



Oldham Road, Manchester

Below ground Drainage Verification Report and Management and Maintenance Plan

19.11.2021

Waterman Structures Limited

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Client Name: ABGi Ltd
Document Reference: OLD-WSL-ZZ-XX-RP-S-00001
Project Number: STR14445

Quality Assurance – Approval Status

This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS OHSAS 18001:2007)

Issue	Date	Prepared by	Checked by	Approved by
01	19.11.21	A.J. Davies Associate	R.I. Bradley Regional Director	R.I. Bradley Regional Director

Comments

Disclaimer

This report has been prepared by Waterman Structures Limited, with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporation of our General Terms and Condition of Business and taking account of the resources devoted to us by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at its own risk.

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1.1 Summary

Waterman Structures Limited (WSL) were appointed by ABGi Ltd to prepare a Below Ground Drainage Verification Report and Maintenance and Management Plan in support of planning condition discharge in relation to their Deluna project on the corner of Oldham Road and Cornell Street, at 40 Oldham Road, Manchester, M4 5FE.

WSL can confirm that based on periodic site visits, and limited to visual inspection only, the below ground drainage has been installed in accordance with all final construction issue drawings and specifications. As built drainage is therefore considered to be in keeping with the approved design principles.

1.2 Surface Water Management

Guidance for the disposal of surface water from a development site indicate infiltration systems are to be considered as the primary solution. If this is not practical, discharge to a watercourse is to be considered as the next available alternative. Only if these options are unavailable, and other sustainable drainage methods not possible, should the use of the public sewerage system be considered. Given the proximity (within 5m) to adjacent properties the use of infiltration drainage techniques would not be considered appropriate under Building Regulations.

The approach is based on providing an oversized piped/ manhole system, supplemented by cellular attenuation system. Flow within the systems will be controlled by flow control devices to achieve the overall discharge rates identified above. The surface water drainage system will be designed to attenuate rainfall events up to and including 1 in 100 year+ 30% Climate Change return periods.

1.2.1 Proposed Catchments Discharge Restrictions & Attenuation Estimates

The following table indicates the anticipated volume of attenuation required in rainfall events for 30 year and 100%+CC return periods. The table below provides the summary results of attenuation.

Outfall Ref.	Public / Private Permeable Area (ha)	Impermeable Area (Roof, roads, drives, etc (ha)	Assumption for future loss of green space (40% loss) (ha)	Total Impermeable area for attenuation assessment (ha)	Proposed Discharge Rates (l/s)	Attenuation Volume required (up to a 1 in 30 year storm return period) m3	Attenuation Volume required (up to a 1 in 100 year storm + 30% cc return period) m3
410x410mm	n/a	0.07	n/a	0.07	10	7.4	17
410x410mm	n/a	0.07	n/a	0.07	7	9.2	20

1.3 Typical Maintenance Plan

Private connections and associated lateral drainage will be maintained by the building owner. Pipes are intended to be the main conveyance across the development which are intended to be dry except for during rainfall events and have been designed to be self-cleansing where possible.

Access for maintenance is provided through access chambers, manholes, rodding plates and rodding eyes. Regular inspection and maintenance is important to identify areas which may have been obstructed/ clogged and may not be draining correctly thus exposing the development to a greater level of flood risk.

1.3.1 Adoption & Maintenance

A review of potential maintenance requirements is provided in the table below.

Regularity	Activity	Frequency
Regular	Check inlets, outlets, control structures and overflows	Annually
Occasional	Clearance of silt	As required
Remedial	Reinstate	As required

1.3.2 General Drainage Maintenance

Providing the safety guidelines herewith are followed inspections and simple maintenance from ground level can be carried out by non-skilled operatives.

It is strongly recommended that maintenance involving “man entry” is only carried out by specialist contractors, who will have the correct training and safety equipment.

It is usually worth lifting manhole covers periodically to keep the covers free and to look for debris and tell-tale signs of imminent problems. Regular inspections and periodic cleaning are required on Drainage Channels, Silt Pits, Catch Pits, Storage Attenuation, Manhole Chambers, Flow Control Devices and Grease Traps.

It is recommended that cause be investigated, and the system cleaned by pressure jetting specialists (where required) if signs of the following are found:

- Ragging on step irons which usually mean that the pipes surcharge occasionally
- Mud or silt in a manhole which probably indicate a restriction downstream
- Detritus on the benching could be a sign of rats or of deterioration of the fabric of the manhole.
- Grease, which is a major cause of blockages.

The notes below should be read in conjunction with any manufacturer's literature.

1.3.3 Drainage Safety Issues

Work on drainage systems expose personnel to serious Health and Safety Hazards. These include but may not be limited to the following:

- Lifting heavy loads (manhole covers)
- The risk of injury through dropping heavy loads
- The risk of falling into chambers
- Biohazards from pathogenic bacteria e.g. Weil's disease
- Poisonous- asphyxiating- and explosive gasses.
- Drowning.

These hazards can be addressed by the following simple rules:

- Never work alone
- Never enter a confined space such as a manhole unless trained and equipped to do so with gas detectors, breathing equipment and a recovery team assisting.
- Always use well-fitting lifting keys etc.

- Always use the correct Personal Protective Equipment (PPE) e.g. gloves, goggles, coveralls etc.
- Always fence unattended open manholes.

In addition, it should be noted that the location of some drainage apparatus may expose maintenance personnel to other hazards e.g., vehicles manoeuvring. In general, it is advised that maintenance works (other than simple inspections) be carried out by specialist contractors unless specially trained personnel are available.

1.3.4 Drainage Channels - Open Channels with removable gratings

The outlet boxes trap silt and sometimes oil. They can be emptied by either a vacuum tanker or by hand with a ladle. These boxes are the first line of defence keeping the underground drains clean. It is therefore important and cost effective to clean them out regularly. Material removed from them is likely to be contaminated and should be disposed of at a suitably licensed tip.

The gratings act to stiffen the channel and the channel edging. It is therefore essential to check that all channel gratings are replaced (and fixed where appropriate). The fixings may be bolts or patent clips depending upon the range of channels installed.

1.3.5 Storage Tanks

Over a period of time all attenuation tanks will have a very gradual build-up of silt, the level of build-up needs to be monitored and from this information the frequency of inspection can be decided. A gully sucker can be used to remove any silt build up or this can be done manually. The tank inspection needs to be carried out by someone who has successfully completed a confined space training course.

Any specific requirements from the tank supplier should also be included within the final O and M Manual

1.3.6 Flow Control Device

It is recommended that flow control chambers should be inspected during Spring and Autumn and cleaned to ensure the flow control orifice is kept free of debris.

Any specific requirements from the flow control supplier should also be included within the final O and M Manual

1.3.7 Ongoing Management

Residual Hazards and Provision for Safe Access for Inspection, Maintenance and Cleaning etc. - Site Works and Infrastructure

Cleaning of drains, manholes and channel drains

- Only to be carried out by competent, suitably trained qualified and authorised persons.
- A Permit-to-Work system must be in place.
- All necessary checks for hazardous atmospheres must be carried out.
- All necessary protection to openings must be provided e.g. warning signs, lights, barriers etc.
- Channel drains need to be maintained cleaned and inspected as per the manufacturer's guidance.
- All maintenance should be in accordance with the method statement as provided by the maintenance contractor.



All general, regular cleaning and maintenance is to be carried out in accordance with all relevant health and safety legislation, guidance, etc. and consider the potential hazards identified in the Health and Safety File or Contractor's Manuals.

Care should be taken to safeguard the health and safety of the building occupiers' staff and the public. Where appropriate, emergency procedures and first aid facilities must be established and agreed with the building occupier prior to work commencing.

APPENDICES

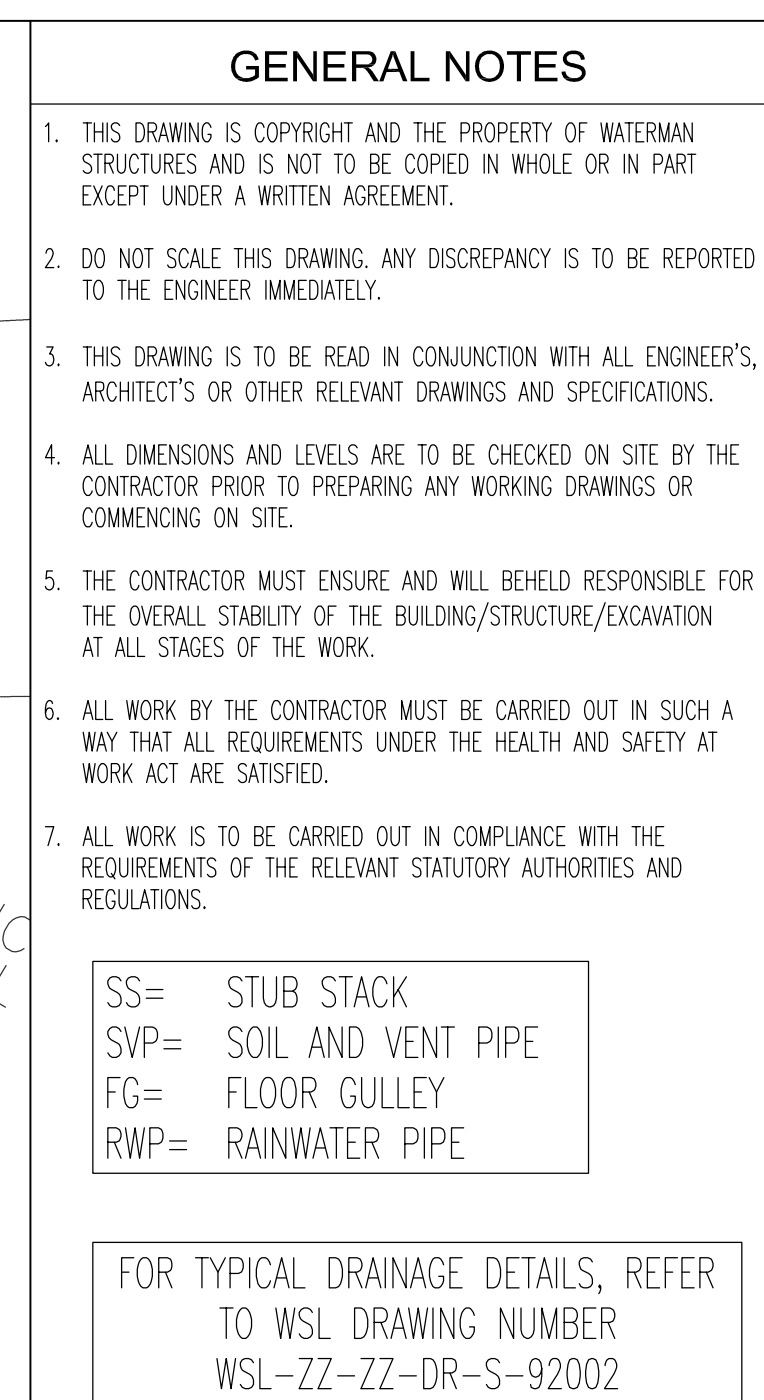
A. Site Photos



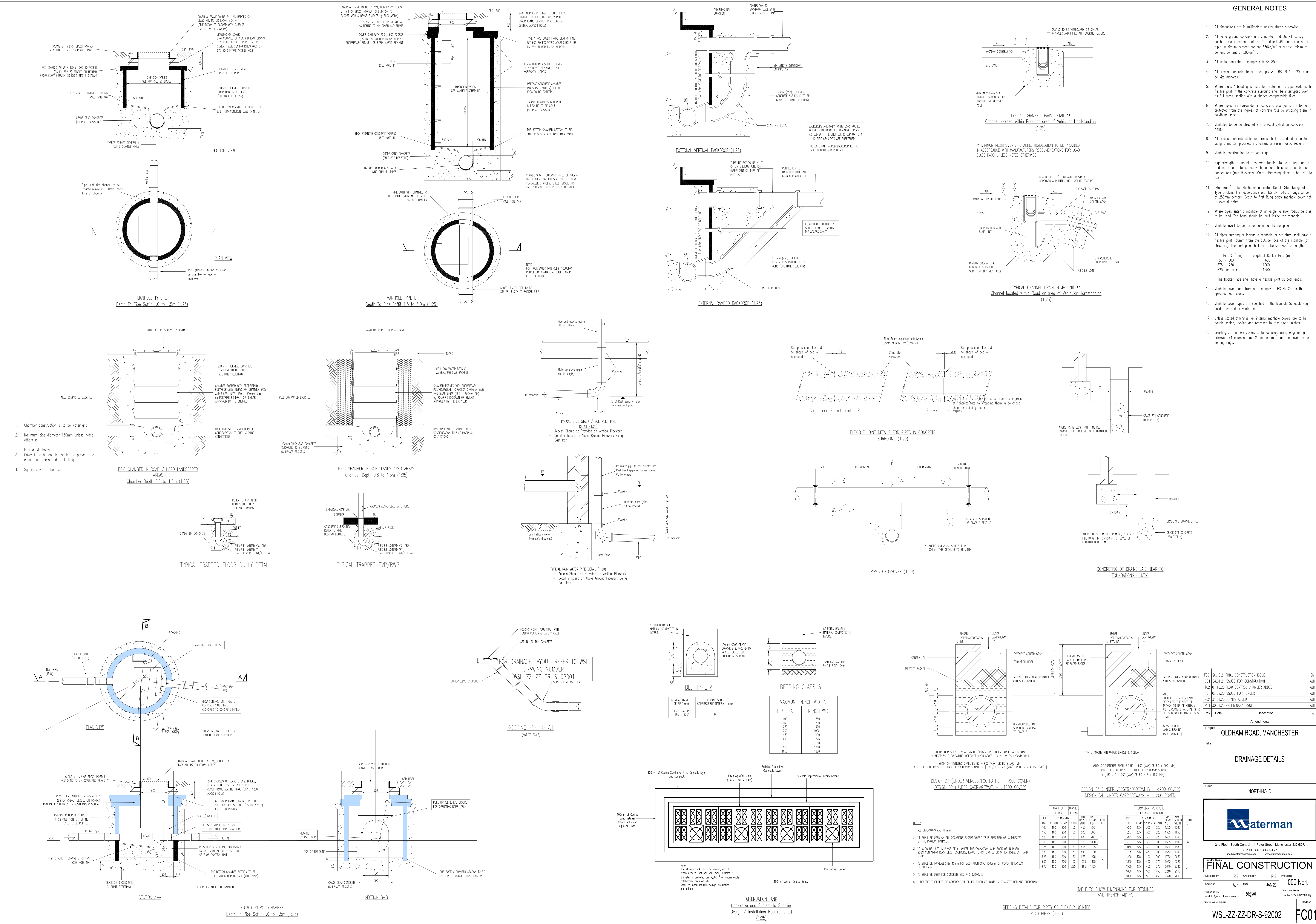








FC05	20-10-12	FINAL CONSTRUCTION ISSUE		Q
C04	03-03-21	AOI DRAWN EXTENDED (SEE CLOUDS)		AJ
C03	07-01-21	UPDATED TO SUIT ARCHITECTS COMMENTS AND REVISED M&E DRAWING. (TBC COMMENTS REMOVED)		AJ
C02	05-01-21	RUN FROM SW2 TO SW3: INVERTS AND ALIGNMENT AMENDED		AJ
C01	04-01-21	UPDATED TO SUIT LATEST M&E/ARCHITECTS REQUIREMENTS. ISSUED FOR CONSTRUCTION		AJ
T03	01-10-20	MANHOLE SCHEDULE CORRECTED TO MATCH PLAN		AJ
T02	17-09-20	OP PIPE ADOD (SEE CLOUDS) TO SUIT LATEST REQUIREMENTS TO REFLECT M&E/ARCHITECTS LATEST REQUIREMENTS, DRAINAGE POINTS MANHOLES AND RUNS ADJUSTED ACCORDINGLY. ISSUED FOR TENDER		AJ
P01	31-01-20	PRELIMINARY ISSUE		AJ
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Amendments				
Project OLDHAM ROAD, MANCHESTER				
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DRAINAGE LAYOUT				
Client NORTH-HOLD				
				
2nd Floor, South Central 11 Peter Street, Manchester M2 6QR T: +44 (0)161 892 1000 or 0161 892 1001 enquiries@waterman.org.uk www.waterman.org.uk				
Drawing No. FINAL CONSTRUCTION Project No. 000.Nort Drawn by AJH Date JAN 20 Scale: (B/A0) Works to Figured dimensions only: 1:50@A0 Consistent File No WSL-ZZ-DR-S-92001.dwg				
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WSL-ZZ-DR-S-92001				FC0



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