finishing of services
- Manholes will be inspected and where specified tested and recorded
- Where specified or instructed by the client or statutory bodies, provide markers, warning tape, colour coding on pipes, or coloured concrete to identify the position of underground services
- When they differ from working drawings, record the position and orientation of pipe junctions, service crossings, land drains etc.



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DRAINAGE NOTES

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ACCESS COVERS AND FRAMES SHALL COMPLY WITH THE LOADINGS SPECIFIED AND TO BS EN 124 AND KITEMARKED OR IF RECESSED COVERS ARE SPECIFIED THEN IN ACCORDANCE WITH FACTA ASSOCIATION EQUIVALENT.

ALL INTERNAL COVERS TO BE DOUBLE SEALED RECESSED COVERS TO ACCEPT PROPOSED FLOOR FINISHES.

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ALL DRAINAGE PIPEWORK SHALL BE LAID SOFFIT TO SOFFIT UNLESS NOTED OTHERWISE.

ALL UNDERSLAB DRAINAGE SHALL BE LAID AT GRADIENTS OF 1:80 MIN. FOR FOUL PIPEWORK AND 1:100 MIN. FOR SURFACE WATER UNLESS NOTED OTHERWISE. ALL UNDERSLAB DRAINAGE SHALL BE CLEAR OF FOUNDATIONS UNLESS SHOWN OTHERWISE.
ALL BENDS IN PIPEWORK TO BE AS LARGE A RADIUS AS POSSIBLE (EXCLUDING CONNECTIONS TO CHAMBERS) TO ENSURE FREE FLOW. SHORT RADIUS BENDS TO BE AGREED WITH DRAINAGE ENGINEER.

ALL SURFACE WATER DROP DOWN POSITIONS SHALL HAVE A BEND SET AT INVERT LEVEL NO GREATER THAN 1.3M BELOW FINISH FLOOR LEVEL.

AT LEAST ONE SOIL PIPE AT THE HEAD OF EACH FOUL RUN SHALL BE VENTED TO THE ATMOSPHERE. ALL SVPS, SSS AND RWP DOWNPIPES SHALL BE ACCESSIBLE AT GROUND LEVEL FOR RODDING PURPOSES.

COVER LEVELS SHOWN ON THIS DRAWING ARE APPROXIMATE AND SHALL BE ADJUSTED TO SUIT LEVELS ON SITE BY CONTRACTOR. COVERS SHALL BE ORIENTATED TO SUIT PAVEMENT FINISHES WHERE APPROPRIATE.
ALL COVER LEVELS ARE TO BE CONFIRMED BY THE ARCHITECT

ALL PRIVATE DRAINAGE PIPEWORK FOR FOUL AND SURFACE WATER SYSTEMS HAVE BEEN DESIGNED ON THE BASIS OF UPVC TO BS EN 1401-1, UNLESS NOTED OTHERWISE.

CONCRETE ENCASEMENT OF THE PIPEWORK SHALL BE REQUIRED WHERE VERTICAL CLEARANCE BETWEEN TWO PIPES CROSSING IS LESS THAN 300MM.
WHERE NEW DRAINAGE IS SITUATED WITHIN 5 METRES OF NEW OR EXISTING TREES THE PIPEWORK SHALL BE ENCASED IN CONCRETE TO REDUCE THE RISK OF ROOT INGRESS.

ALL DRAINAGE CONNECTING TO THE PUBLIC SEWER NETWORK SHALL NOT COMMENCE UNTIL RECEIPT OF THE APPROVAL FROM THE DRAINAGE AUTHORITY AND SHALL COMPLY WITH REQUIREMENTS USING VITRIFIED CLAY PIPEWORK TO BS EN 295 WITH PLAIN SLEEVED OR SOCKETED FLEXIBLE JOINTS SUBJECT TO APPROVAL.

WHERE DRAINAGE WORKS ARE CARRIED OUT IN THE PUBLIC HIGHWAY THE RELEVANT NECESSARY APPROVALS AND ROAD OPENING NOTICES SHALL BE OBTAINED FROM THE HIGHWAY AUTHORITY AND UTILITY COMPANIES.

PRIOR TO CONSTRUCTION THE FLOW CONTROL MANUFACTURER'S DRAWING AND HYDRAULIC TABLE SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL

PRIOR TO CONSTRUCTION THE ATTENUATION TANK MANUFACTURER'S DRAWINGS SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL

UPON COMPLETION ALL NEW DRAINAGE INSTALLATION TOGETHER WITH ANY EXISTING DRAINAGE RETAINED SHALL BE JETTED AND CCTV SURVEYED UPON COMPLETION. CONTRACTOR TO ENSURE THAT THE DRAINAGE SYSTEM IS FULLY OPERATIONAL, FREE OF EXCESS DEBRIS/SILT AND ALL IDENTIFIED FAULTS RECTIFIED.

Standard Notes

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2. This drawing should not be scaled.
3. All dimensions are to be verified by the contractor on site.
4. All discrepancies should be reported to the C.A. prior to the commencement of the works.

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Notes and Keys

TOPOGRAPHICAL SURVEY BY SURVEY SOLUTIONS RECEIVED ON: 07.09.22 DRG NO: 41020MCLS-01

ALL DRAINAGE PROPOSALS ARE SUBJECT TO CONFIRMATION OF EXISTING SEWER LEVELS

ALL RWP AND SVP DROPS TO BE CONFIRMED BY ARCHITECT

ALL POP UP REST BENDS ARE SET MIN 450mm BELOW SSL

WHERE POP UPS ARE LOCATED ON PILECAPS / GROUND BEAMS AND A CONTINUOUS GRADE CANNOT BE ACHIEVED PIPE SHOULD BE SET AT A MIN 1:40 GRADIENT UNTIL CLEAR OF PILECAP FOOTPRINT WITH A BEND TO ALLOW FOR STEEP GRADIENT CONNECTION TO DOWNSTREAM INSPECTION CHAMBER. REFER TO TYPICAL DETAIL ON DRAWING C-31001

- FOUL SEWER 100mm DIAMETER UNLESS OTHERWISE NOTED
- STORM SEWER 150mm DIAMETER UNLESS OTHERWISE NOTED
- COMBINED SEWER 150mm DIAMETER UNLESS OTHERWISE NOTED
- EXISTING PUBLIC COMBINED SEWER
- PROPOSED S185 CW SEWER DIVERSION
- FOUL SEWER INSPECTION CHAMBER 450mm DIAMETER
- STORM SEWER INSPECTION CHAMBER 450mm DIAMETER
- SW FLOW CONTROL CHAMBER
- COMBINED SEWER INSPECTION CHAMBER / MANHOLE
- STUB STACK
- SVP
- RWP
- FLOOR GULLY
- SLOT DRAIN ACO M100D WITH BRICKSLOT ST GRATING
- YG YARD GULLY

Date	Rev	Description	Drawn	Chkd
24.08.23	C04	S201/S204 REINSTATED, S203A REFERENCE UPDATED	ZG	CK
21.08.23	C03	POP UP LOCATIONS UPDATED	ZG	CK
03.08.23	C02	PROPOSED DIVERSION UPDATED	ZG	JP
11.07.23	C01	ISSUED FOR CONSTRUCTION	ZG	CK
06.12.22	P07	RWP ADDED/LAYOUT AMENDED	CD	ZG
29.11.22	P06	DRAINAGE UPDATED	CD	CK
25.11.22	P05	DRAINAGE UPDATED	ZG	CK
02.11.22	P04	DRAINAGE UPDATED	CD	CK
18.10.22	P03	UPDATED FFLs AND DRAINAGE	CD	CK
12.08.22	P02	COORDINATED WITH M&E DESIGN	ZG	CK
04.07.22	P01	FOR INFORMATION	CD	CK

Civic Engineers

MANCHESTER LONDON LEEDS GLASGOW

Project
ONE VICTORIA MANCHESTER

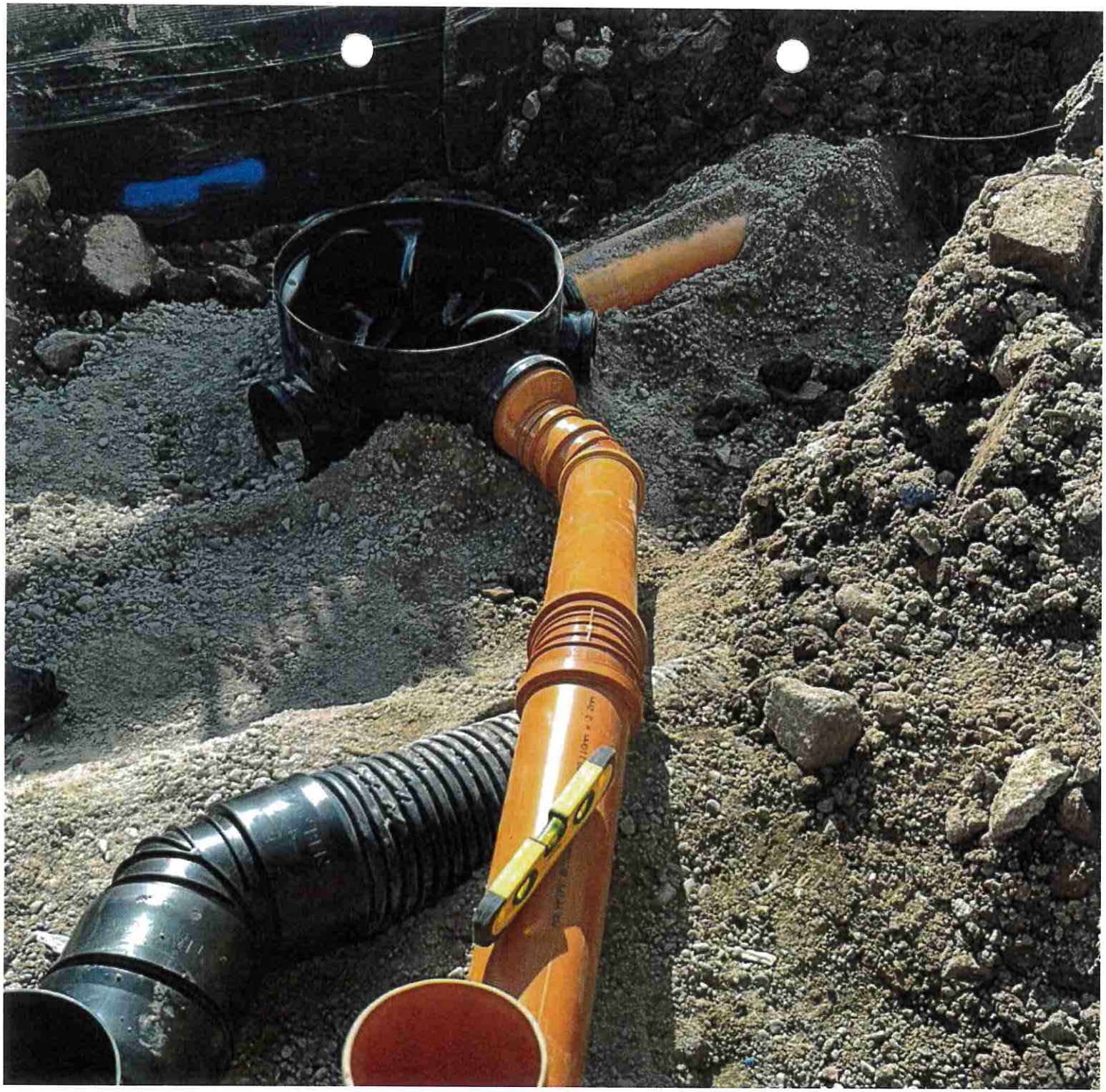
Title
DRAINAGE GENERAL ARRAGEMENT

Status
CONSTRUCTION

Project Number	Scale @ A1	Date Created	Drawn	Checked	Suitable
756-02	1:100	04.07.22	CD	CK	----

Drawing Number
204-CIV-00-XX-DR-C-30001

Revision
C04





Drainage and Manholes

CHECKSHEET

Contract:	**One Victoria**	Contract no.:	**204**		**QA5**
Inspection details					
Description:	Foul Sewer F100-F102 Drainage Run				
Check sheet details					
Drawing references used:	**204-CIV-00-XX-DR-C-30001**				
Has setting out check sheet been signed off?	Yes	☐			
Details of drainage and manholes to be installed:					
Material:	Foul Pipe PPIC		Size:	**150**	
Excavation support method:			**N/A Trench To Be Stepped**		
Concrete grade where applicable			GEN3N / mm2		
Where special installation instructions are to be followed, particularly for interceptors, give brief details. :			N/A		
All materials and plant available on site?		Yes	☐		
Area released for construction:	Initials:	J.W	Date:	**21.09.23**	

Drainage pipes laid to correct depth and gradient?	Yes	☐	No	☐
Correct P Gravel installed as per specification?	Yes	☐	No	☐
Concrete base installed to specification?	Yes	☐	N/A	☐
Channels / branches / haunching to specification?	Yes	☐	N/A	☐
M/H rings / concrete surround or poly chamber or brickwork to specification?	Yes	☐	N/A	☐
Step irons / ladder rung irons / ladder to specification?	Yes	☐	N/A	☐
Air/ water test carried out to specification?	Yes	☐	No	☐
Inspection carried out by Building Control?	Yes	☐	No	☐
Area correctly backfilled?	Yes	☐	N/A	☐
Actual installed position recorded for as-built drawing?	Yes	☐	N/A	☐
Manhole / chamber / interceptor clean and cover(s) installed at correct level?	Yes	☐	N/A	☐

Area released for next activity:

This check sheet has been issued with the purpose to progress 'the works'.
All work is subject to a final inspection and customer approval at the date of project handover.
This checklist is flexible to allow full checking process by all parties.

Drainage and Manholes checked, approved and released for next activity:

PRINT NAME	COMPANY NAME Torsion, Sub-contractor or third party sign off (delete as applicable)	PRINT JOB TITLE:	SIGNATURE:	DATE:
Aiden Bougourd	**Torsion**	**Engineer**		
Jaiden Watts	**Spencer's**	**Engineer**		

Drainage and Manholes

CHECKSHEET

Drainage guidance

Preparation
- Check risk assessment measures are implemented and method statement is understood by all
- The site team will obtain and use appropriate permits to work from the client, utilities, local authorities or other
- Existing services, which may present hazard or danger, will be identified and appropriate protective measures taken
- Obtain the clients or appropriate authorities instructions regarding the protection, support or other action required to any existing service located in or adjacent to the work. Plan for any temporary support
- Plan plant requirements, methods of work and produce appropriate method statements.

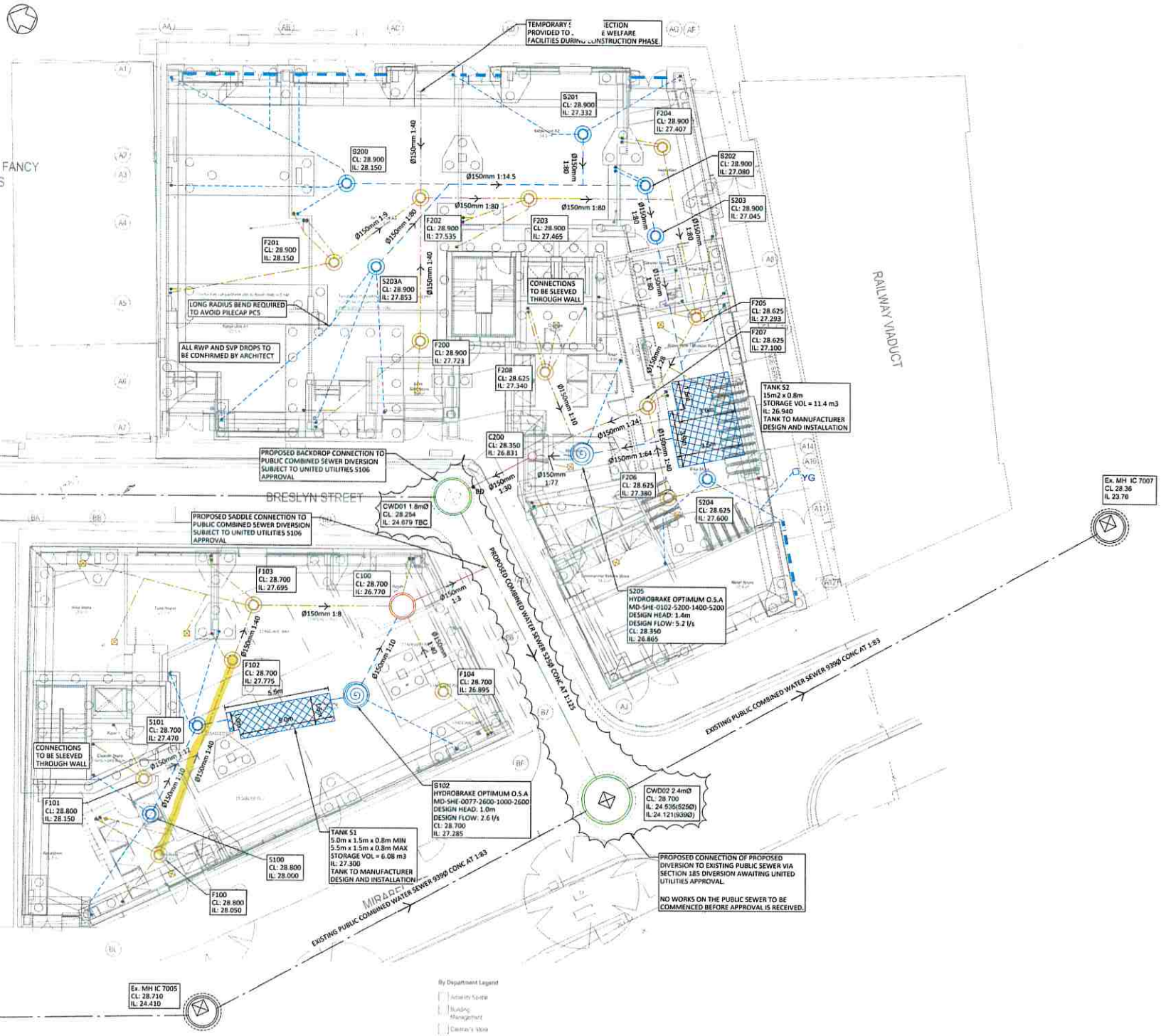
Excavation for services
- Dig by hand or machine in accordance with any permits
- Support excavation as per method statement. Adhere to designed shoring systems produced
- Give the client or building control reasonable opportunity to inspect the excavated formation.

Laying of services
- Concrete grades for services work will be specified or shown on drawings
- Free draining bedding media will be placed in the trench and pipes laid to specific gradients. Ensure that the barrel of the pipe is fully supported by the granular surround
- Measures will be taken to prevent material entering the pipe run
- Air tests will be carried out prior to backfill to ensure that joints are not leaking
- After backfill, each drainage run will be checked, tested and witnessed as required and recorded.

Air tests
In the absence of any specified tests the following procedure will be adopted:
- Seal the ends of the pipe and any junction pipes. Note that the pipelines should not be left with plugs in where there is a risk of trench filling with water before it is backfilled, or floatation may occur
- Attach a u-tube (manometer) and a means of applying the air pressure to one of the plugs
- Apply pressure either by mouth or by a hand pump to achieve a pressure slightly more than 100mm of water in the u-tube
- Allow about five minutes for stabilisation of air temp
- Adjust air pressure to 100mm of water
- Without further pumping, the head of water should not fall by more than 25mm in a period of five minutes
- Should a pipeline marginally fail an air test, it should be re-tested using water.

Water test (use only when specified or when air test fails)
The following test procedure will be adopted:
- Fit an expanding plug, suitable to resist the full hydrostatic head, at the lower end of the pipe and in any branches if necessary. The pipes may need strutting to prevent movement
- Fit a similar plug and strutting at the higher end but with access for hose and standpipe
- Fill the system with water ensuring that these are no pockets of entrapped air
- Fill the standpipe to requisite level
- Leave for at least two hours to enable the pipe to become saturated, topping up as necessary
- After the absorption period measure the loss of water from the system be noting the amount of water needed to maintain the level in the standpipe over a further period of 30 minutes, the standpipe being topped up at regular intervals of five minutes.

Finishing of services
- Manholes will be inspected and where specified tested and recorded
- Where specified or instructed by the client or statutory bodies, provide markers, warning tape, colour coding on pipes, or coloured concrete to identify the position of underground services
- When they differ from working drawings, record the position and orientation of pipe junctions, service crossings, land drains etc.



HEALTH & SAFETY: THE WORKS SHALL BE CARRIED OUT BY SPECIALIST COMPETENT AND EXPERIENCED CONTRACTORS. ALL OPERATIVES SHALL HAVE RECEIVED FULL AND APPROPRIATE TRAINING WITH APPROPRIATE QUALIFICATIONS FOR THE OPERATIONS THEY ARE REQUIRED TO UNDERTAKE. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT HEALTH & SAFETY REGULATIONS.

DRAINAGE NOTES

ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER FOR ACTION PRIOR TO CONSTRUCTION.

ALL DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY AND IN CONJUNCTION WITH ALL RELEVANT BRITISH STANDARDS, CODES OF PRACTICE AND 'DESIGN AND CONSTRUCTION GUIDANCE FOR FOUL AND SURFACE WATER SEWERS' AND ADDENDUMS AS APPROPRIATE.
ALL DRAINAGE SHALL COMPLY WITH THE TYPICAL DRAINAGE CONSTRUCTION DETAILS AND THE REQUIREMENTS OF BS EN 752.

ACCESS COVERS AND FRAMES SHALL COMPLY WITH THE LOADINGS SPECIFIED AND TO BS EN 124 AND KITEMARKED OR IF RECESSED COVERS ARE SPECIFIED THEN IN ACCORDANCE WITH FACTA ASSOCIATION EQUIVALENT.

ALL INTERNAL COVERS TO BE DOUBLE SEALED RECESSED COVERS TO ACCEPT PROPOSED FLOOR FINISHES.

THE PROPOSED BUILDING OUTLINES SHOWN ON THIS DRAWING ARE FOR INFORMATION ONLY. REFER TO ARCHITECTS PLANS FOR SETTING OUT INFORMATION AND DETAILS.

FOR SETTING OUT DIMENSIONS OF SS'S, SVP'S, RWP'S, FLOOR GULLY & OTHER DRAINAGE 'POP UP' LOCATIONS, REFER TO ARCHITECTS OR MECHANICAL & ELECTRICAL ENGINEERS DRAWINGS. LOCATION OF EXTERNAL CHANNEL DRAINS AND GULLY LOCATIONS / REQUIREMENTS TO BE CONFIRMED BY ARCHITECT.
ALL DRAINAGE PIPEWORK SHOWN SHALL BE 100MM DIAMETER FOR FOUL AND 150MM FOR SURFACE WATER UNLESS NOTED OTHERWISE.
ALL DRAINAGE PIPEWORK SHALL BE LAID SOFFIT TO SOFFIT UNLESS NOTED OTHERWISE.

ALL UNDERSLAB DRAINAGE SHALL BE LAID AT GRADIENTS OF 1:80 MIN. FOR FOUL PIPEWORK AND 1:100 MIN. FOR SURFACE WATER UNLESS NOTED OTHERWISE. ALL UNDERSLAB DRAINAGE SHALL BE CLEAR OF FOUNDATIONS UNLESS SHOWN OTHERWISE.
ALL BENDS IN PIPEWORK TO BE AS LARGE A RADIUS AS POSSIBLE (EXCLUDING CONNECTIONS TO CHAMBERS) TO ENSURE FREE FLOW. SHORT RADIUS BENDS TO BE AGREED WITH DRAINAGE ENGINEER.

ALL SURFACE WATER DROP DOWN POSITIONS SHALL HAVE A BEND SET AT INVERT LEVEL NO GREATER THAN 1.3M BELOW FINISH FLOOR LEVEL.

AT LEAST ONE SOIL PIPE AT THE HEAD OF EACH FOUL RUN SHALL BE VENTED TO THE ATMOSPHERE. ALL SVPS, SSS AND RWP DOWNPIPES SHALL BE ACCESSIBLE AT GROUND LEVEL FOR RODDING PURPOSES.

COVER LEVELS SHOWN ON THIS DRAWING ARE APPROXIMATE AND SHALL BE ADJUSTED TO SUIT LEVELS ON SITE BY CONTRACTOR. COVERS SHALL BE ORIENTATED TO SUIT PAVEMENT FINISHES WHERE APPROPRIATE.
ALL COVER LEVELS ARE TO BE CONFIRMED BY THE ARCHITECT

ALL PRIVATE DRAINAGE PIPEWORK FOR FOUL AND SURFACE WATER SYSTEMS HAVE BEEN DESIGNED ON THE BASIS OF UPVC TO BS EN 1401-1, UNLESS NOTED OTHERWISE.

CONCRETE ENCASEMENT OF THE PIPEWORK SHALL BE REQUIRED WHERE VERTICAL CLEARANCE BETWEEN TWO PIPES CROSSING IS LESS THAN 300MM.
WHERE NEW DRAINAGE IS SITUATED WITHIN 5 METRES OF NEW OR EXISTING TREES THE PIPEWORK SHALL BE ENCASED IN CONCRETE TO REDUCE THE RISK OF ROOT INGRESS.

ALL DRAINAGE CONNECTING TO THE PUBLIC SEWER NETWORK SHALL NOT COMMENCE UNTIL RECEIPT OF THE APPROVAL FROM THE DRAINAGE AUTHORITY AND SHALL COMPLY WITH REQUIREMENTS USING VITRIFIED CLAY PIPEWORK TO BS EN 295 WITH PLAIN SLEEVED OR SOCKETED FLEXIBLE JOINTS SUBJECT TO APPROVAL.

WHERE DRAINAGE WORKS ARE CARRIED OUT IN THE PUBLIC HIGHWAY THE RELEVANT NECESSARY APPROVALS AND ROAD OPENING NOTICES SHALL BE OBTAINED FROM THE HIGHWAY AUTHORITY AND UTILITY COMPANIES.

PRIOR TO CONSTRUCTION THE FLOW CONTROL MANUFACTURER'S DRAWING AND HYDRAULIC TABLE SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL

PRIOR TO CONSTRUCTION THE ATTENUATION TANK MANUFACTURER'S DRAWINGS SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL

UPON COMPLETION ALL NEW DRAINAGE INSTALLATION TOGETHER WITH ANY EXISTING DRAINAGE RETAINED SHALL BE JETTED AND CCTV SURVEYED UPON COMPLETION. CONTRACTOR TO ENSURE THAT THE DRAINAGE SYSTEM IS FULLY OPERATIONAL, FREE OF EXCESS DEBRIS/SILT AND ALL IDENTIFIED FAULTS RECTIFIED.

Standard Notes

1. This drawing is to be read in conjunction with all relevant Architect's and Engineer's drawings and the specification.
2. This drawing should not be scaled.
3. All dimensions are to be verified by the contractor on site.
4. All discrepancies should be reported to the C.A. prior to the commencement of the works.

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Notes and Keys

TOPOGRAPHICAL SURVEY BY SURVEY SOLUTIONS. RECEIVED ON: 07.09.22 DRG NO: 41020MCLS-01

ALL DRAINAGE PROPOSALS ARE SUBJECT TO CONFIRMATION OF EXISTING SEWER LEVELS

ALL RWP AND SVP DROPS TO BE CONFIRMED BY ARCHITECT

ALL POP UP REST BENDS ARE SET MIN 450mm BELOW SSL

WHERE POP UPS ARE LOCATED ON PILECAPS / GROUND BEAMS AND A CONTINUOUS GRADE CANNOT BE ACHIEVED PIPE SHOULD BE SET AT A MIN 1:40 GRADIENT UNTIL CLEAR OF PILECAP FOOTPRINT WITH A BEND TO ALLOW FOR STEEP GRADIENT CONNECTION TO DOWNSTREAM INSPECTION CHAMBER. REFER TO TYPICAL DETAIL ON DRAWING C-31001

- FOUL SEWER 100mm DIAMETER UNLESS OTHERWISE NOTED
- STORM SEWER 150mm DIAMETER UNLESS OTHERWISE NOTED
- COMBINED SEWER 150mm DIAMETER UNLESS OTHERWISE NOTED
- EXISTING PUBLIC COMBINED SEWER
- PROPOSED S185 CW SEWER DIVERSION
- FOUL SEWER INSPECTION CHAMBER 450mm DIAMETER
- STORM SEWER INSPECTION CHAMBER 450mm DIAMETER
- SW FLOW CONTROL CHAMBER
- COMBINED SEWER INSPECTION CHAMBER / MANHOLE
- STUB STACK
- SVP
- RWP
- FLOOR GULLY
- SLOT DRAIN ACO M100D WITH BRICKSLOT ST GRATING
- YG YARD GULLY

Date	Rev	Description	Drawn	Chkd
24.08.23	CD4	S201 REINSTATED, S203A REFERENCE UPDATED	ZG	CK
21.08.23	CD3	POP UP LOCATIONS UPDATED	ZG	CK
03.08.23	CD2	PROPOSED DIVERSION UPDATED	ZG	JP
11.07.23	CD1	ISSUED FOR CONSTRUCTION	ZG	CK
08.12.22	P07	RWP ADDED/LAYOUT AMENDED	CD	ZG
29.11.22	P06	DRAINAGE UPDATED	CD	CK
25.11.22	P05	DRAINAGE UPDATED	ZG	CK
02.11.22	P04	DRAINAGE UPDATED	CD	CK
18.10.22	P03	UPDATED FFLs AND DRAINAGE	CD	CK
12.09.22	P02	COORDINATED WITH M&E DESIGN	ZG	CK
04.07.22	P01	FOR INFORMATION	CD	CK

Civic Engineers

MANCHESTER LONDON BRISTOL BIRMINGHAM

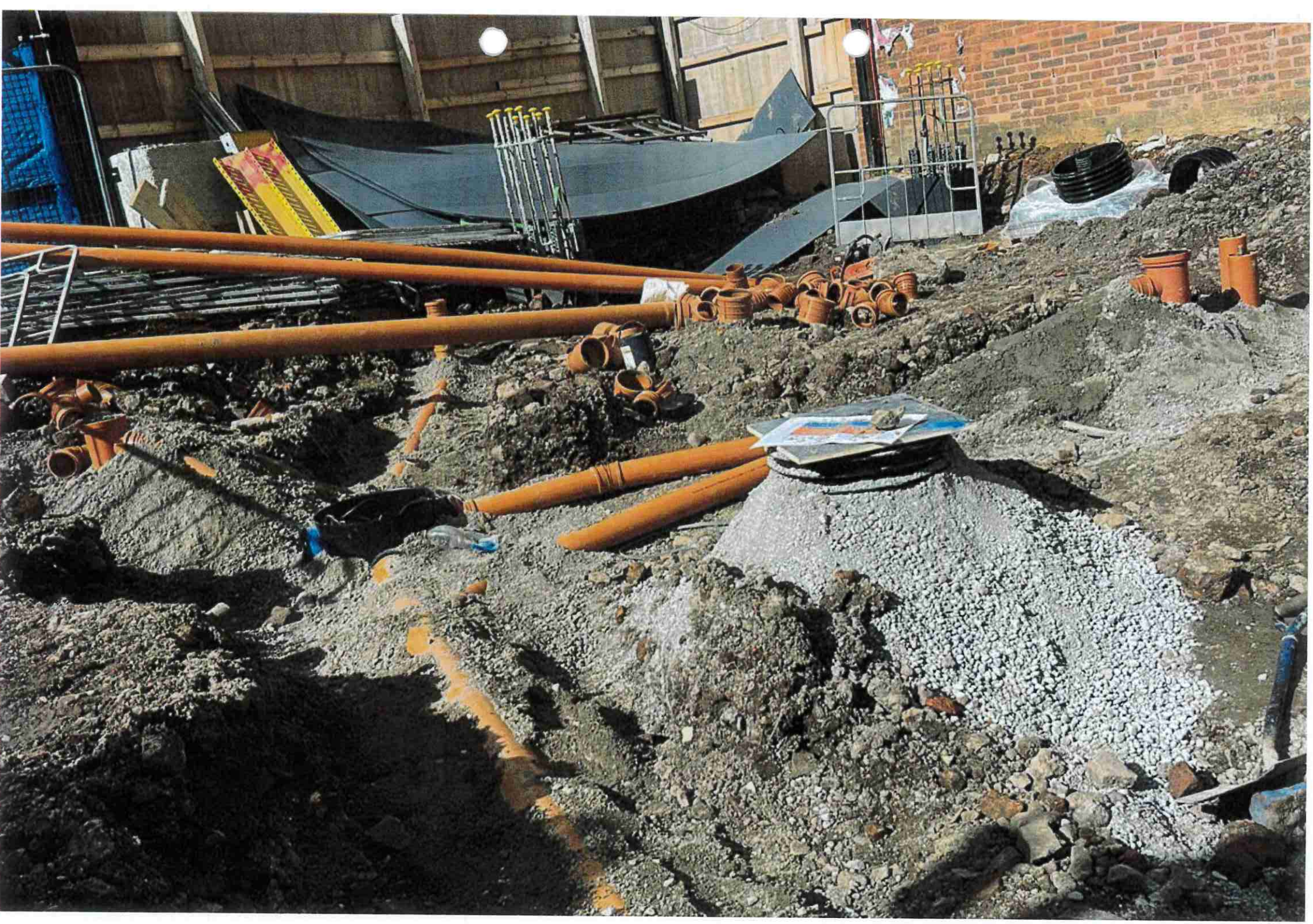
Project
ONE VICTORIA MANCHESTER

Title
DRAINAGE GENERAL ARRAGEMENT

Status
CONSTRUCTION

Project Number	Scale @ A1	Date Created	Drawn	Checked	Suitable
756-02	1:100	04.07.22	CD	CK	----

Drawing Number: 204-CIV-00-XX-DR-C-30001
Revision: C04










MM
WG
100
80
60
40
20
0
20
40
60
80
100

Drainage and Manholes

CHECKSHEET

Contract:	**One Victoria**	Contract no.:	**204**		**QA4**
Inspection details					
Description:	Foul Sewer F100 Drainage Run				
Check sheet details					
Drawing references used:	**204-CIV-00-XX-DR-C-30001**				
Has setting out check sheet been signed off?	Yes	☒			
Details of drainage and manholes to be installed:					
Material:	Foul Pipe PPIC		Size:	**150/100**	
Excavation support method:	**N/A Trench To Be Stepped**				
Concrete grade where applicable	GEN3N / mm2				
Where special installation instructions are to be followed, particularly for interceptors, give brief details. :	N/A				
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Drainage pipes laid to correct depth and gradient?	Yes	☒	No	☐
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Inspection carried out by Building Control?	Yes	☒	No	☐
Area correctly backfilled?	Yes	☒	N/A	☐
Actual installed position recorded for as-built drawing?	Yes	☒	N/A	☐
Manhole / chamber / interceptor clean and cover(s) installed at correct level?	Yes	☐	N/A	☐

Area released for next activity:

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Drainage and Manholes checked, approved and released for next activity:

PRINT NAME	COMPANY NAME Torsion, Sub-contractor or third party sign off (delete as applicable)	PRINT JOB TITLE:	SIGNATURE:	DATE:
Aiden Bougourd	**Torsion**	**Engineer**		
Jaiden Watts	**Spencer's**	**Engineer**		