

Date: 22nd March 2023

LANDCARE (EAST MANCHESTER)

One St. Peter's Square
Manchester
M2 3DE

BY Email

CONSULTANTS SHEET PILE WALL PERFORMANCE SPECIFICATION FORMER MANOX SITE, MILES PLATTING

BACKGROUND & OBJECTIVES

E3P is appointed as a Geoenvironmental Engineer by Landcare (East Manchester) to provide professional consultancy services as part of the regeneration of the subject site for low-rise residential end use.

Various stages of intrusive investigation and assessment have been completed, which have identified the presence of varying levels of inorganic ion salts including cyanide, metalloids (arsenic) and soluble phase aromatic hydrocarbons in the Manox area of the site. The presence of the canal located immediately adjacent to the western portion of the site has been identified as a sensitive receptor due to the proximity to the Manox area and therefore the potential for contaminant migration towards the canal.

Hydrogeological assessment completed previously by E3P, along with subsequent assessment for other contaminants of concern (namely carbon disulphide), has also identified the potential that the canal is also causing an in-flow to the site.

With these points in mind, it has been determined that both, on a temporary and a permanent basis, a low permeability barrier will be required along the western boundary in order to ensure there will be no outflow of contaminated groundwater to the canal and conversely, any potentially contaminated canal water into the site.

This letter provides the specification for the low permeability barrier, which is intended to be provided to the designer.

CONSTRUCTION AND INSTALLATION OF SHEET PILE WALL

In order to ensure the western boundary of the site is geotechnically sound, the canal and towpath protected and the development is appropriately supported with respect to its load, a new retaining wall is proposed along the full length of the western boundary in the place of the existing one.

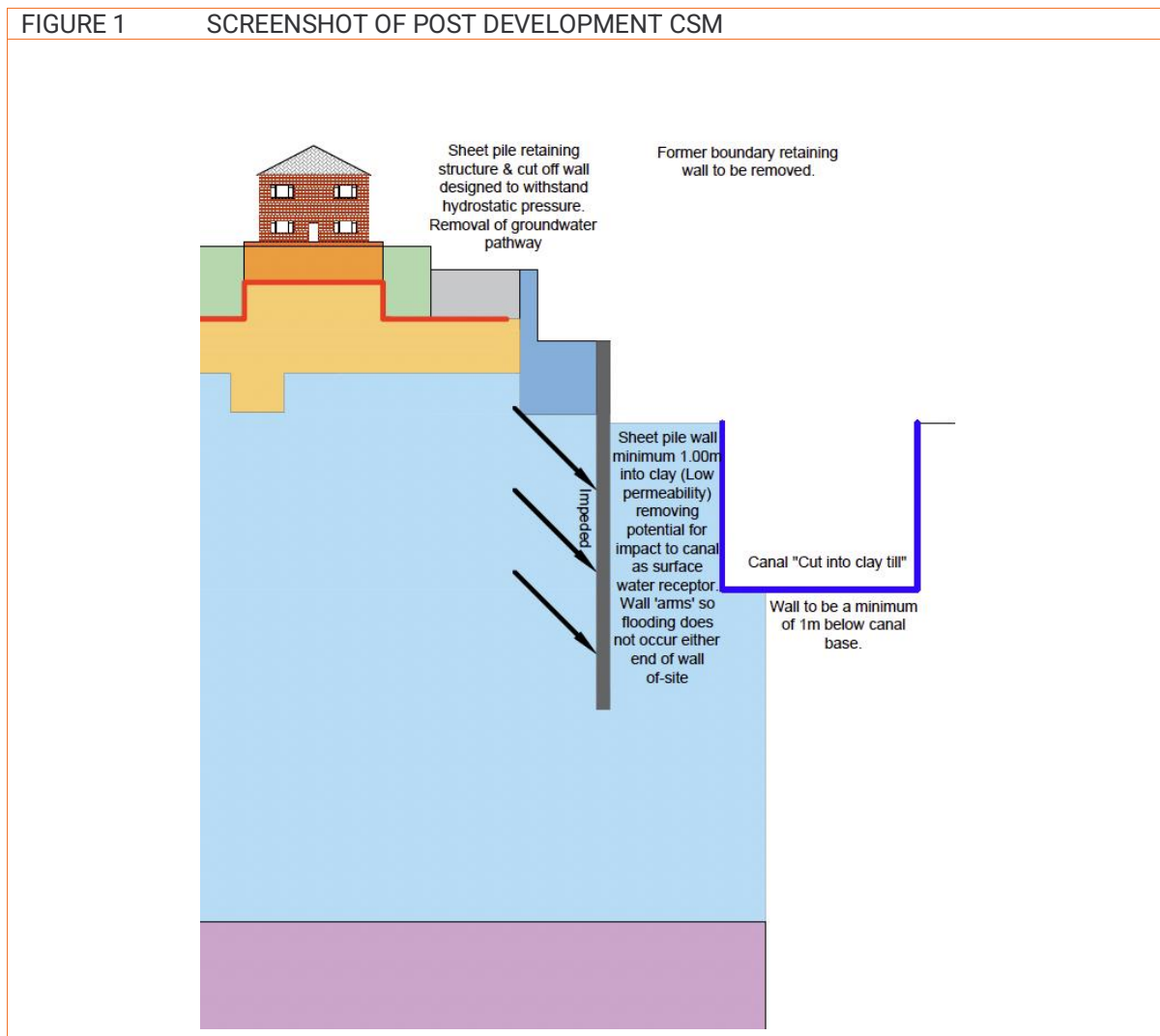


As part of this retaining wall, a sheet pile wall will be installed, which will act as the low permeability barrier. This sheet pile wall will be installed upon commencement of the remediation works (prior to any remediation of the contaminated materials) and will be installed directly on the boundary with the canal to avoid the potential for any unremediated materials being left outside of this wall.

Steel as a construction materials is inherently 100% low permeability to the passage of water, however steel sheet piles have interlocks at discrete centres along the wall length, usually at 600 to 800mm centres, which if left unsealed can allow the water to pass through.

To ensure the sheet pile wall is installed as an low permeability barrier, the application of a sealant at the interlocks will be required. The specific sealant to be used will be determined by the specialist designer to create the design. Figure 1 demonstrates the post-development CSM in relation to the installation of the sheet pile wall.

FIGURE 1 SCREENSHOT OF POST DEVELOPMENT CSM



Manox**Sheet Pile Wall Performance Specification****22nd March 2023**

The sheet pile wall will be installed across the whole western boundary length which borders the canal. There will also be a requirement to create a return at the north western and south western corners of the site to ensure that any migration from the subject site during remediation works, is encapsulated and will not migrate around either side of the sheet pile wall. It is recommended that the return on this sheet pile wall is a minimum of 1m.

There will also be a requirement to install the sheet pile wall to the depth of the canal with an additional 1m beyond the canal base. Based on an average depth of circa 2m to the canal basin, the sheet pile wall will need to be installed 3m below tow path to ensure there is full protection from the potential migration of water in or out of the canal.

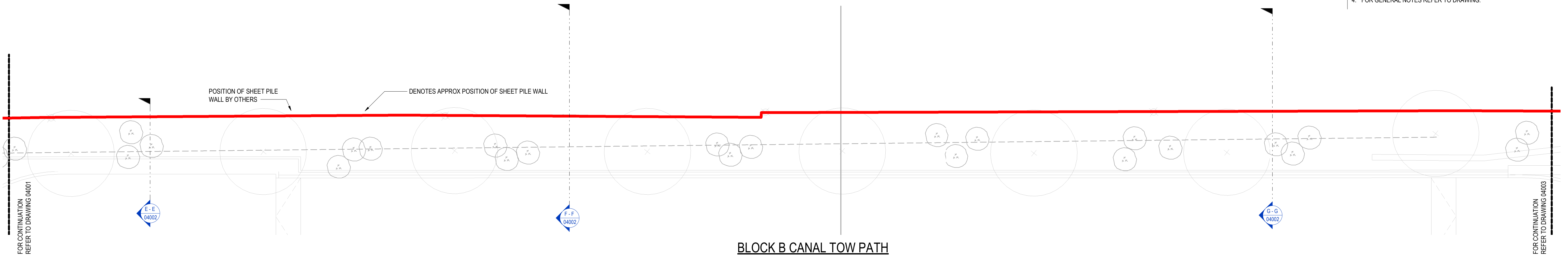
The sheet pile wall will then be brought to the level of the site alongside the construction of the retaining wall to act as the permanent design.

I trust the above provides sufficient information however if you need anything further please do not hesitate to contact me.

Yours sincerely,
For and on behalf of E3P Ltd

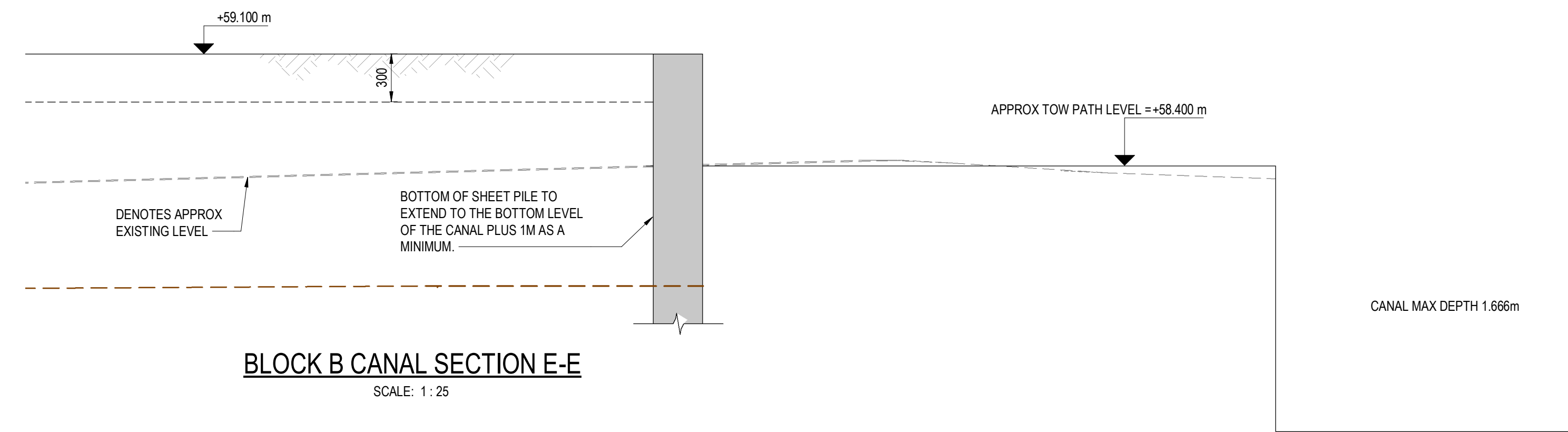
Stephanie Cox
Director





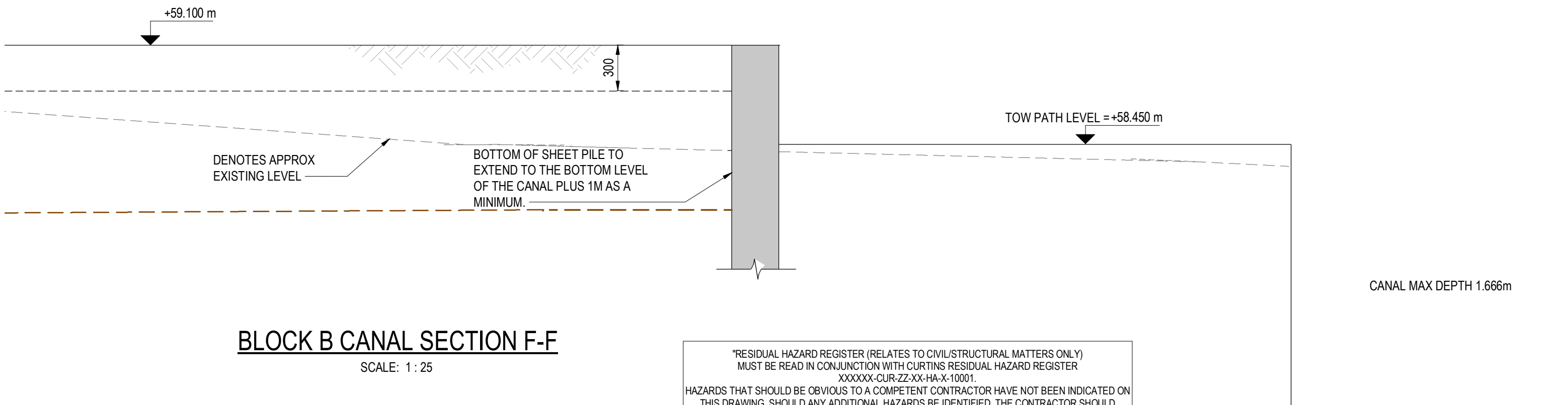
**BLOCK B CANAL TOW PATH
FOUNDATION GENERAL
ARRANGEMENT - CALLOUT 1**

SCALE: 1 : 100



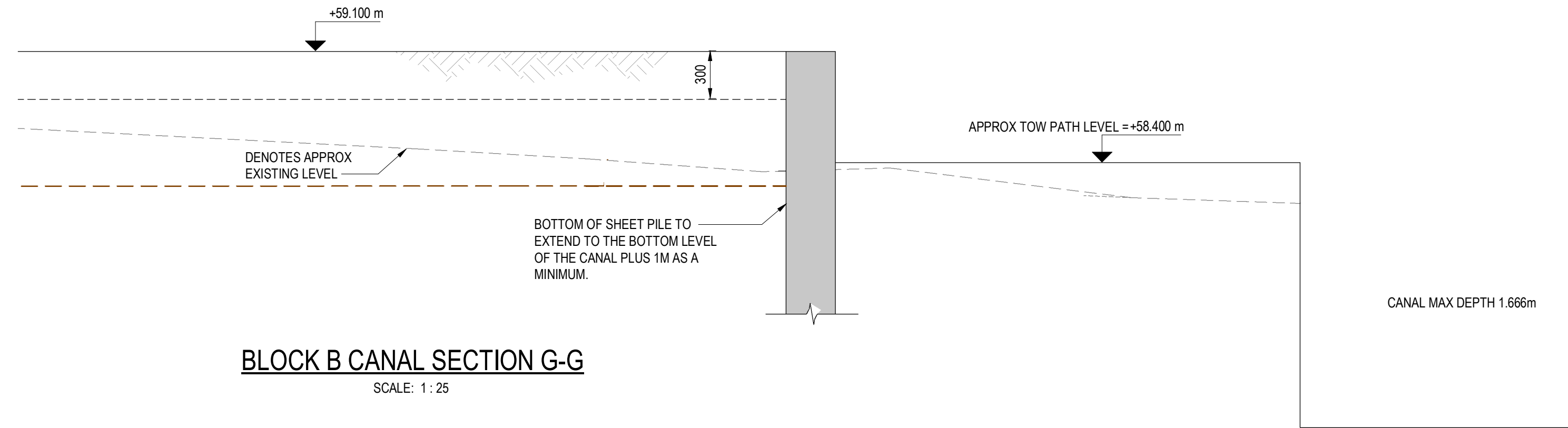
BLOCK B CANAL SECTION E-E

SCALE: 1 : 25



BLOCK B CANAL SECTION F-F

SCALE: 1 : 25



BLOCK B CANAL SECTION G-G

SCALE: 1 : 25

LEVELS TBC BY
EP3/CONTRACTOR

ALL LEVEL INFO IS BASED
EP3 CUT/FILL INFO

ALLOWANCE HAS BEEN MADE FOR
300mm PILING MATT ON TOP OF
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KEY
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P02	SHEET PILE UPDATE	16.12.22	HW	DS
P01	INITIAL ISSUE	27.10.22	DS	DS
Rev:	Description:	Date:	By:	Chkd:



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Status: **PRELIMINARY**

Project: **MANOX DEVELOPMENT**

Rev: **04002 - S**

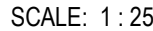
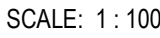
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Size: **A1** Date: **27.10.22** Drawn By: **DS** Designed By: **DS** Checked By: **DS**

Scale: **As indicated**

Project No: **076298 - CUR - XX - XX - DR - S - 04002 - P02**

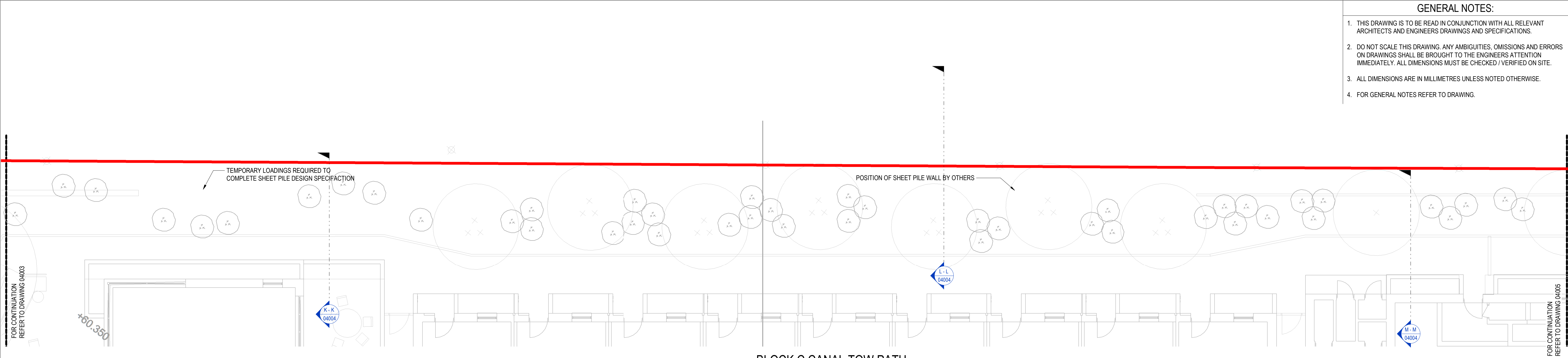
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076298 - CUR - XX - XX - DR - S - 04003 - P02

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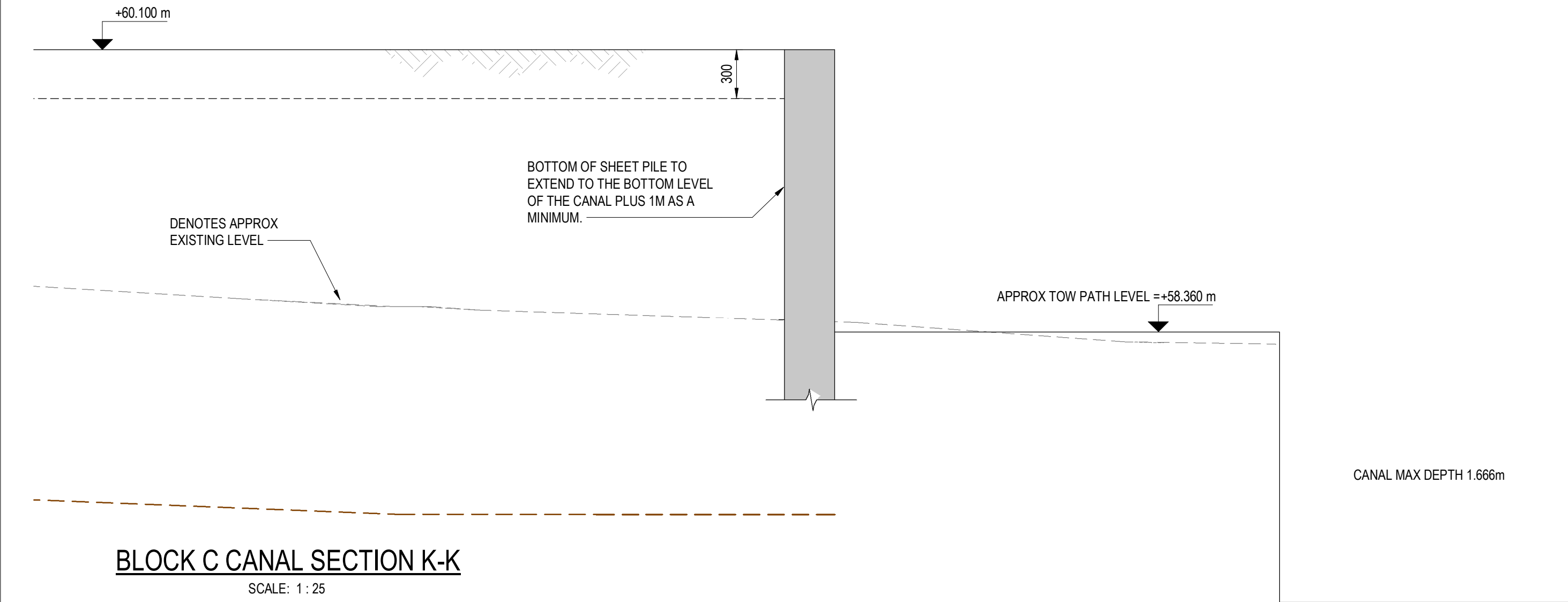
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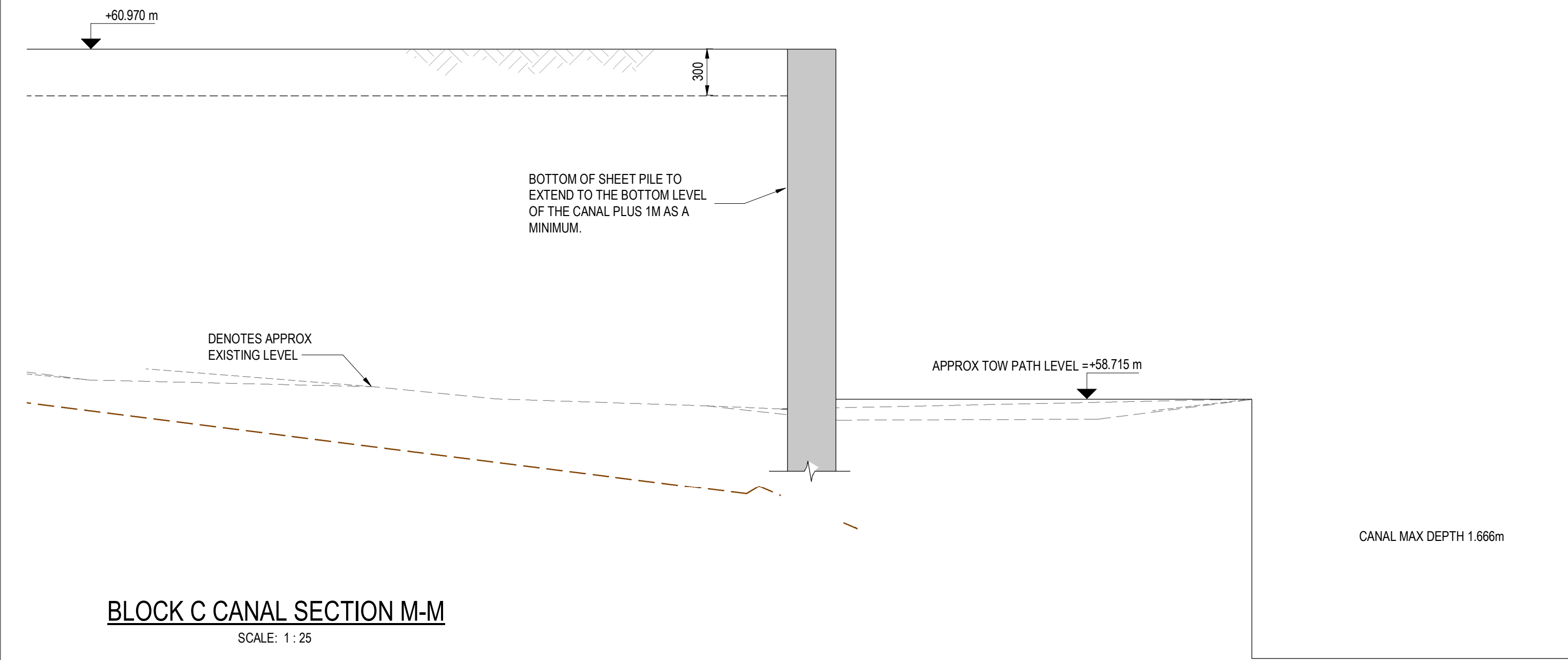
BLOCK C CANAL TOW PATH
FOUNDATION GENERAL
ARRANGEMENT - CALLOUT 1

SCALE: 1: 100



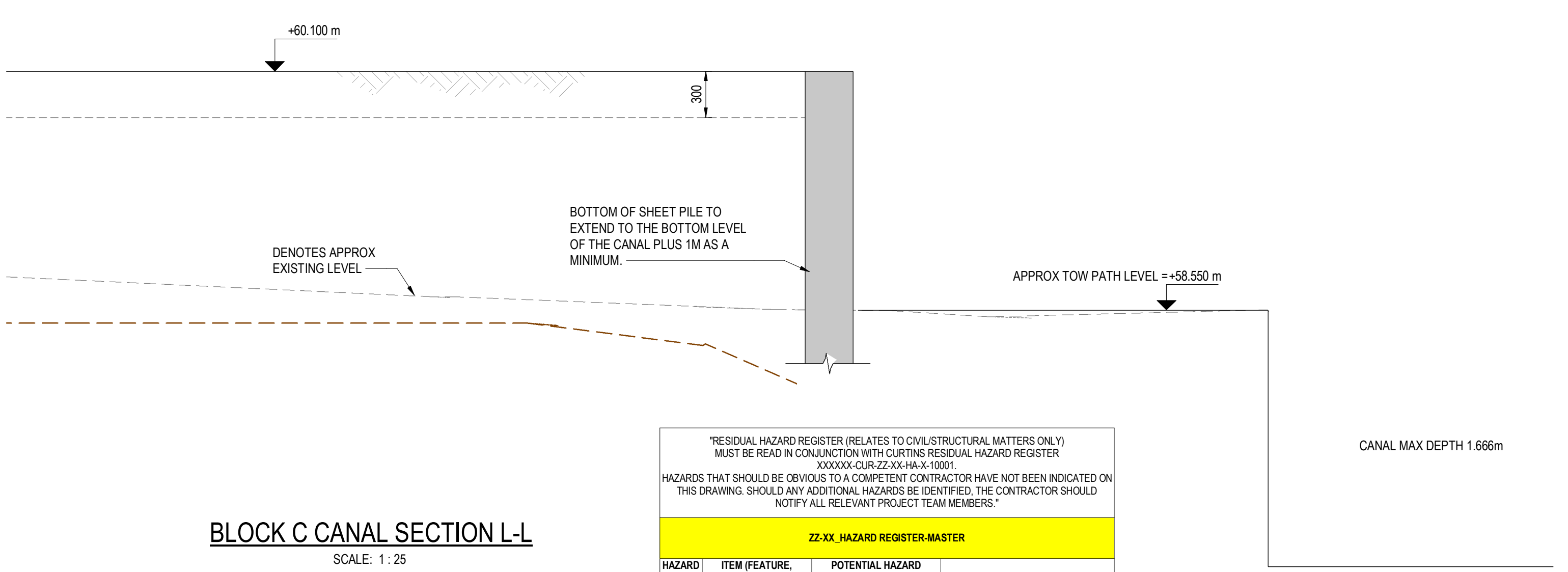
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SCALE: 1: 25



BLOCK C CANAL SECTION M-M

SCALE: 1: 25



BLOCK C CANAL SECTION L-L

SCALE: 1: 25

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INSTALLATION: 7.5Hz

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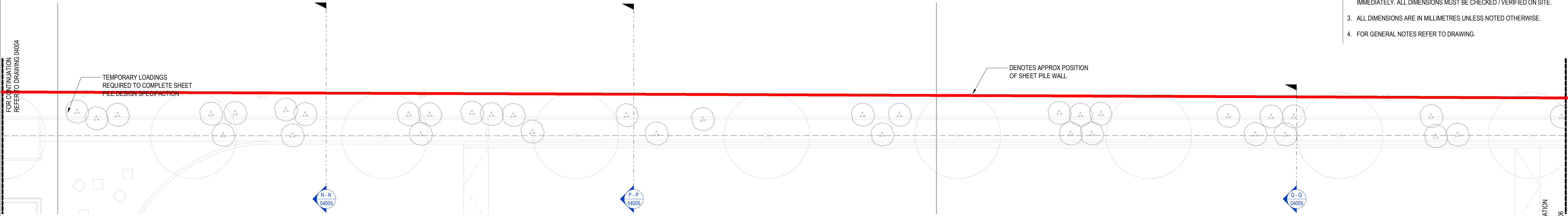
Project: MANOX DEVELOPMENT

Orig Title: SHEET PILE CUT OFF WALL SHEET 4

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	27.10.22	DS	DS	DS
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Project No:	Originator:	Volume:	Level:	Type:
076298 - CUR - XX - XX - DR - S -	04004 -	P02		

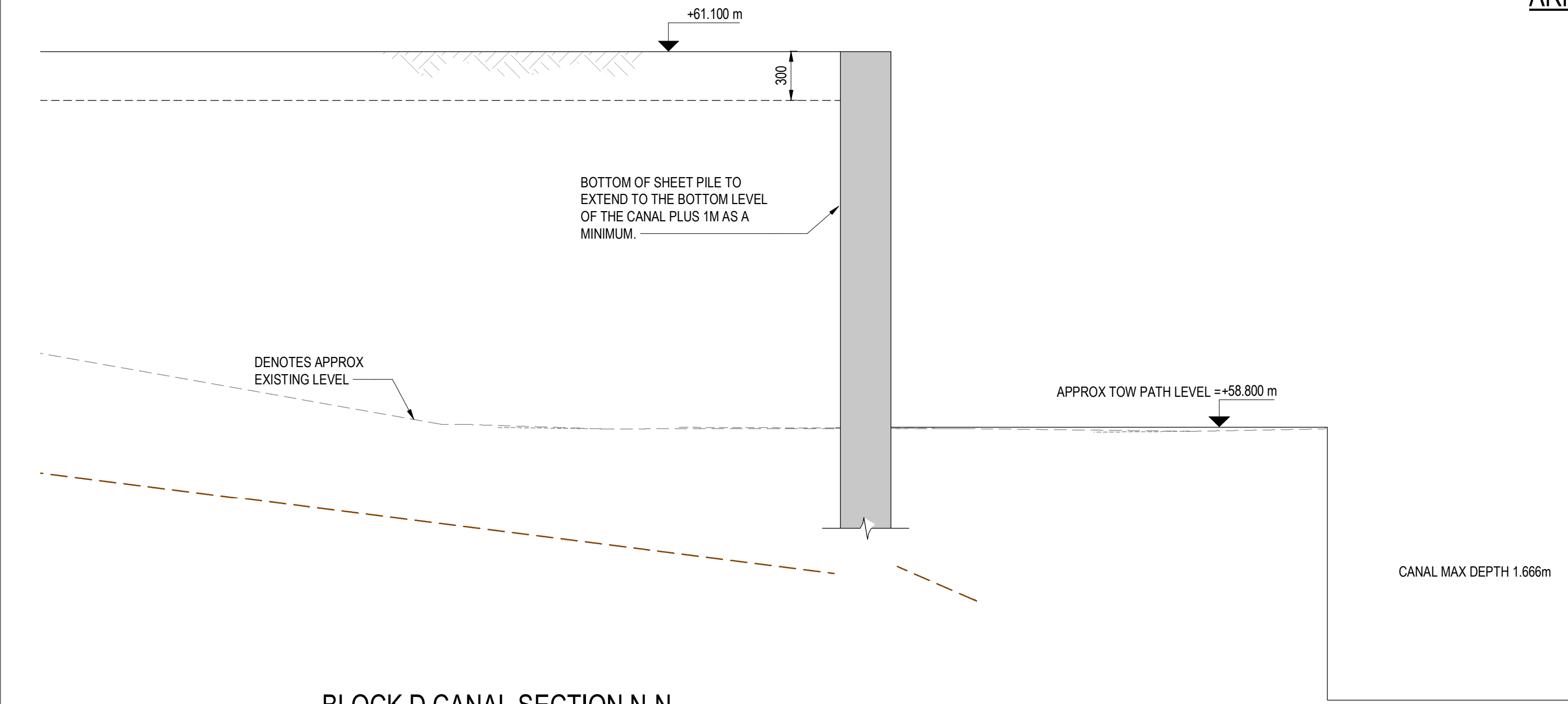
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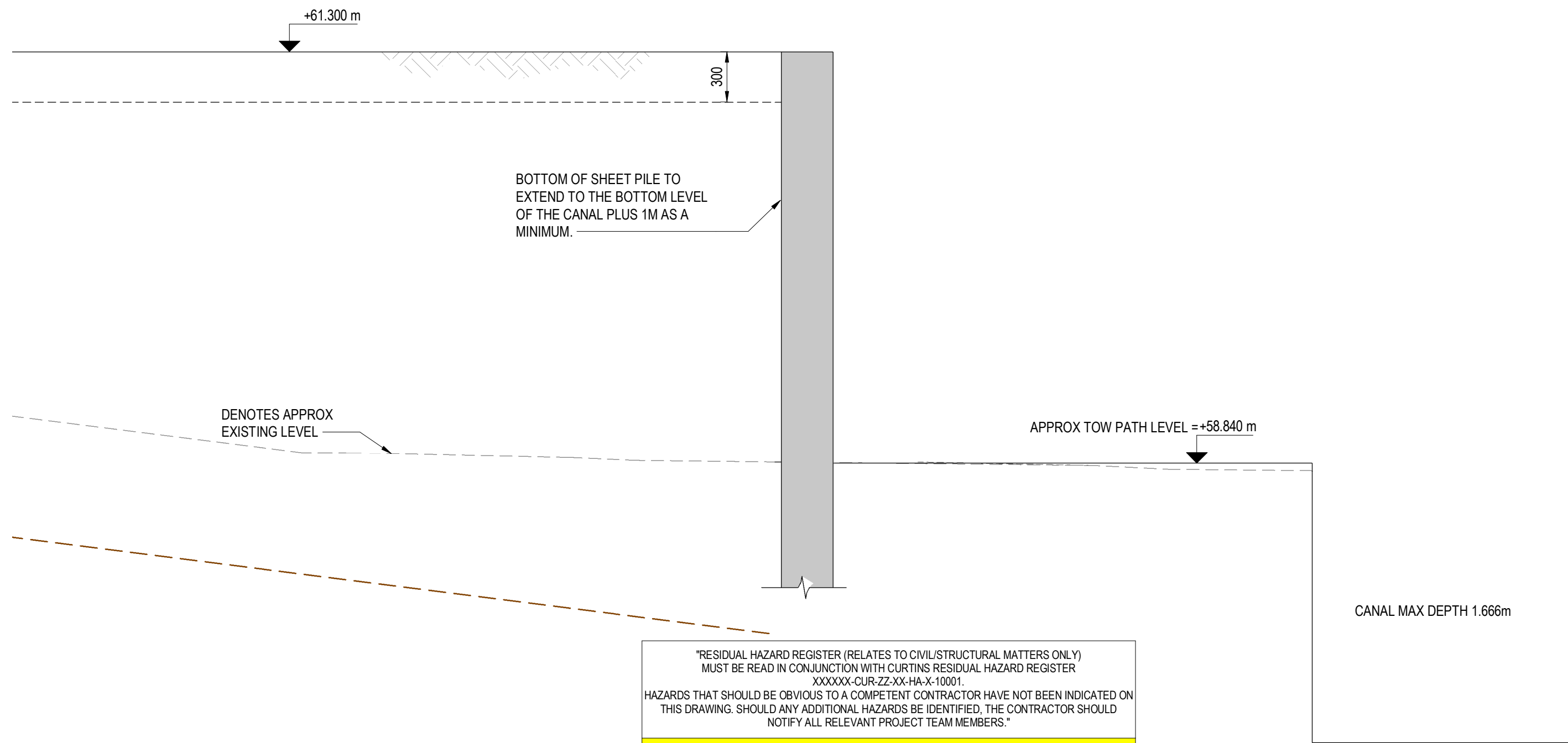


**BLOCK D CANAL TOW PATH
FOUNDATION GENERAL
ARRANGEMENT - CALLOUT 1**
SCALE: 1 : 100

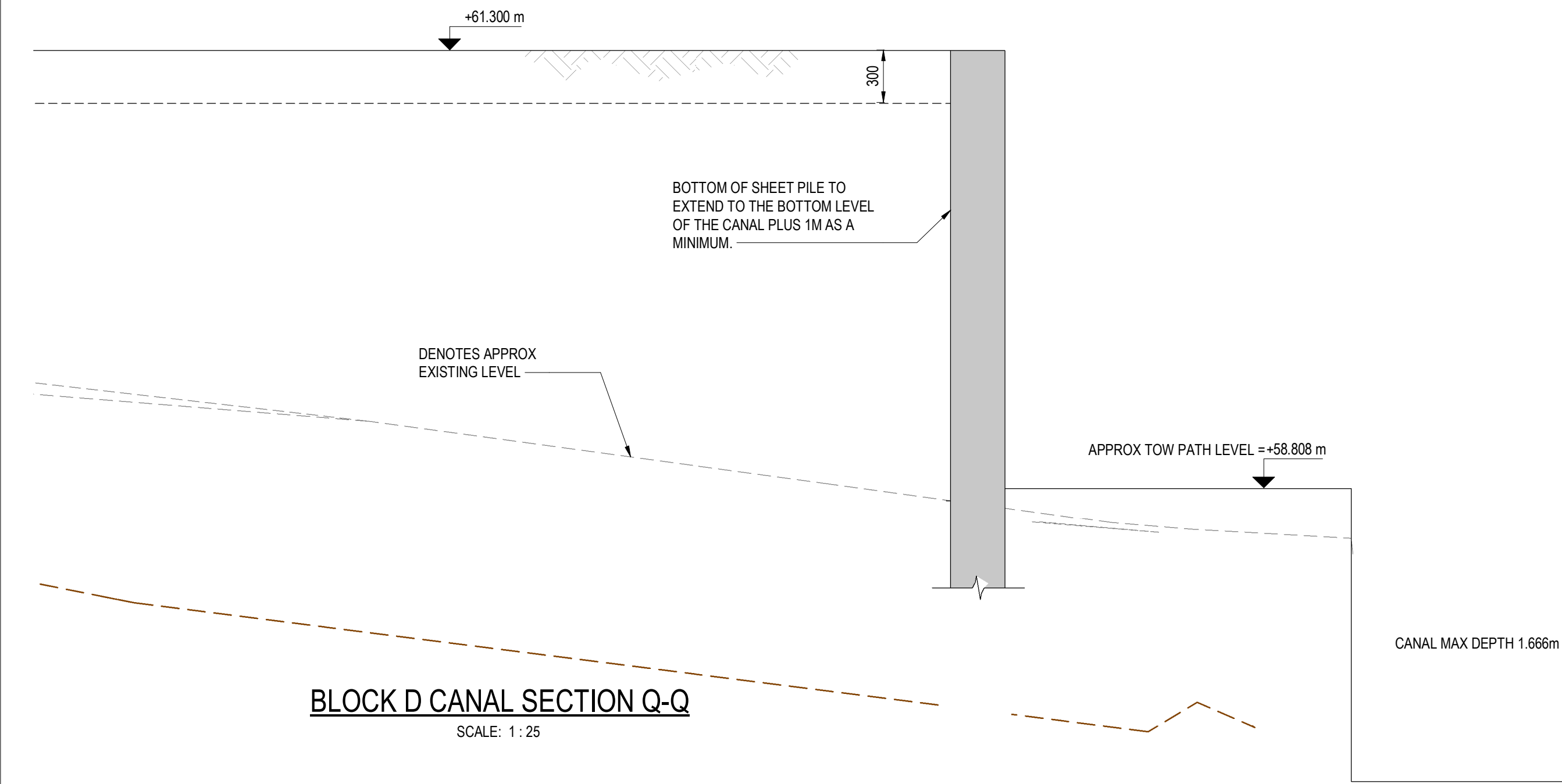
FOR CONTINUATION
REFER TO
DRAWING 04005



BLOCK D CANAL SECTION N-N
SCALE: 1 : 25



BLOCK D CANAL SECTION P-P
SCALE: 1 : 25



BLOCK D CANAL SECTION Q-Q
SCALE: 1 : 25

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Status: **PRELIMINARY**

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**SHEET PILE CUT OFF WALL
SHEET 5**

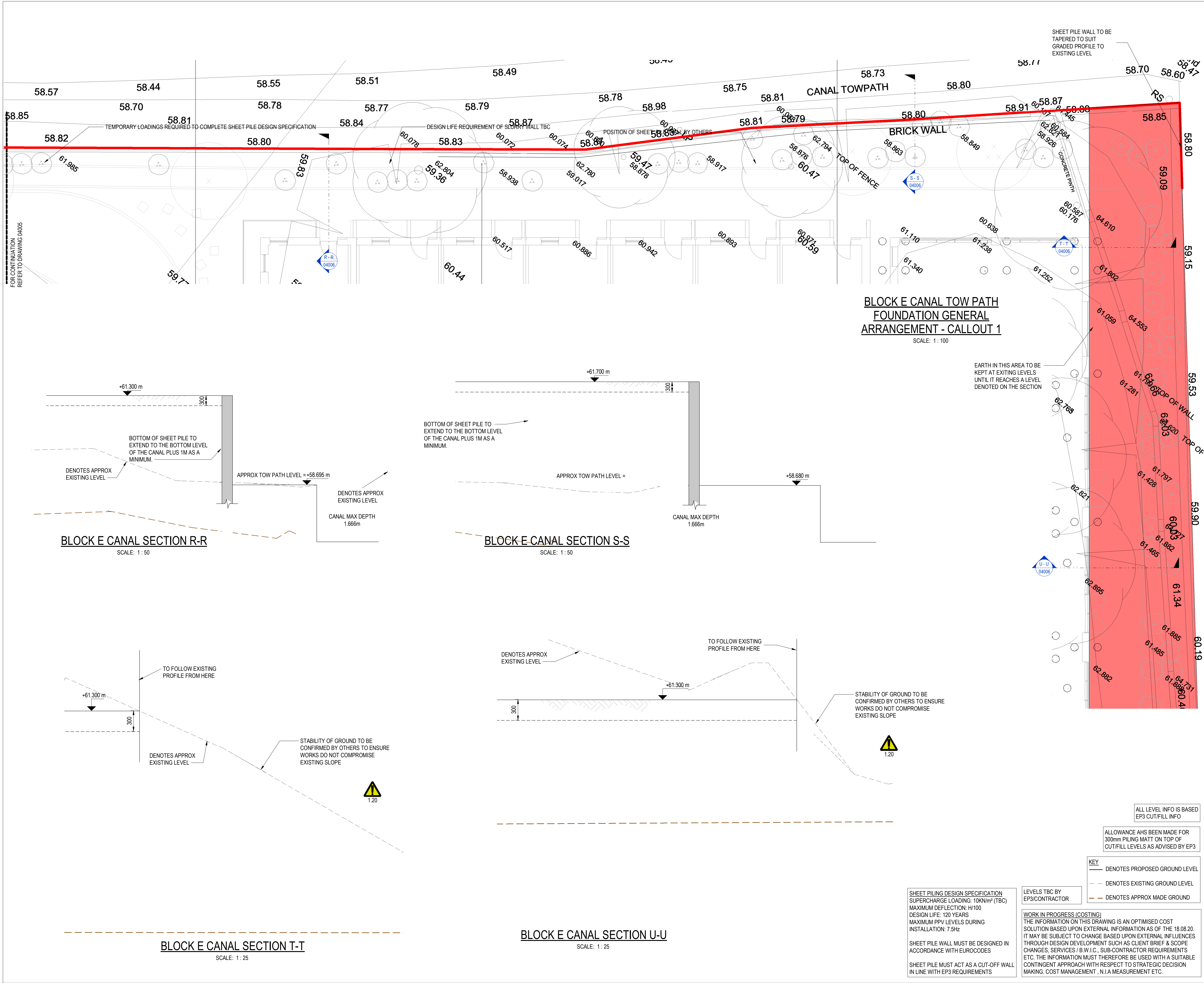
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Project No: Originator: Volume: Level: Type: Role: Category / Number: Rev:

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Model Name: 076298-CUR-XX-XX-DR-S-19-00002



GENERAL NOTES:

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
- DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- FOR GENERAL NOTES REFER TO DRAWING.

"RESIDUAL HAZARD REGISTER (RELATES TO CIVIL/STRUCTURAL MATTERS ONLY) MUST BE READ IN CONJUNCTION WITH CURTINS RESIDUAL HAZARD REGISTER XXXXX-CUR-ZZ-XX-XX-X-10001. HAZARDS THAT SHOULD BE OBVIOUS TO A COMPETENT CONTRACTOR HAVE NOT BEEN INDICATED ON THIS DRAWING. SHOULD ANY ADDITIONAL HAZARDS BE IDENTIFIED, THE CONTRACTOR SHOULD NOTIFY ALL RELEVANT PROJECT TEAM MEMBERS."

ZZ-XX HAZARD REGISTER-MASTER

HAZARD REF.	ITEM (FEATURE, ELEMENT OR ACTIVITY)	POTENTIAL HAZARD IDENTIFIED	ACTION
1.0 ENABLING / HIGHWAYS WORKS			
1.1	Remediation works and Cut and Fill exercise	Risk of exposure to contaminated ground, groundwater, and ground gases.	Contractor to carry out works in accordance with recommendations provided in E3P remediation strategy
1.2	Remediation works and Cut and Fill exercise	Made ground present on site which may be weak / loose and susceptible to loss of equilibrium or large ground movements during cut and fill exercise and remediation works	Contractor to carry out works in accordance with recommendations provided in E3P remediation strategy
1.3	Remediation works and Cut and Fill exercise	Existing buried and overhead services	Contractor to refer to GPR survey and STATS information to identify existing services.
1.4	Remediation works and Cut and Fill exercise	Local collapse of ground due to existing mine shaft and shallow coal seams	Contractor to carry out works in accordance with recommendations provided in E3P remediation strategy
2.0 SITE WIDE ISSUES			
2.1	Various locations around building	Risk of exposure to contaminated ground, groundwater, and ground gases.	Contractor to refer to geotechnical investigation and remediation strategy reports
2.2	Any vibration sensitive works along the canal tow path such as excavation and piling works	Exceeding safe vibration limits posed by Canal and River Trust for construction activities adjacent the canal tow path	Contractor to adhere to vibration limits posed by Canal and River Trust and minimise vibration activities adjacent the canal tow path
2.3	General construction activities along canal tow path	Flooding	Contractor to monitor weather warnings and sign up to alerts from Canal and River Trusts
2.4	General construction activities along canal tow path	Damage to canal tow path infrastructure	Contractor to provide condition survey of existing canal tow path infrastructure and report any damages to the Canal and River Trust
4.0 DEMOLITION OF EXISTING STRUCTURES/ SITE CLEARANCE			
4.1	Demolition of existing retaining walls	Potential to destabilise the retained earth	Contractor to provide method statement for demolition of the existing retaining wall in accordance with following deconstruction sequence: - Excavate and batter back retained Earth - Remove stem from top to bottom - Remove foundations and concrete slab
5.0 EXCAVATIONS AND FOUNDATIONS			
5.1	Substructure construction activities	Local collapse of ground due to existing mine shaft and shallow coal seams	Foundation design to accommodate risk of mine collapse. Ground beams to be designed to span 3m and cantilever 1.5m.
5.2	Foundation excavations	Risk of exposure to contaminated ground, groundwater, and ground gases.	Contractor to carry out works in accordance with recommendations provided in E3P remediation strategy
7.0 ERECTING STRUCTURES AND PLACING COMPONENTS			
7.1	Courtyard retaining walls	Instability of courtyard retaining wall due to higher surcharge loads from temporary construction activities	Contractor to ensure construction sequence does not surcharge the courtyard retaining walls with a higher surcharge load from construction activities
7.2	New Canal Tow Path Retaining Wall	Instability of retaining wall due to surcharge from adjacent new building foundations	Formation level of strip footings adjacent to the tow path retaining walls to be lowered to ensure foundations do not surcharge new canal tow path retaining wall

P02	SHEET PILE UPDATE	16.12.22	HW	DS
P01	INITIAL ISSUE	27.10.22	DS	DS
Rev:	Description:	Date:	By:	Chkd:

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Status:

PRELIMINARY

Project:

MANOX DEVELOPMENT

Dwg Title:

**SHEET PILE CUT OFF WALL
SHEET 6**

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	27.10.22	DS	DS	DS

Scale: As indicated

Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
076298 - CUR - XX - XX - DR - S -	04006 -	P02					

KEY

- DENOTES PROPOSED GROUND LEVEL
- - - DENOTES EXISTING GROUND LEVEL
- - - DENOTES APPROX MADE GROUND

ALL LEVEL INFO IS BASED EP3 CUT/FILL INFO

ALLOWANCE AHS BEEN MADE FOR 300mm PILING MATT ON TOP OF CUT/FILL LEVELS AS ADVISED BY EP3

SHEET PILING DESIGN SPECIFICATION
SUPERCHARGE LOADINGS: 10kN/m² (TBC)
MAXIMUM DEFLECTION: H/100
DESIGN LIFE: 120 YEARS
MAXIMUM PPV LEVELS DURING INSTALLATION: 7.5Hz

LEVELS TBC BY EP3/CONTRACTOR

WORK IN PROGRESS (COSTING)
THE INFORMATION ON THIS DRAWING IS AN OPTIMISED COST SOLUTION BASED UPON EXTERNAL INFORMATION AS OF THE 18.08.20. IT MAY BE SUBJECT TO CHANGE BASED UPON EXTERNAL INFLUENCES THROUGH DESIGN DEVELOPMENT SUCH AS CLIENT BRIEF & SCOPE CHANGES, SERVICES / B.W.I.C., SUB-CONTRACTOR REQUIREMENTS ETC. THE INFORMATION MUST THEREFORE BE USED WITH A SUITABLE CONTINGENT APPROACH WITH RESPECT TO STRATEGIC DECISION MAKING. COST MANAGEMENT, N.I.A MEASUREMENT ETC.

SHEET PILE WALL MUST BE DESIGNED IN ACCORDANCE WITH EUROCODES

SHEET PILE MUST ACT AS A CUT-OFF WALL IN LINE WITH EP3 REQUIREMENTS