

# The Railyard Apartments

## Civil Engineering Report

Prepared for: Progressive Commercial Construction Ltd  
Prepared by: MMOS Consulting Engineers Ltd.  
Date: 6<sup>th</sup> August 2024  
Reference: 18254-MMS-XX-XX-RE-C-0101



MMOS Consulting Civil & Structural Engineers,  
The Chapel, Blackrock House, Blackrock Road, Cork, T12 KRK7.  
T 00353 (0)21 4317608 W [mmosengineers.com](http://mmosengineers.com)

Report Title: Civil Engineering Report  
Project Title: The Railyard Apartments

Prepared for:  
Progressive Commercial Construction Ltd

## REVISION CONTROL TABLE

**Document reference: 18254-MMS-XX-XX-RE-C-0101**

Revision	Date	Issue	Author	Checked
00	06.08.24	Issue for Planning	LOM	PTM

## TABLE OF CONTENTS

<b>1.0</b>	<b>Introduction .....</b>	<b>1</b>
<b>2.0</b>	<b>Site Location and Description .....</b>	<b>1</b>
<b>3.0</b>	<b>Development Description .....</b>	<b>2</b>
<b>4.0</b>	<b>Drainage.....</b>	<b>3</b>
4.1	Wastewater Sewer .....	3
4.2	Surface Water Sewer .....	3
4.2.1	SuDS Measures .....	4
<b>4.3</b>	<b>Water Services.....</b>	<b>4</b>
<b>Appendix A</b>	<b>Services Design .....</b>	<b>5</b>
<b>Appendix B</b>	<b>Design &amp; Calculations.....</b>	<b>6</b>
<b>Appendix C</b>	<b>Irish Water.....</b>	<b>7</b>

## LIST OF FIGURES

**Figure 1 – Site Location Plan ..... 1**

## 1.0 Introduction

Progressive Commercial Construction Ltd intend to apply for planning application for a residential development at Albert Quay East in Cork City Centre. The Development will be known as 'The Railyard Apartments' and will include 217 residential units over 24 stories.

Murphy Matson O' Sullivan have been appointed as the Civil and Structural Engineers for the project.

## 2.0 Site Location and Description

The proposed development is located at Albert Quay East on the Southern Channel of the River Lee at approximate Irish Transverse Mercator reference E: 568180, N:571835. The Site is bounded by Albert Street to the West and by Albert Road to the South. The site is also bounded by the Navigation Square Development to the East.

A topographical Survey has been undertaken on the site and indicates levels varying between 2.6m OD to 2.8 m OD at the North, 2.80 m OD to 3.10 m OD at the West and 3.10 m OD to 3.0 m OD at the South. The site has an area of approximately 0.2744 HA. The site structure consists of a number of single storey warehouse buildings (Park Facilities Management Ltd), a 2-storey office building and an open carparking area.



**Figure 1 – Site Location Plan**

### 3.0 Development Description

The Railyard Apartments proposed development comprises of the construction of 217 no. apartments comprising 25 no. studio units; 92 no. 1-bed units; 88no. 2-bed units; and 12no. 3-bed units apartments in a building that ranges in height from 8 to 11 to 24 storeys over ground floor at the former Carey Tool Hire site, currently principally occupied by Park Facilities Management Ltd, Albert Quay, Cork City.

The development site, measuring approximately 0.2744 hectares, is bounded by Albert Quay East to the north, Albert Street to the west, the former Blackrock and Passage Railway Terminus – Ticket Office, a Protected Structure, Ref. No. PS 1138, and which is also a Recorded Monument, CO074-119002, the two-storey former Cork, Blackrock and Passage Railway Offices, Protected Structure, Ref. No. PS 1137, and the Albert Road Post Box, which is also a Protected Structure Ref. No. PS942 and Albert Road to the south, and Navigation Square to the east. The site is accessed by Albert Quay East and Albert Street.

The proposed works include:

- The construction of 217no. apartments [25no. studio units; 92no. 1-bed units; 88no. 2-bed units; and 12no. 3-bed units] in a building that ranges in height from 8 to 11 to 24 storeys over ground floor.
- The provision of external balconies on the east, west and south elevations to the 12th floor on the east and west elevation, and to the 9th floor on the southern elevation.
- The provision of an external public realm area at ground level, an eastern laneway for servicing of the proposed development, in addition to its use as a pedestrian link.
- The provision of internal communal space areas at ground floor, 1st floor, and 2nd floor, and 2no. external rooftop terraces on the 9th floor and the 12th floor.
- The provision of a ground floor community/arts use, with external seating area and a ground floor creche with external covered play area.
- The provision of ground level plant, ancillary uses, and bin store.
- Bicycle spaces at lower ground floor and ground floor level; additional visitor bicycle spaces; and a set down delivery area at ground floor level on Albert Street.
- Set back of the eastern boundary wall to the north and south.
- All site development, public realm and landscaping works.
- The proposed development also involves the demolition of the existing two-storey Carey Tool Hire building, currently principally occupied by Park Facilities Management Ltd.

## 4.0 Drainage

### 4.1 Wastewater Sewer

A large (1800mm diameter) interceptor sewer exists on Albert Quay and is connected into the siphon chamber at the Victoria Road Junction. From this point the sewage drains to the Atlantic Pond pumping station. We propose that dedicated foul sewer outfalls will be provided from the development and connect directly to the 1800mm diameter sewer on Albert Quay as indicated on drawing 18254-MMS-ZZ-ST-DR-C-10000.

The existing sewer invert and the proposed sewer outfall invert from the development are favourable to allow a connection to the existing manholes on the 1800mm diameter interceptor sewer. All connection works are to be subject to the approval and supervision of Cork City Council Drainage personnel and of Irish Water.

All foul drainage arising from the proposed development will be required to discharge into the foul sewer system. Any foul drainage arising from kitchens/canteens or any other food preparation areas will require to drain to a suitable grease trap/interceptor prior to discharge to the public sewerage system. Grease traps will be designed to BS EN 1825.

We propose that all foul sewage will pass through non-return valves, located within the site, to prevent back up in the sewers in the event of a flood in public sewage system. Refer to drawing no 18254-MMS-ZZ-ST-DR-C-10000 –Proposed Services Layout Plan.

The drainage calculations contained in Appendix B of this report are based on flow rates as set out in the Irish Water code of practice for Wastewater.

Calculations for the Foul sewer show a peak outfall of 6.71 l/sec to the Albert Quay Sewer. We note that the existing sewer on Albert Quay is sufficiently sized to cater for this minimal additional flow.

### 4.2 Surface Water Sewer

The site is located within sub-section 1 of the south Docklands development drainage sub-catchments. The South Docklands Local Area Plan directs that the drainage from sub-catchment 1 should outfall directly to the River Lee.

We have reviewed the proposed storm network with the Cork City Council drainage department and have agreed that we can utilise an existing outfall to the River Lee located at the Junction of Albert Quay and Victoria Road as indicated on drawing 18254-MMS-ZZ-ST-DR-C-10000.

We note that due to location of the site in proximity to the River Lee and its existing brownfield nature we are not specifically required to provide attenuation storage, however we have provided an onsite attenuation storage volume of 50 m<sup>3</sup> to allow for storage on site in the case of a 1:20 year flood event.

It is proposed to provide a new 375 diameter sewer laid across Albert Quay East with an outfall of 1 in 300 towards the River Lee as described in Appendix A. Refer to drawing no 18254-MMS-ZZ-ST-DR-C-10000 for the Proposed Services Layout Plan and drawing no's 18254-MMS-ZZ-ST-DR-C-10002 and 18254-MMS-ZZ-ST-DR-C-10003 for Storm Water Long Sections and Outfall details. The storm water pipe will be fitted with a non-return valve to prevent water from backing up during a flood event.

Surface Water Calculation for the proposed project are contained in Appendix B of this report.

#### **4.2.1 SuDS Measures**

Sustainable Drainage Systems (SuDS) play a crucial role in addressing challenges associated with urbanization, including flooding, water pollution, and habitat loss. SuDS principles aim to mimic natural water management processes, promoting infiltration, storage, and evapotranspiration.

The landscaping for the proposed site has been designed to utilise rain gardens to provide a sustainable urban drainage system for the scheme. Rain gardens are shallow, vegetated depressions designed to capture and treat stormwater runoff from impervious surfaces. They comprise soil media, vegetation, and sometimes mulch or decorative stones. Their functionality lies in facilitating infiltration, pollutant removal, and groundwater recharge, while also offering aesthetic and ecological benefits. The rain gardens are proposed to infiltrate the surface water from paving around the site. The rain garden will be fitted with a high-level overflow drain in the event that the rain garden is overwhelmed during a flood event. The overflow drain is connected to the stormwater network that is connected to the underground attenuation tank. There are 192m<sup>2</sup> of landscaping, green areas and tree pits incorporated onto the site to work as SuDS in addition to the attenuation tank referred in Section 4.2.

Refer to drawing no 18254-MMS-ZZ-ST-DR-C-10001 for the Proposed SUDS measures on site. Drawing available in Appendix A of this report.

#### **4.3 Water Services**

We have had discussions with the water services department of Cork City Council and are advised that the locality is adequately served in water main capacity. There is a 250mm diameter water main on the near side of Albert Quay. There are three number hydrants in the vicinity of the development, on the near side of Albert Quay at the entrance to the existing carpark, on Albert Street and on the opposite side of Albert Road. The project fire consultant has advised the requirement for an additional hydrant on Albert Quay, and this is identified on MMOS drawing 18254-MMS-ZZ-ST-DR-C-10000.

We are currently proposing that a new 150mm diameter connection can be made to the 250mm diameter water main on the near side of Albert Quay to serve the overall development. The proposed watermain connection has been reviewed by Irish Water who subsequently issued a statement of design acceptance, see Appendix C. All new water main connections will be undertaken to the requirements and supervision of Cork City Council and Irish Water.

All existing water services which will become redundant as a result of the development works will be identified and removed back to the public water main and made good.

## **Appendix A        Services Design**

- (i)      Proposed Services Layout Plan
- (ii)     Proposed SUDS Plan
- (iii)    Proposed Storm & Foul Water Outfall Sections
- (iv)    Proposed Storm Water Outfall Details

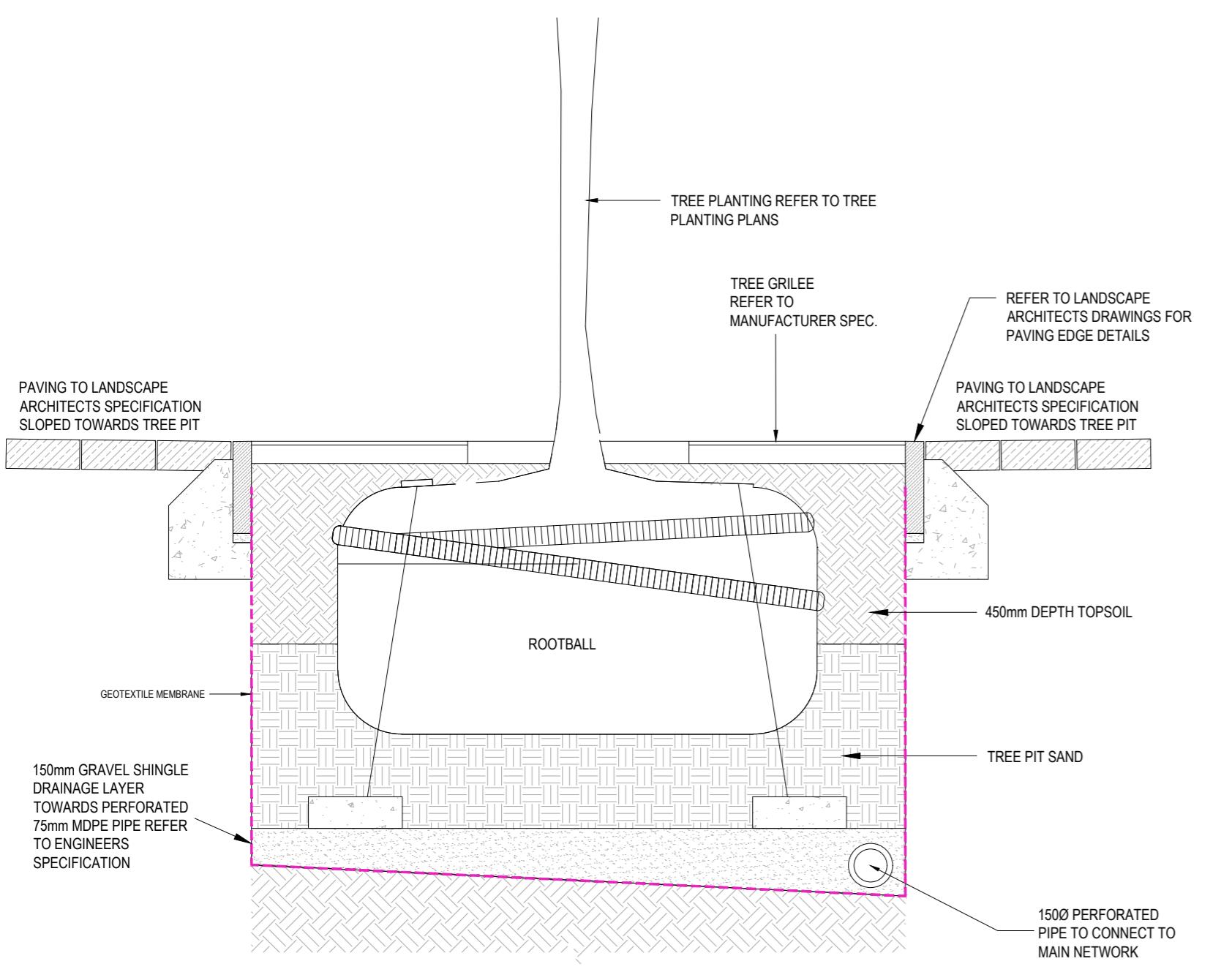




## PROPOSED SUDS MEASURES

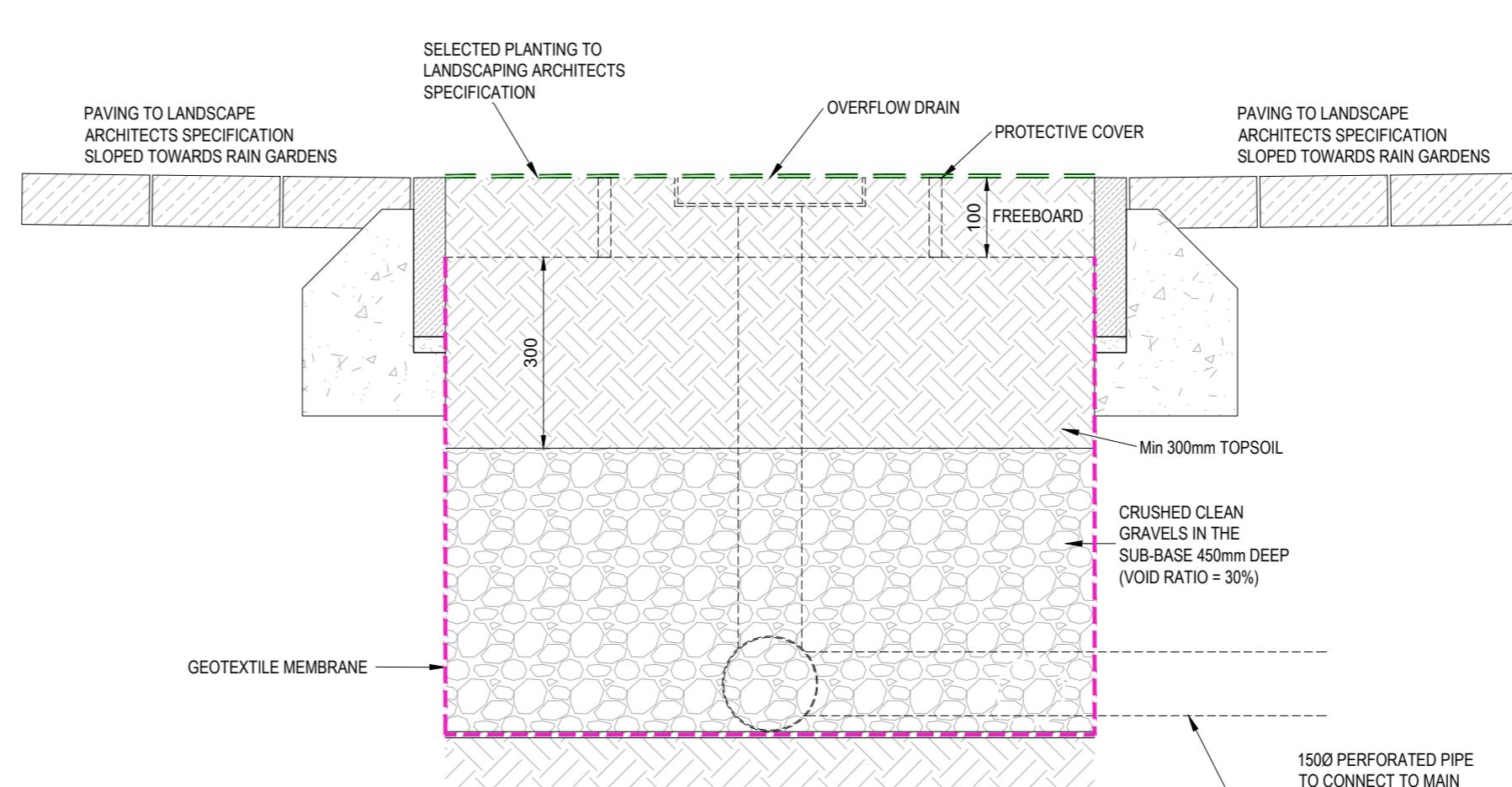
---

Scale 1:200



### Typical Tree Pit Detail

Typical

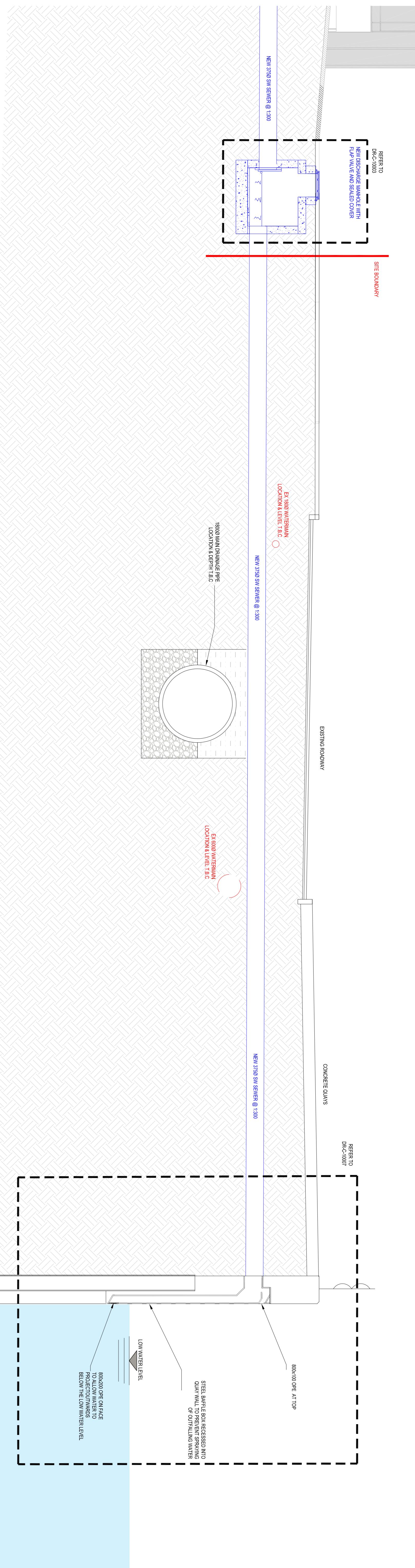


## Typical Rain Garden Detail

Typical

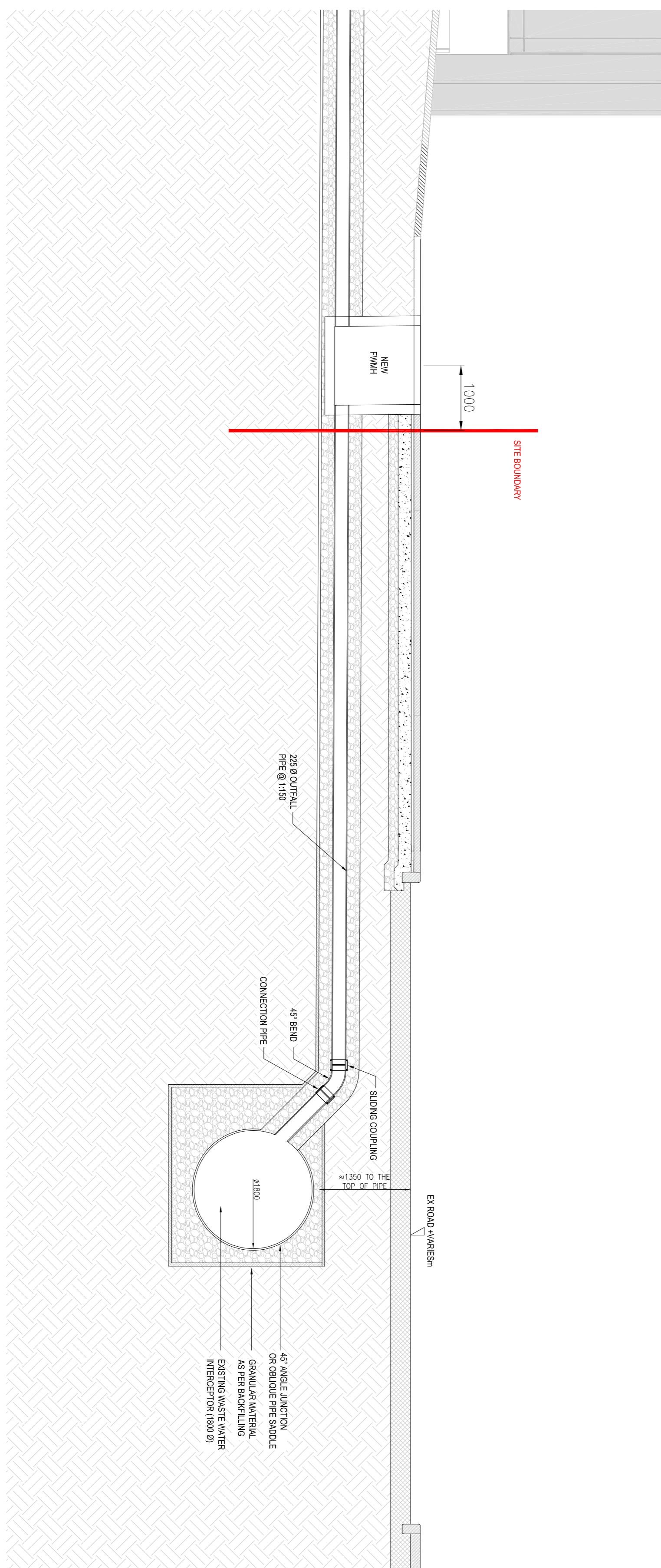
# Proposed Storm Water Outfall Section

Scale 1:500



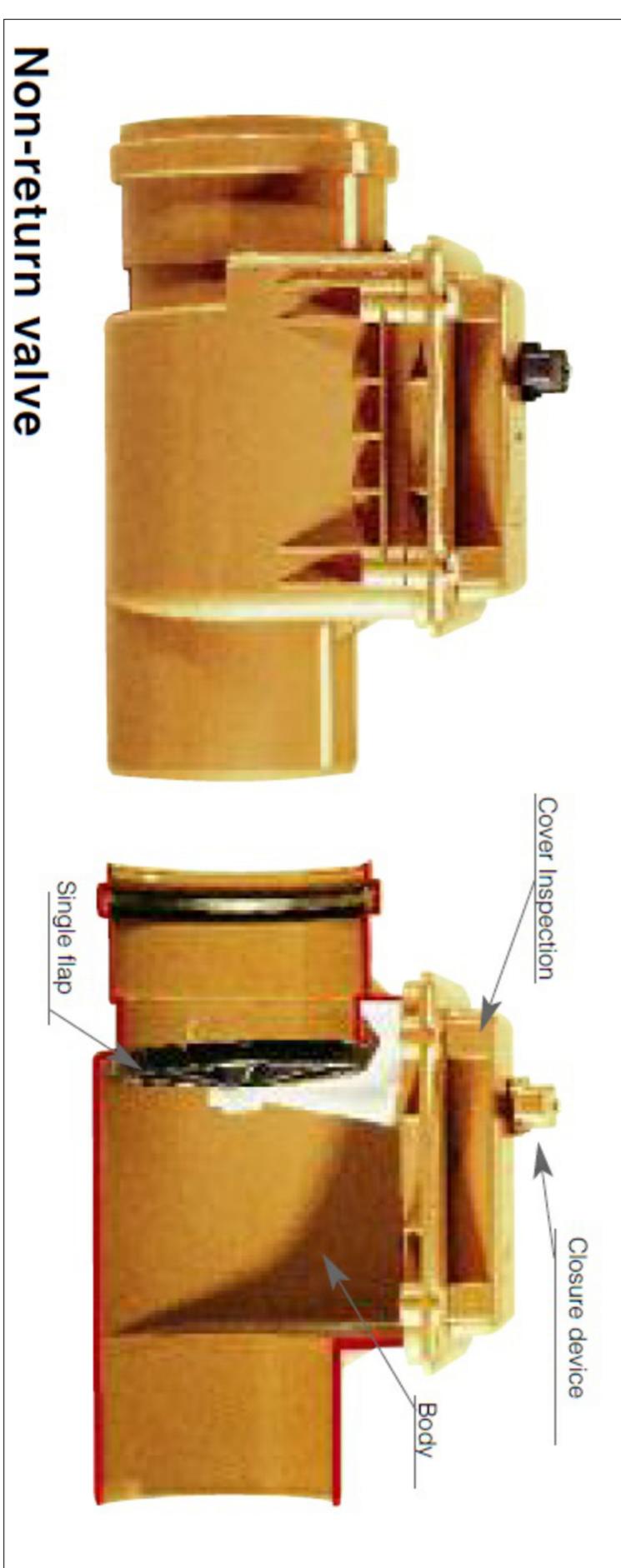
## Proposed Foul Longitudinal Section

Scale 1:50

NOTE

&lt;div[[{"text": "NEW STORM WATER BAFFLE TO BE", "x": 100, "y": 100, "align": "left"}, {"text": "INSERTED INTO THE QUAY WALL TO", "x": 100, "y": 150, "align": "left"}, {"text": "CONSIST OF 800x200mm RECTANGULAR", "x": 100, "y": 200, "align": "left"}, {"text": "BOX STEEL SECTION, 25mm IN THICKNESS", "x": 100, "y": 250, "align": "left"}, {"text": "STEEL BAFFLE BOX TO BE", "x": 250, "y": 100, "align": "left"}, {"text": "PRE-FABRICATED OFF SITE AND FINISHED", "x": 250, "y": 150, "align": "left"}, {"text": "IN ANTI-CORROSION PAINT TO THE", "x": 250, "y": 200, "align": "left"}, {"text": "SATISFACTION OF THE PORT OF CORK", "x": 250, "y": 250, "align": "left"}]]

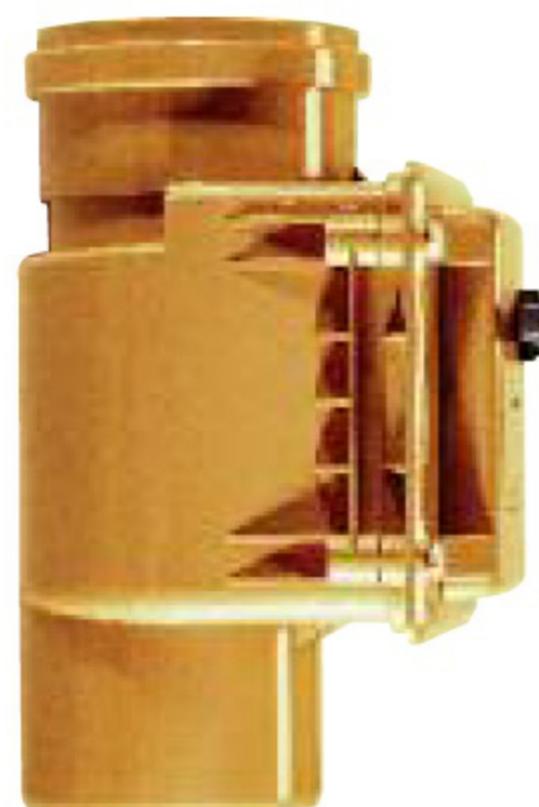
<p><b>TITLE</b></p> <p>Storm &amp; Foul Water Outfall Sections</p>	<p><b>CLIENT</b></p> <p>Progressive Commercial Construction Limited</p>	<p><b>PROJECT</b></p> <p>The Railyard Apartments, Cork</p>	<p><b>MURPHY • MATSON • O'SULLIVAN</b> CONSULTING CIVIL &amp; STRUCTURAL ENGINEERS</p> <p><b>VIVOS</b></p> <p>Laline Business Park, Monahan Road, Cork.</p> <p>Tel : 353 21 431760</p>
--	---	--	--



## TYPICAL IN LINE NON RETURN VALVE



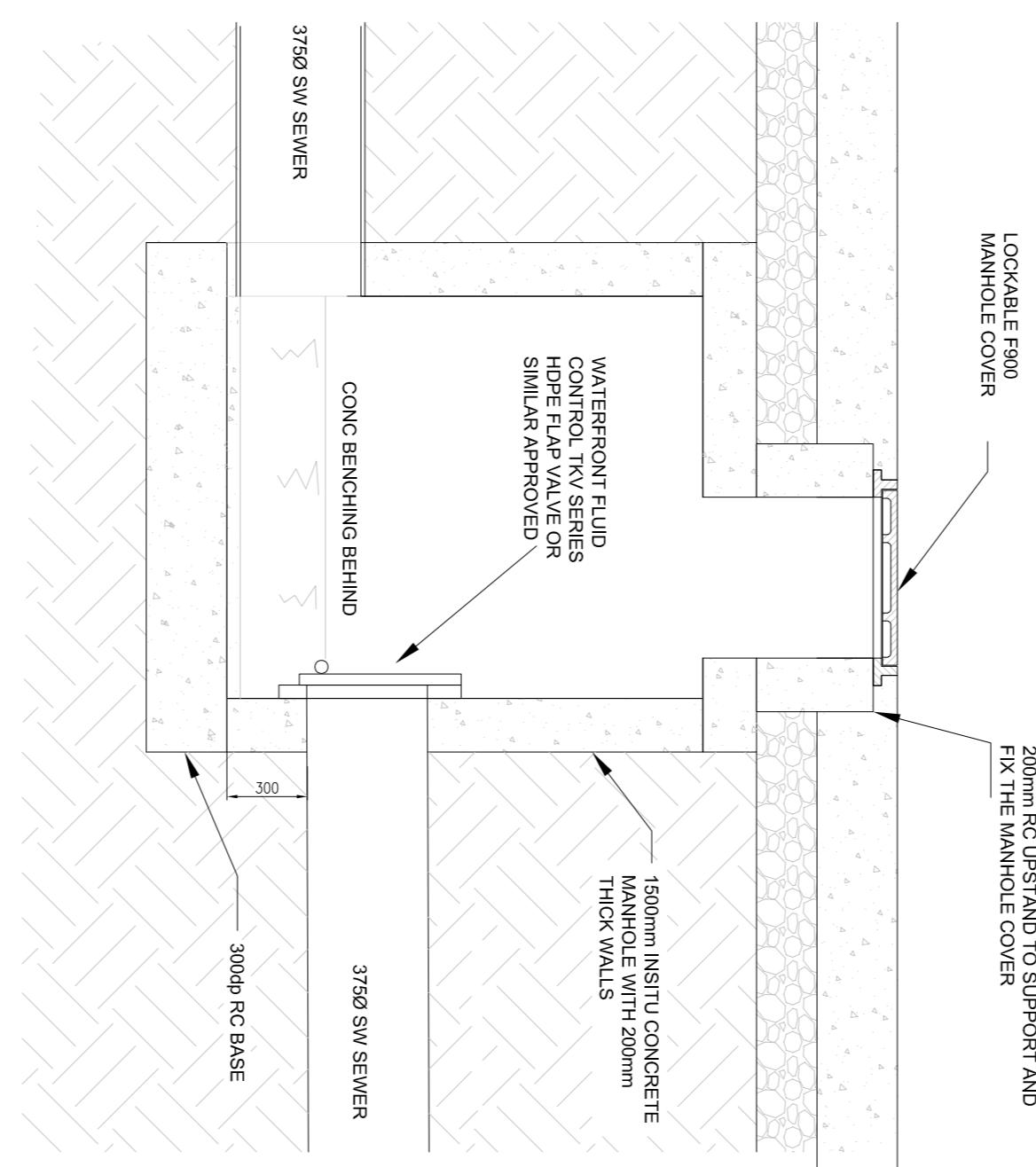
## Typical HDPE Flap Valve



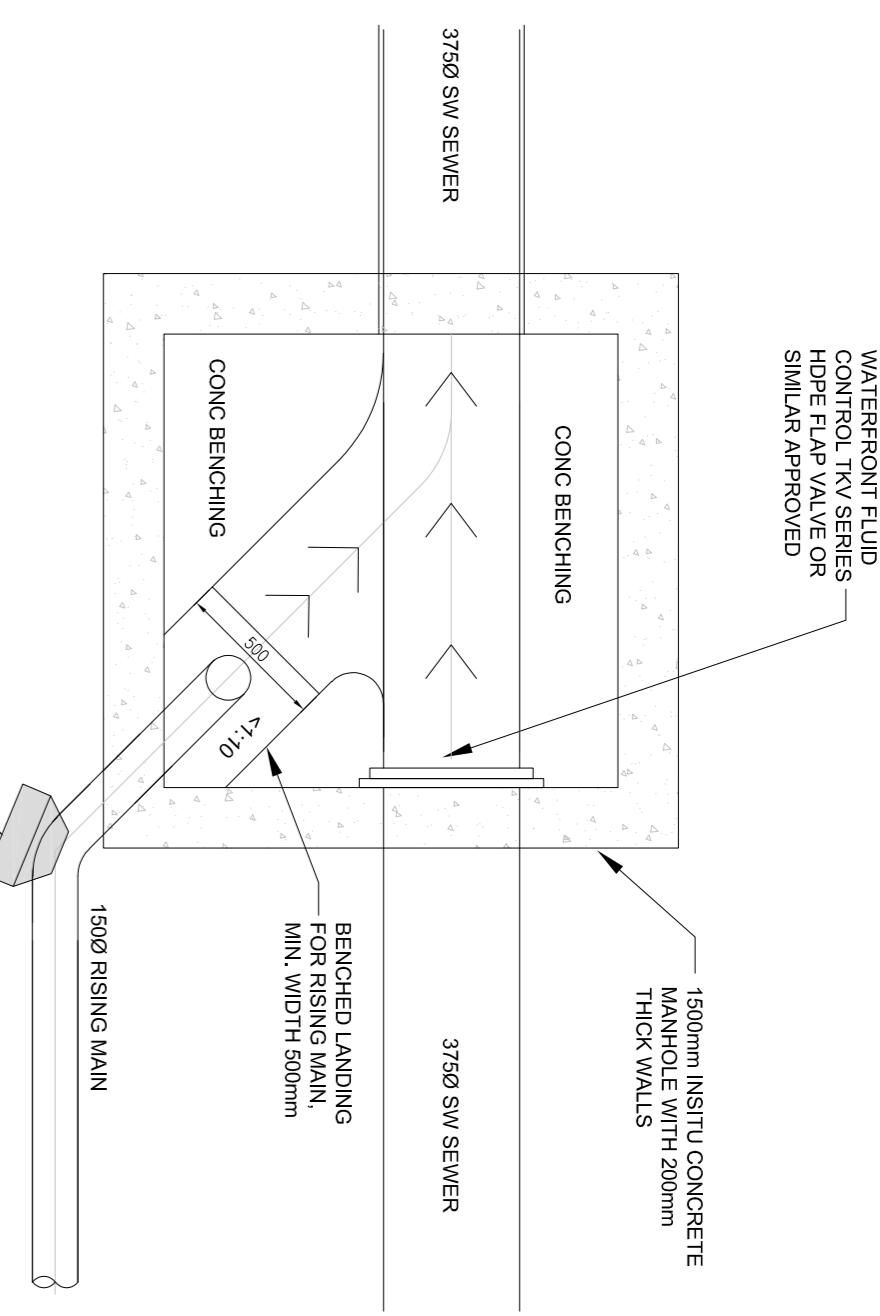
## Non-return valve



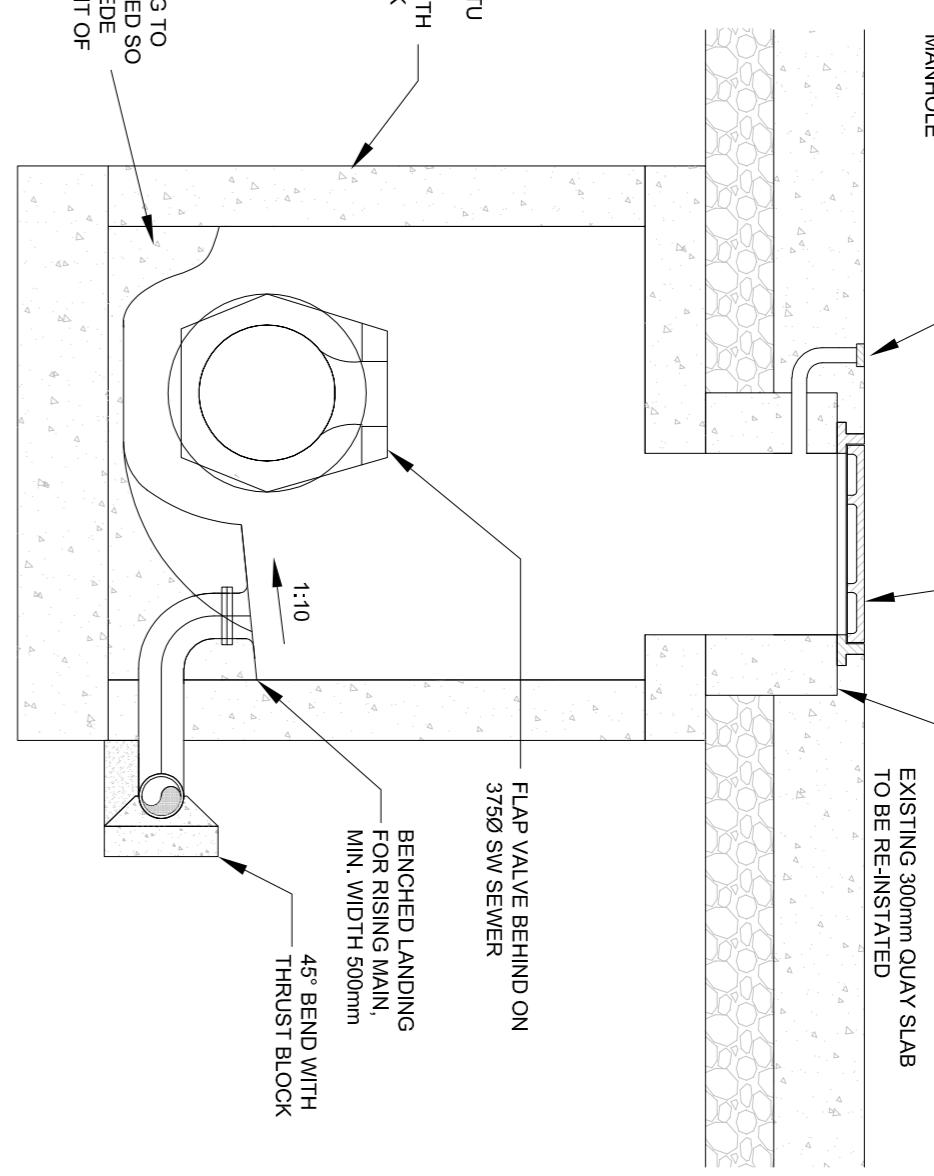
## TYPICAL IN LINE NON RETURN VALVE



PLAN OF DISCHARGE MANIFOLD



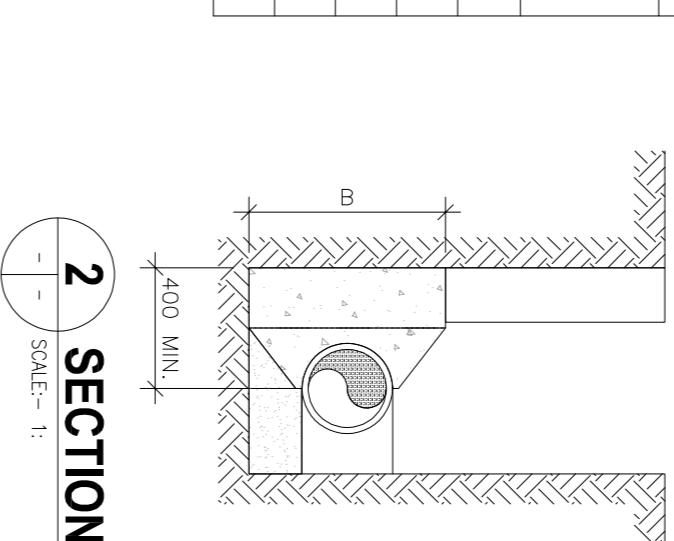
SECTION THROUGH DISCHARGE MANHOLE  
SHOWING RISING MAIN DISCHARGE



## SHOWING RISING MAIN DISCHARGE

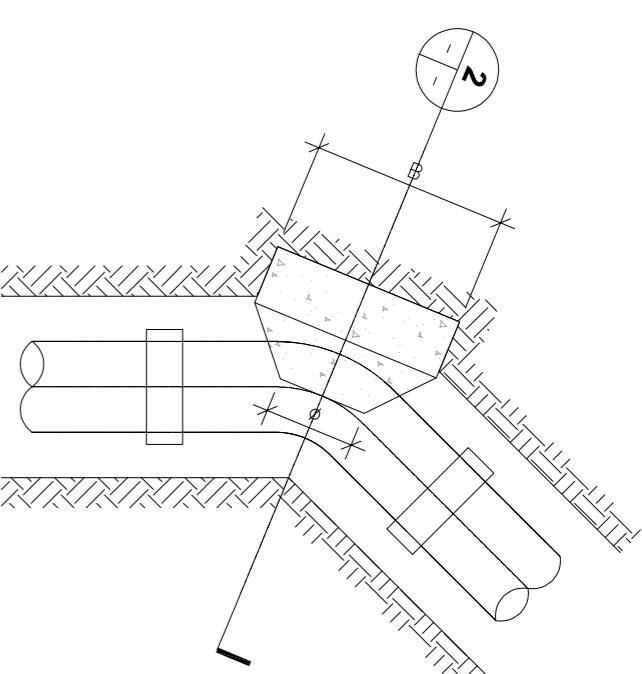
## THRUST BLOCK SIZES

PIPE DIAMETER (mm)	ANCHOR BLOCK DIMENSIONS IN MILLIMETRES FOR GROUND BEARING PRESSURE 100KN/m <sup>2</sup>			
	A	B	C	D
100	400	400	400	400
150	550	400	400	400
200	650	400	400	400
300	750	650	550	400

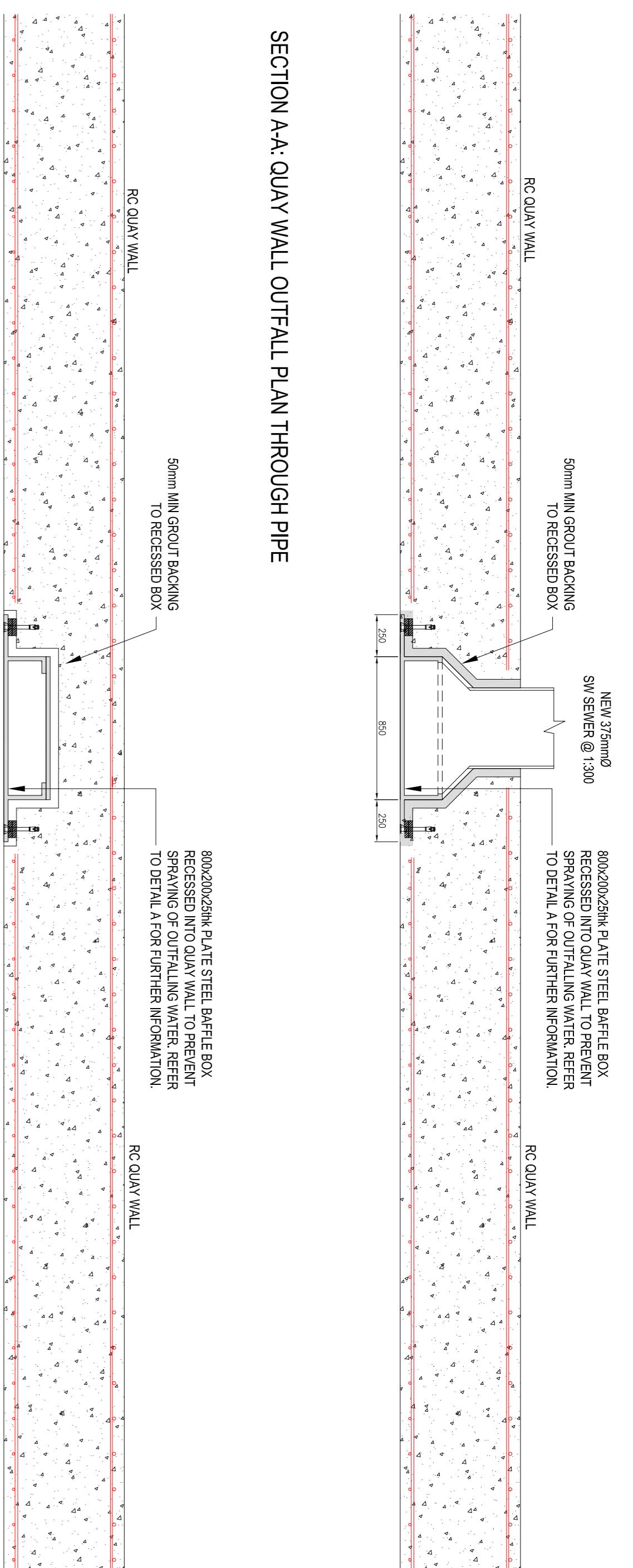


**PLAN (45° BEND)**

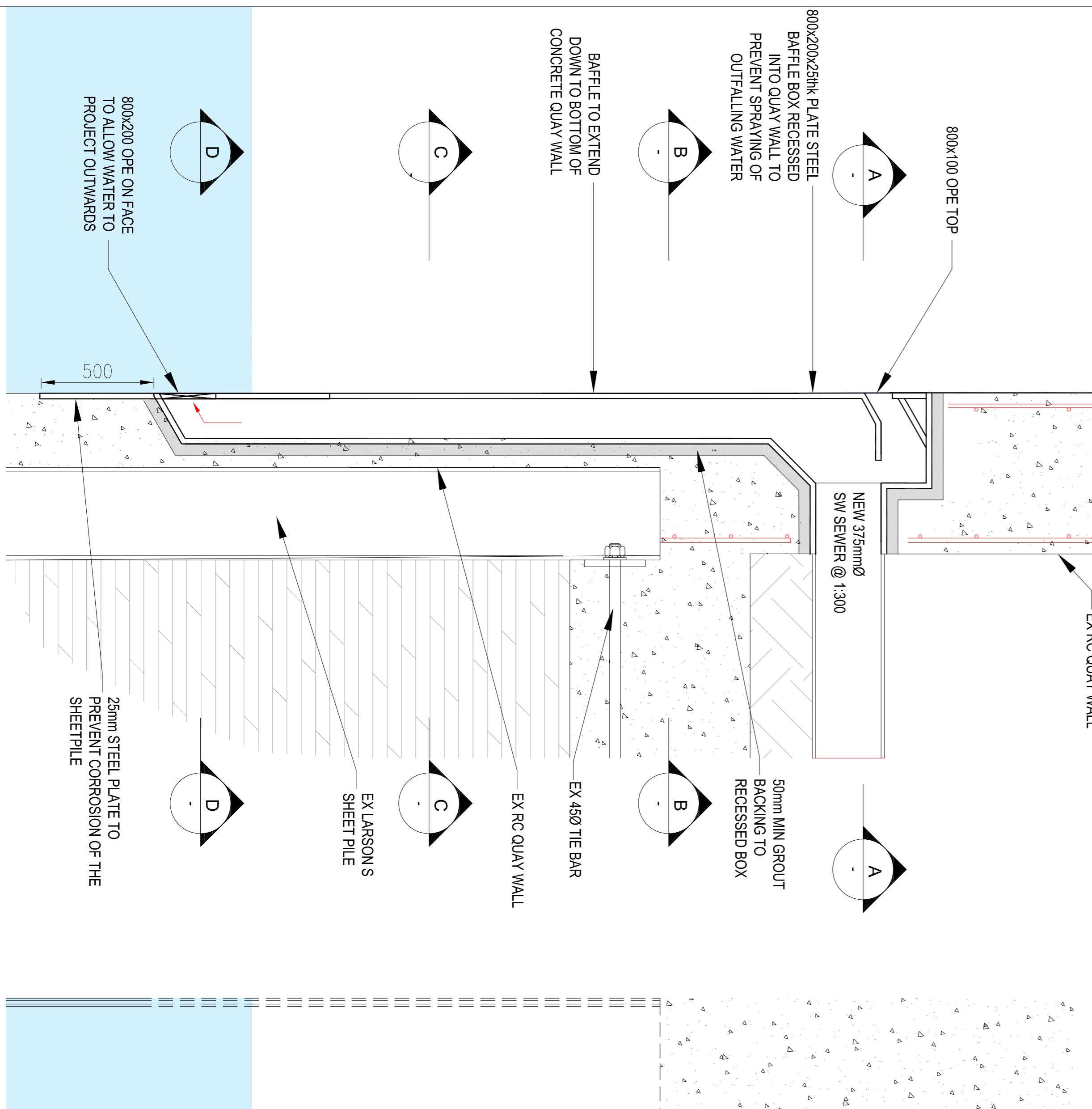
---



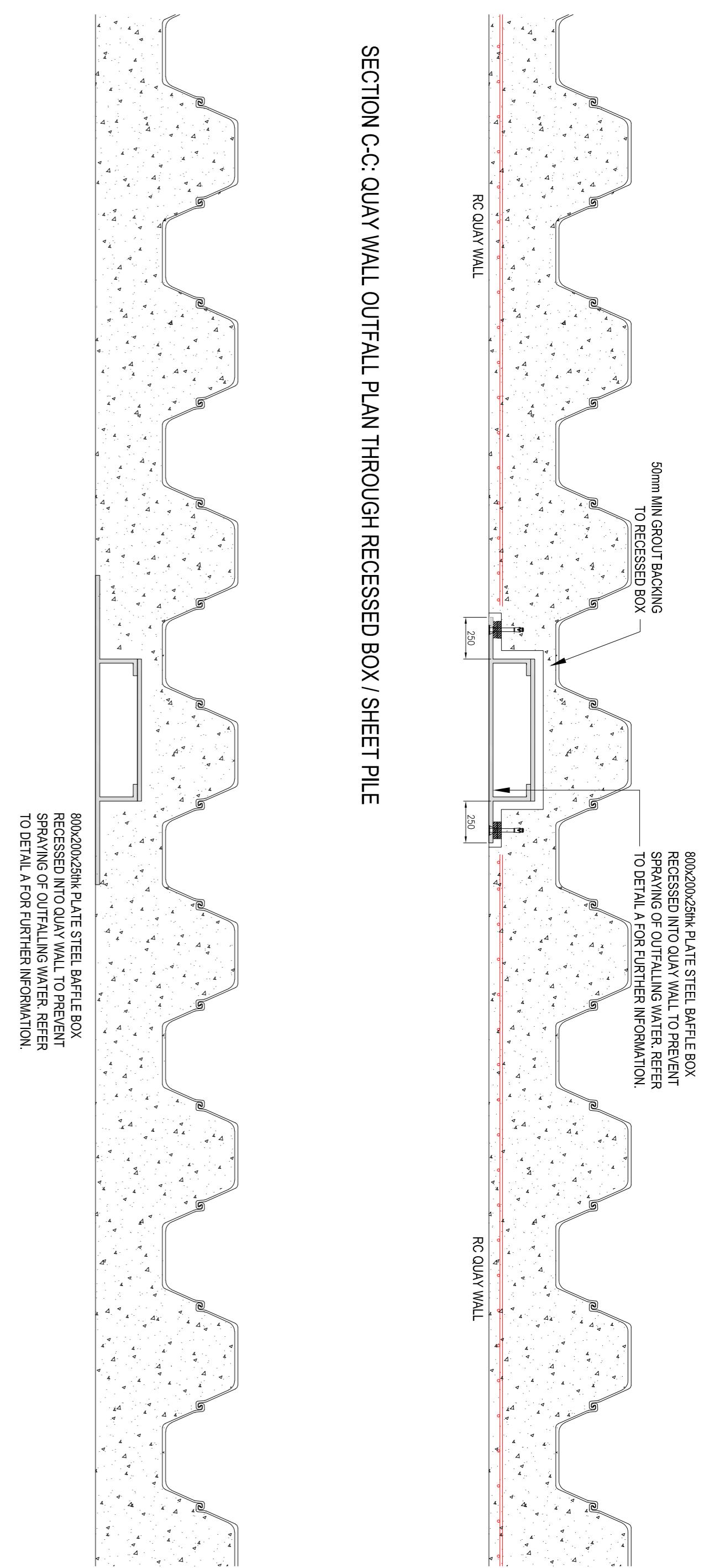
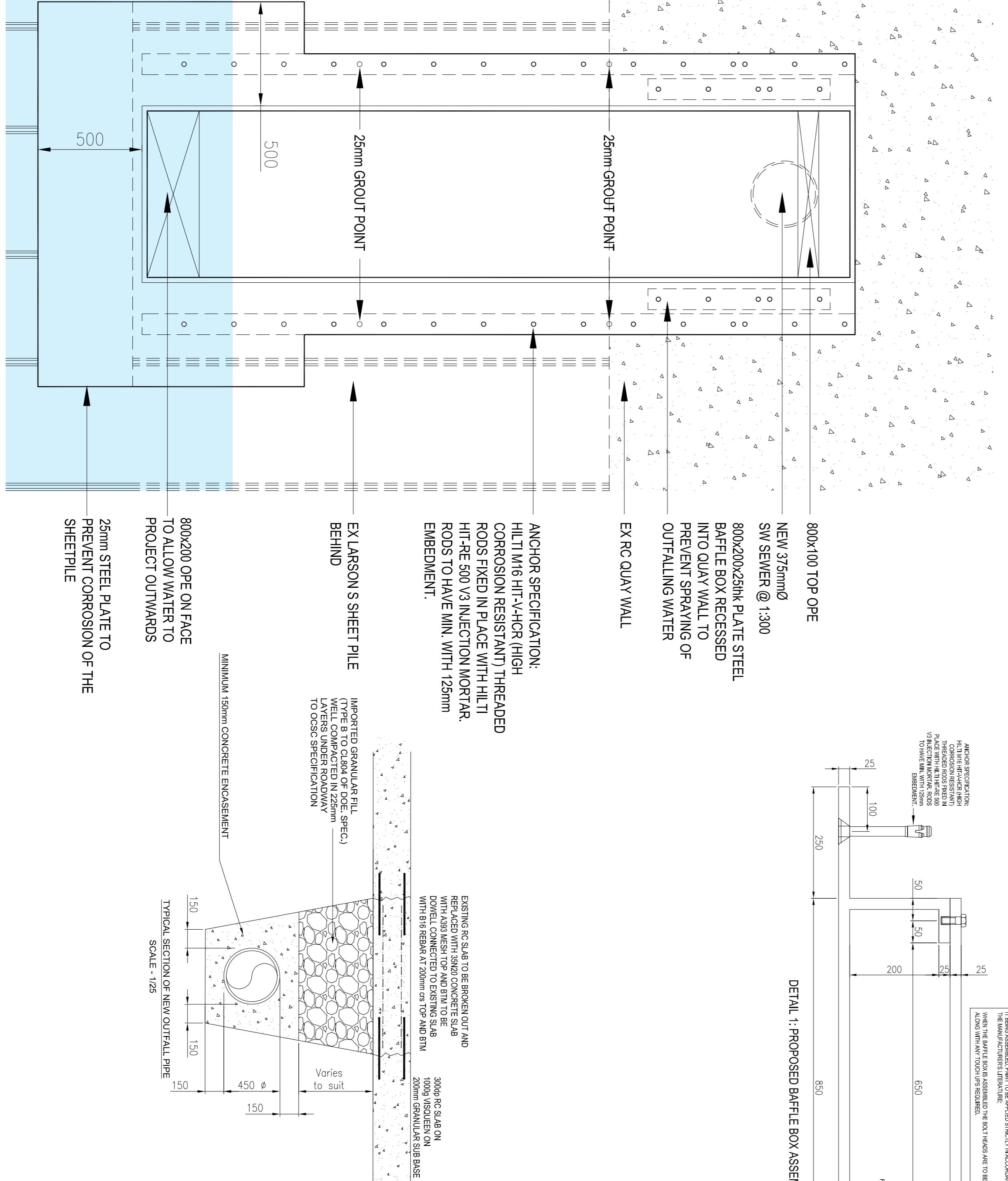
SECTION A-A: QUAY WALL OUTFALL PLAN THROUGH RECESSED PIPE



SECTION B-B: QUAY WALL OUTFALL PLAN THROUGH RECESSED BOX / RC WALL



SECTION D-D: QUAY WALL OUTFALL PLAN THROUGH RECESSED BOX / SHEET PILE



DETAIL A: QUAY WALL OUTFALL SECTION THROUGH PIPE

QUAY WALL OUTFALL ELEVATION

PROJECT	CLIENT	Rev	Sts	Description	Date
The Railyard Apartments, Cork	Progressive Commercial Construction Limited	01/08/24	ISSUE FOR PLANNING		
	TITLE				
	Typical Quay Wall Outfall Details				
DOCUMENT REFERENCE					
18254-MMS-ZZ-ST-DR-C-0007					
PROJECT-ORIGINATOR-ZONE-LEVEL-TYPE-DISCIPLINE-NUMBER					
REF:	S2				
As Shown	18254				
SCALE	M.M.				
PROJECT NUMBER					
STATUS:					
PO1					

## **Appendix B              Design & Calculations**

- (i)      Wastewater Discharge Calculations
- (ii)     Surface Water Discharge Calculations



## Contract

## AQ 2

**Job ref.**

18254

## Element:

## Foul Sewer Design

## Calc. Sheet No.

## Sewer Ref.

## Calculations by

**Checked by**

Date

**ISSUE.**

---

5

---

REV.

---

1

### Daily Foul Water Discharge (DWF)

Ref.	Development Type		Units	Beds	Population	Area	Design Flows			Flow	Flow
			(No.)	(No.)	(No.)	(Sq.m)	(l/hd/day)	(l/100sq.m)	(l/room/d)	(Litres / day)	(Litres/sec)

## Residential Development

Residential Development									
	1 bed Apartment	92	1	2.7		165		40986	0.47
	2 bed Apartment	88	2	2.7		165		39204	0.45
	3 bed Apartment	12	3	2.7		165		5346	0.06
	Studio Unit	25	1	2.7		165		11138	0.13

**Project:** The Railyard Apartments  
**Client:** Progressive Commercial Construction Ltd  
**Drawing:**  
**Job. No.:** 18254  
**Catchment:**

**Design by:** PTM  
**Date:** 12/06/2024  
**Checked by:**  
**Revision:**  
**Rev. by:**  
**Date:**

**Surface Water Attenuation Design**

**AREA:**

**0.27 Ha**

**1 in 20 year Rainfall event**

**Pump Capacity =**

**60.00 l/s**

**m**

Duration (minutes)	Rainfall * (mm)	Rainfall (m3/ha)	Roofs Flow (m3)	Greenfield Flow (m3)	Roads Flow (m3)	Total Inflow (m3)	Allowable Outflow (m3)	Storage (m3)	hrs
2	5.50	55.00	8.15	0.00	4.12	12.27	7.20	5.07	
5	11.00	110.00	16.30	0.00	8.24	24.54	18.00	6.54	
10	15.30	153.00	22.67	0.00	11.46	34.13	36.00	-1.87	
15	18.00	180.00	26.68	0.00	13.48	40.16	54.00	-13.84	
30	22.40	224.00	33.20	0.00	16.78	49.97	108.00	-58.03	
60	27.70	277.00	41.05	0.00	20.75	61.80	216.00	-154.20	1
120	34.40	344.00	50.98	0.00	25.77	76.75	432.00	-355.25	2
240	42.80	428.00	63.43	0.00	32.06	95.49	864.00	-768.51	4
360	48.50	485.00	71.88	0.00	36.33	108.20	1296.00	-1187.80	6
720	60.20	602.00	89.22	0.00	45.09	134.31	2592.00	-2457.69	12
1440	74.80	748.00	110.85	0.00	56.03	166.88	5184.00	-5017.12	

**Contribution Areas**

Greenfield (Open Space, Verges, Landscaping)	<b>0.02</b>	Hectares		% Runoff Coefficient
Roofs	<b>0.15</b>	Hectares	<b>100</b>	% Runoff Coefficient
Roads, Carparks	<b>0.11</b>	Hectares	<b>70</b>	% Runoff Coefficient
<b>Total</b>	<b>0.27</b>	Hectares	<b>0.22</b>	Eq Imp Area (Ha)

Attenuation Storage Required = **6.54** m<sup>3</sup>

Attenuation Storage Provided = **50.00** m<sup>3</sup>

## **Appendix C            Irish Water**

### **(i)        Confirmation of Feasibility**

## CONFIRMATION OF FEASIBILITY

Peter Martin

The Chapel  
Blackrock House  
Blackrock Road  
Cork  
Co. Cork  
T12 KRK7

21 December 2023

**Uisce Éireann**  
Bosca OP 448  
Oifig Sheachdta na  
Cathrach Theas  
Cathair Chorcaí

**Uisce Éireann**  
PO Box 448  
South City  
Delivery Office  
Cork City

[www.water.ie](http://www.water.ie)

**Our Ref: CDS23008059 Pre-Connection Enquiry**  
**Albert Quay East, Cork, Co. Cork**

Dear Applicant/Agent,

### **We have completed the review of the Pre-Connection Enquiry.**

Uisce Éireann has reviewed the pre-connection enquiry in relation to a Water & Wastewater connection for a Multi/Mixed Use Development of 218 unit(s) at Albert Quay East, Cork, Co. Cork (**the Development**).

Based upon the details provided we can advise the following regarding connecting to the networks;

- Water Connection** - Feasible without infrastructure upgrade by Uisce Éireann
- Wastewater Connection** - Feasible without infrastructure upgrade by Uisce Éireann

This letter does not constitute an offer, in whole or in part, to provide a connection to any Uisce Éireann infrastructure. Before the Development can be connected to our network(s) you must submit a connection application and be granted and sign a connection agreement with Uisce Éireann.

As the network capacity changes constantly, this review is only valid at the time of its completion. As soon as planning permission has been granted for the Development, a completed connection application should be submitted. The connection application is available at [www.water.ie/connections/get-connected/](http://www.water.ie/connections/get-connected/)

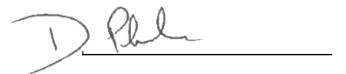
## Where can you find more information?

- **Section A** - What is important to know?

**This letter is issued to provide information about the current feasibility of the proposed connection(s) to Uisce Éireann's network(s). This is not a connection offer and capacity in Uisce Éireann's network(s) may only be secured by entering into a connection agreement with Uisce Éireann.**

For any further information, visit [www.water.ie/connections](http://www.water.ie/connections), email [newconnections@water.ie](mailto:newconnections@water.ie) or contact 1800 278 278.

Yours sincerely,



**Dermot Phelan  
Connections Delivery Manager**

## Section A - What is important to know?

What is important to know?	Why is this important?
<b>Do you need a contract to connect?</b>	<ul style="list-style-type: none"> <li>Yes, a contract is required to connect. This letter does not constitute a contract or an offer in whole or in part to provide a connection to Uisce Éireann's network(s).</li> <li>Before the Development can connect to Uisce Éireann's network(s), you must submit a connection application <u>and be granted and sign</u> a connection agreement with Uisce Éireann.</li> </ul>
<b>When should I submit a Connection Application?</b>	<ul style="list-style-type: none"> <li>A connection application should only be submitted after planning permission has been granted.</li> </ul>
<b>Where can I find information on connection charges?</b>	<ul style="list-style-type: none"> <li>Uisce Éireann connection charges can be found at: <a href="https://www.water.ie/connections/information/charges/">https://www.water.ie/connections/information/charges/</a></li> </ul>
<b>Who will carry out the connection work?</b>	<ul style="list-style-type: none"> <li>All works to Uisce Éireann's network(s), including works in the public space, must be carried out by Uisce Éireann*.</li> </ul> <p>*Where a Developer has been granted specific permission and has been issued a connection offer for Self-Lay in the Public Road/Area, they may complete the relevant connection works</p>
<b>Fire flow Requirements</b>	<ul style="list-style-type: none"> <li>The Confirmation of Feasibility does not extend to fire flow requirements for the Development. Fire flow requirements are a matter for the Developer to determine.</li> <li><b>What to do?</b> - Contact the relevant Local Fire Authority</li> </ul>
<b>Plan for disposal of storm water</b>	<ul style="list-style-type: none"> <li>The Confirmation of Feasibility does not extend to the management or disposal of storm water or ground waters.</li> <li><b>What to do?</b> - Contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges.</li> </ul>
<b>Where do I find details of Uisce Éireann's network(s)?</b>	<ul style="list-style-type: none"> <li>Requests for maps showing Uisce Éireann's network(s) can be submitted to: <a href="mailto:datarequests@water.ie">datarequests@water.ie</a></li> </ul>

<b>What are the design requirements for the connection(s)?</b>	<ul style="list-style-type: none"> <li>The design and construction of the Water &amp; Wastewater pipes and related infrastructure to be installed in this Development shall comply with <b><i>the Uisce Éireann Connections and Developer Services Standard Details and Codes of Practice</i></b>, available at <a href="http://www.water.ie/connections">www.water.ie/connections</a></li> </ul>
<b>Trade Effluent Licensing</b>	<ul style="list-style-type: none"> <li>Any person discharging trade effluent** to a sewer, must have a Trade Effluent Licence issued pursuant to section 16 of the Local Government (Water Pollution) Act, 1977 (as amended).</li> <li>More information and an application form for a Trade Effluent License can be found at the following link: <a href="https://www.water.ie/business/trade-effluent/about/">https://www.water.ie/business/trade-effluent/about/</a></li> </ul> <p>**trade effluent is defined in the Local Government (Water Pollution) Act, 1977 (as amended)</p>