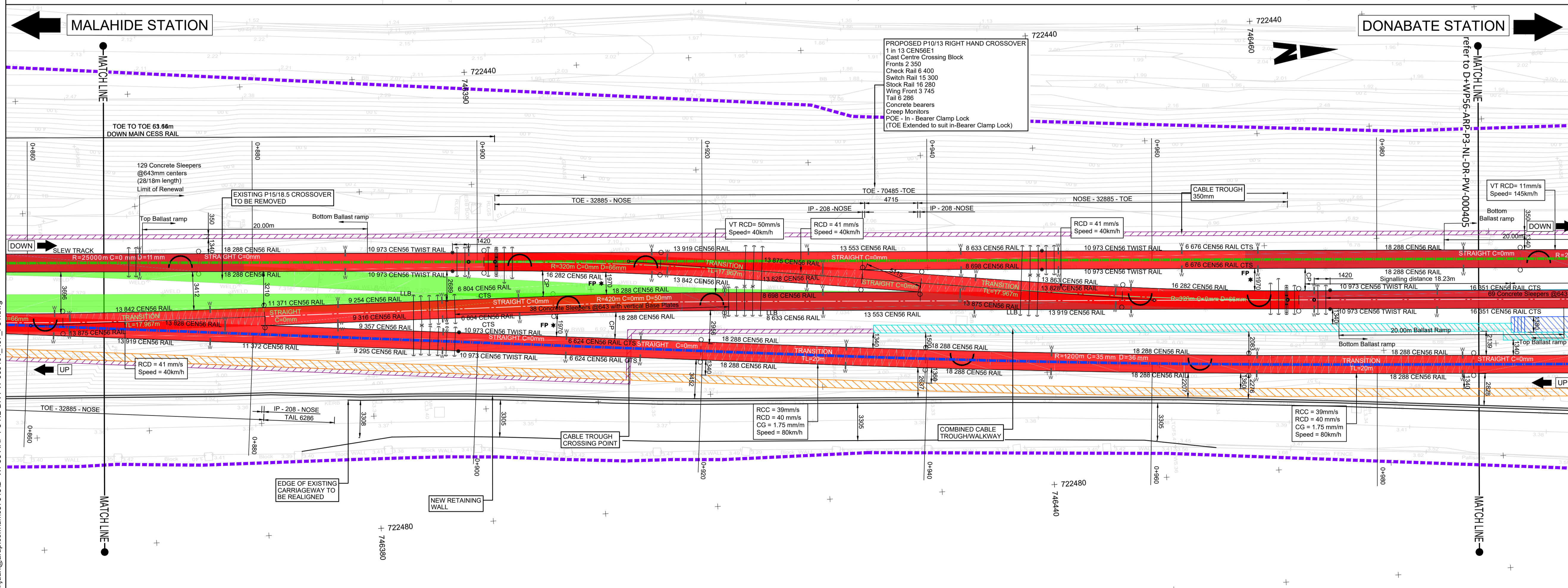


KEY

- RUNNING LINE
- SIDINGS
- PROPOSED TRACK WORK
- TRACK WORK TO BE REMOVED
- EXISTING STATION PLATFORMS
- IRISH RAIL PROPERTY BOUNDARY
- DOWN MAIN
- UP MAIN
- TL (Transition Length) m
- RCC (Rate of Change of Cant) mm/s
- RCD (Rate of Change of Cant Deficiency) mm/s
- CG (Cant Gradient) mm/s
- VT (Virtual Transition)
- CP CLEARANCE POINT (see note 11)
- *FP FOULING POINT (1970mm)
- CTS CUT TO SUIT
- CONCRETE BEARER 265mm WIDE
- WELDS
- DRIVERS RAISED 1.38m WALKWAY
- CESS WALKWAY
- COMBINED CABLE TROUGH/WALKWAY
- CABLE TROUGH
- HAND OF CURVE

Notes

- This design is based upon a topographical survey dated September 2022, completed by APEX survey team. File name: 5243-DART+Coastal - Topographical Survey - Stage A2 C1 Site 03 2D (Malahide). Minor variations to existing arrangement may have occurred since survey took place.
- Chainages, levels and coordinates are shown in meters. All other dimensions are shown in millimeters, unless otherwise stated. All clearance and six-foot intervals are quoted to running edges (RE)
- Chainage datum is +1000 located at the 9.1 milepost located on the Down Main Cess side. It applies for all lines
- Cant shown as positive throughout, except where adverse to the direction of curvature. All in direction of increasing chainage
- The maximum available length for a raised drivers walkway has been shown. The exact length may be shorter and will be determined at the detailed stage of design
- Track gauge to be nominal 1602mm for plain line and 1600mm for P&C
- All P&C shall be vertical rail. All P&C geometries shall be in accordance with IE manufacturers' drawings and CCE-TMS-300 Track Construction Requirements and Tolerances
- The bearer arrangement and rest of the P 10 / 13 turnout and crossover details are as per drawing CCE-TMS-W495-036 (P&C Standard Drawings). This drawing should be read in conjunction with drawing CCE-TMS-W495-036
- Radii quoted are from track centreline, unless otherwise stated
- All rails below 500m radii to be pre-curved, except for CWR rail strings
- Clearance point=foaling point (1970mm)+5200mm
- All transitions curves shall be clothoids
- All proposed alignments should be set out using coordinate information
- Proposed sleeper spacing to be 643mm, unless otherwise stated
- Renewal is to be treated as Track Category 1. Ballast depth to be 300mm below sleeper bottom, with 50 mm sand blanket treatment and separator. Crossfalls to be 1:25 as per CCE-TMS-300 unless otherwise stated
- Modular compliant layouts throughout
- Speed calculations for through speed are based on:
 - Up Main: 50mph
 - Down Main: 90mph
 - Pocket track: 25 mph
- The Rate of Change of Cant Deficiency values of the virtual transitions are based on a vehicle with a distance of 14 m between bogie centres



KEY PLAN

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DART+ Coastal North

NTA
National Transport Authority

Transcend Éireann Project Ireland 2040

Rev	Date	Drn	Chkd	App'd	Description
P01	13/01/2023	SS	TS	RS	---
P02	20/04/2023	SS	TS	RS	For review and comment

Client
Iarnród Éireann
Irish Rail

Engineering Designer
ARUP

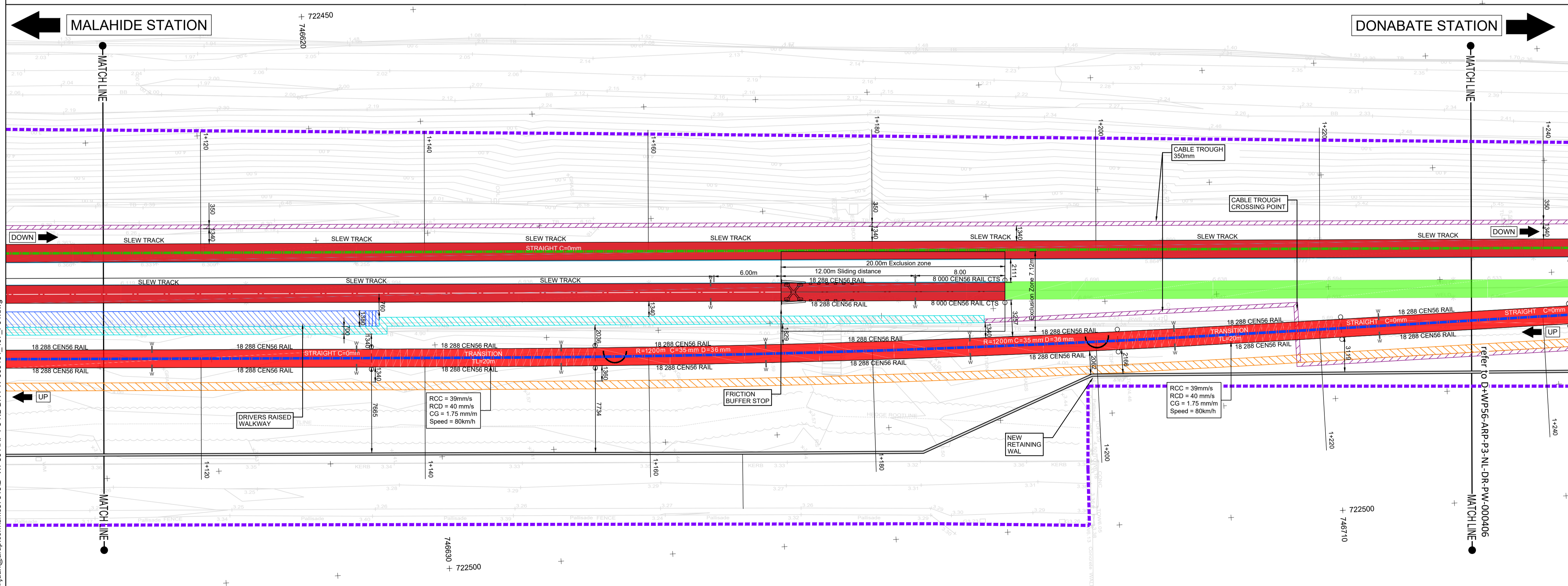
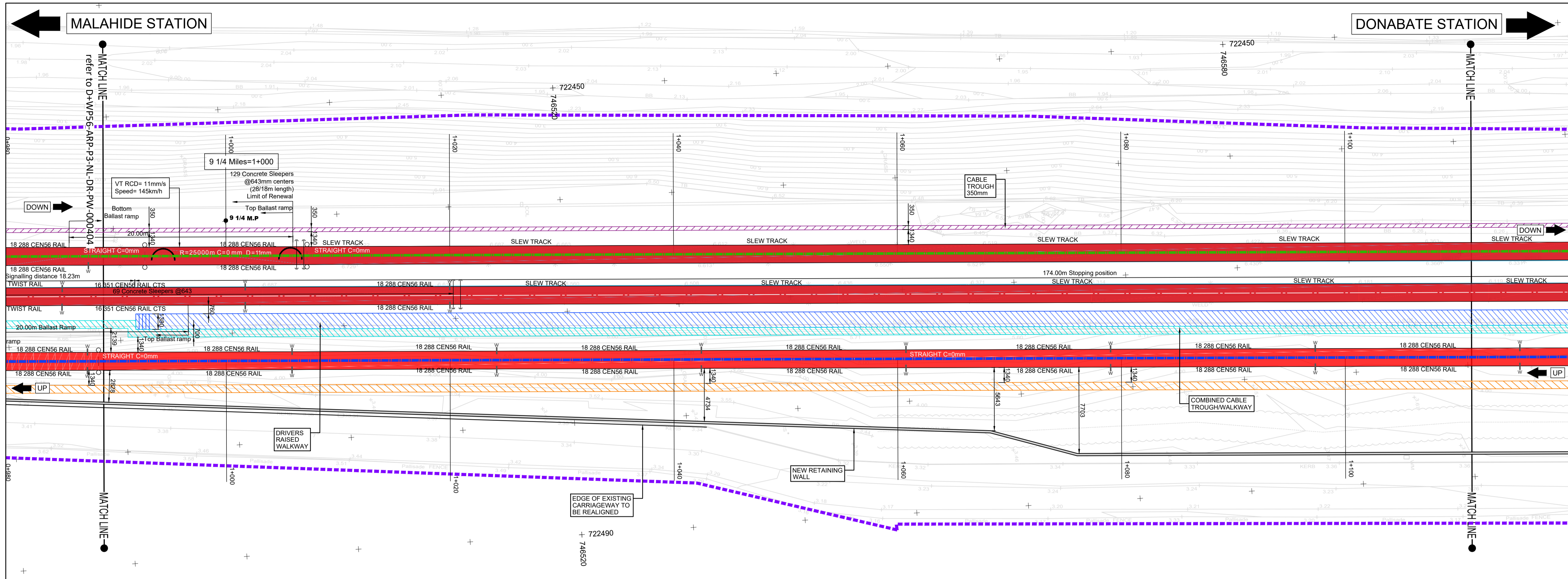
Date: 13/01/2023
Scale: 1:200 @ A1, 1:400 @ A3
Project Code: D+WP56
Originator Code: ARP

Drawn SS
Checked TS
Approved RS

QMS Code: 280275-00

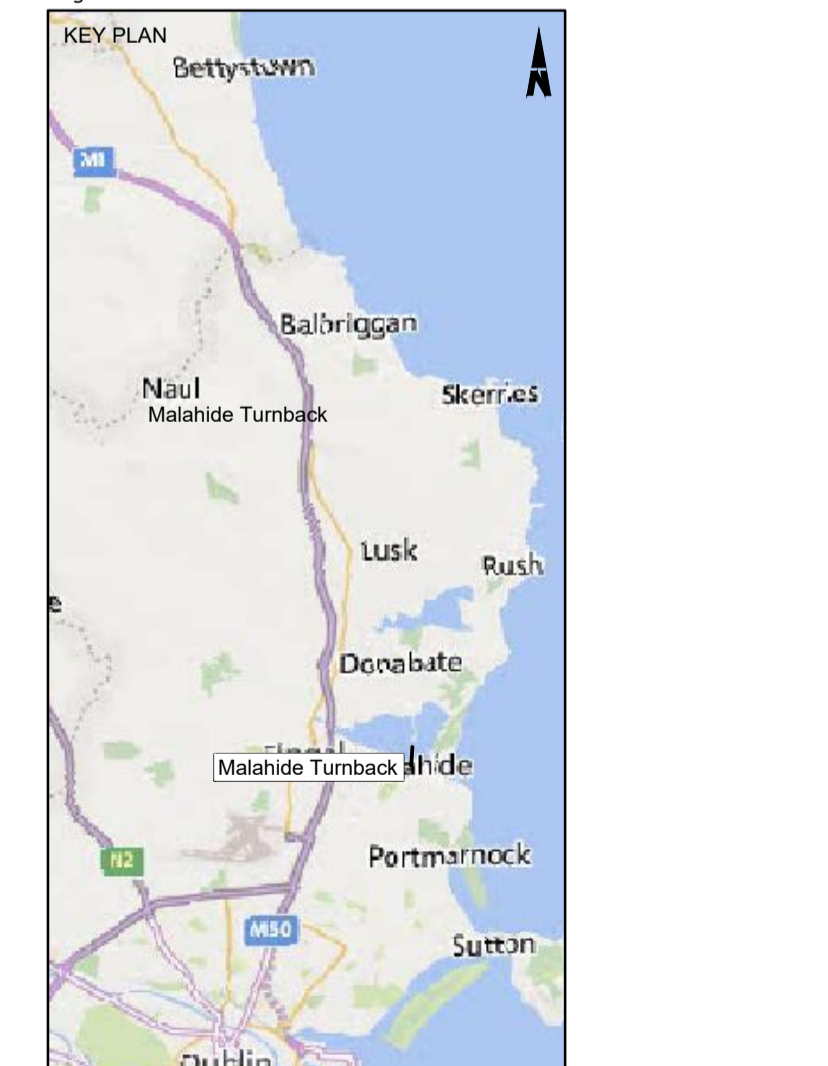
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Drawing Title			
MALAHIDE STATION PRELIMINARY HORIZONTAL TRACK ALIGNMENT			
Drawing File Name		Sheet Number	Status
D+WP56-ARP-P3-NL-DR-PW-000404		1 of 3	S3
Rev		Rev	
P02		P02	

DO NOT SCALE USE FIGURED DIMENSIONS ONLY



- KEY**
- RUNNING LINE
 - SIDINGS
 - PROPOSED TRACK WORK
 - TRACK WORK TO BE REMOVED
 - EXISTING STATION PLATFORMS
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 - WELDS
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 - CESS WALKWAY
 - COMBINED CABLE TROUGH/WALKWAY
 - CABLE TROUGH
 - HAND OF CURVE

- Notes**
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 2. Chainages, levels and coordinates are shown in meters. All other dimensions are shown in millimeters, unless otherwise stated. All clearance and six-foot intervals are quoted to running edges (RE)
 3. Chainage datum is 1+000 located at the 9 1/4 milepost located on the Down Main Cess side. It applies for all lines
 4. Cant shown as positive throughout, except where adverse to the direction of curvature. All in direction of increasing chainage
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 15. Renewal is to be treated as Track Category 1. Ballast depth to be 300mm below sleeper bottom, with 50 mm sand blanket treatment and separator. Crossfalls to be 1:25 as per CCE-TMS-300 unless otherwise stated
 16. Modular compliant layouts throughout
 17. Speed calculations for through speed are based on:
 - Up Main: 50mph
 - Down Main: 90mph
 - Pocket track: 25 mph
 18. The Rate of Change of Cant Deficiency values of the virtual transitions are based on a vehicle with a distance of 14 m between bogie centres



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Rev	Date	Drn	Chk'd	App'd	Description
P01	13/01/2023	SS	TS	RS	---
P02	20/04/2023	SS	TS	RS	For review and comment

Client
Iarnród Éireann
Irish Rail

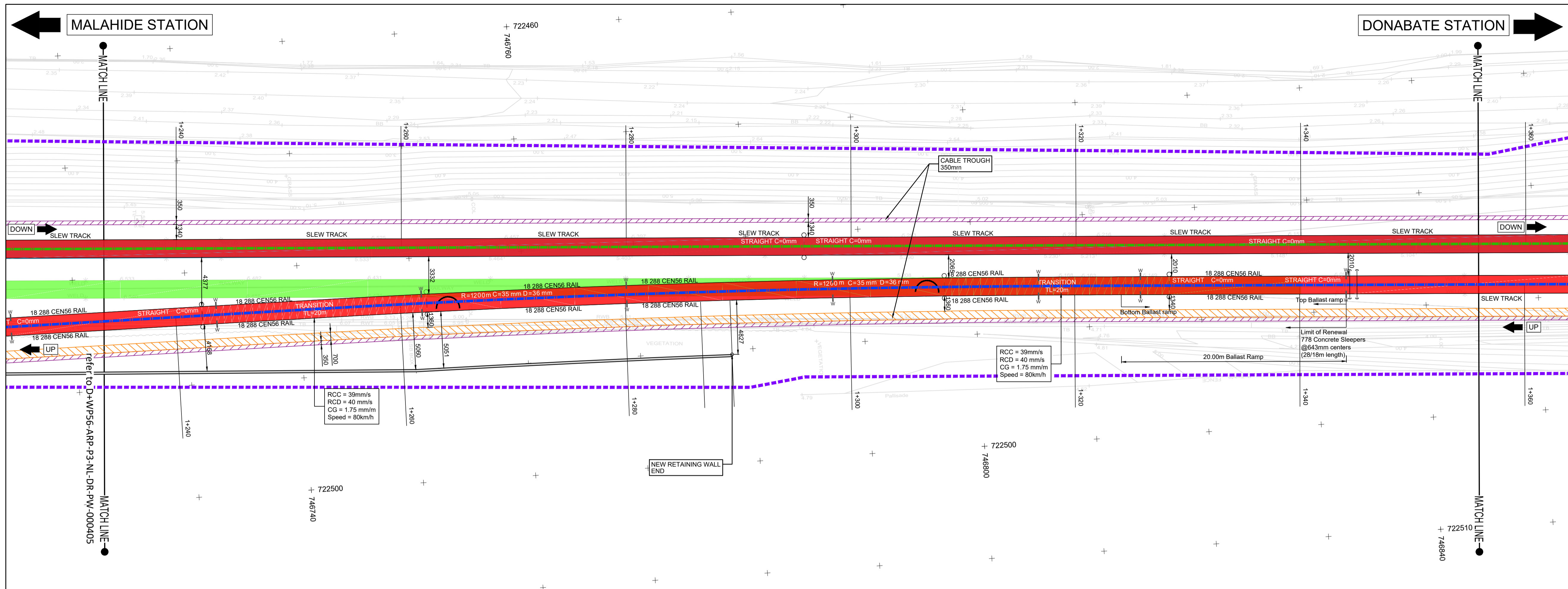
Engineering Designer
ARUP

Date: 13/01/2023
Scale: 1:200 @ A1, 1:400 @ A3
Project Code: D+WP56
Originator Code: ARP

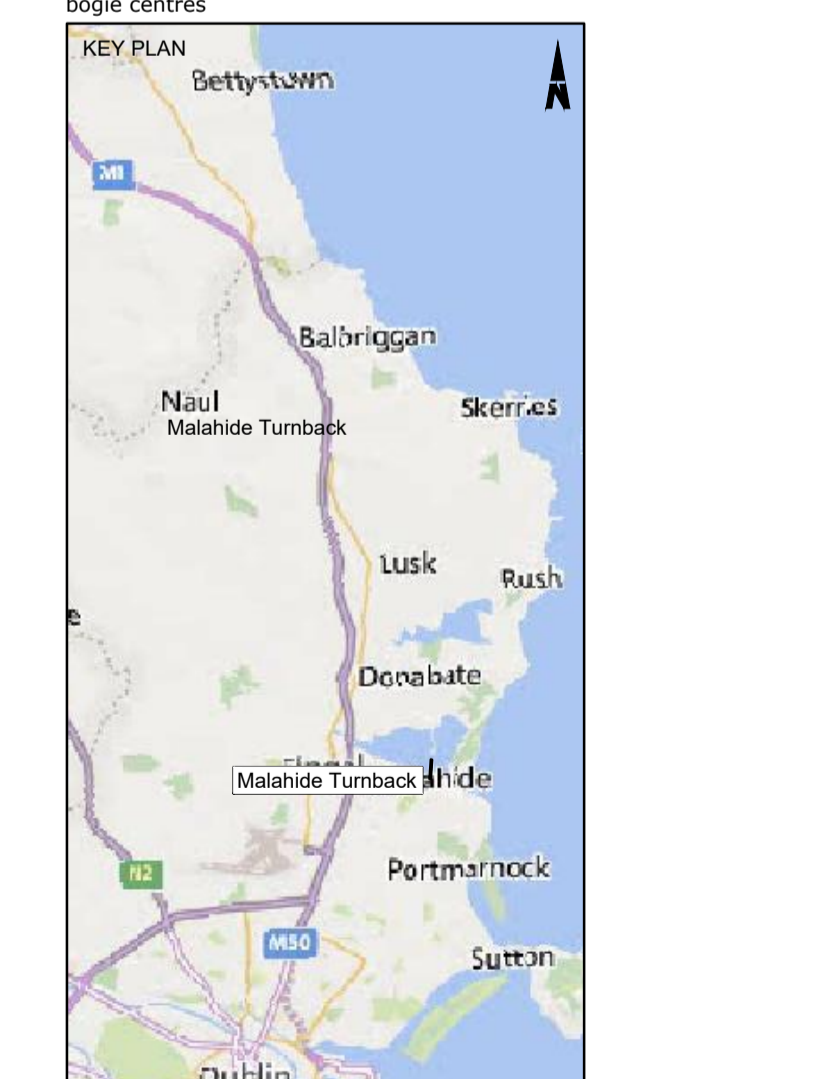
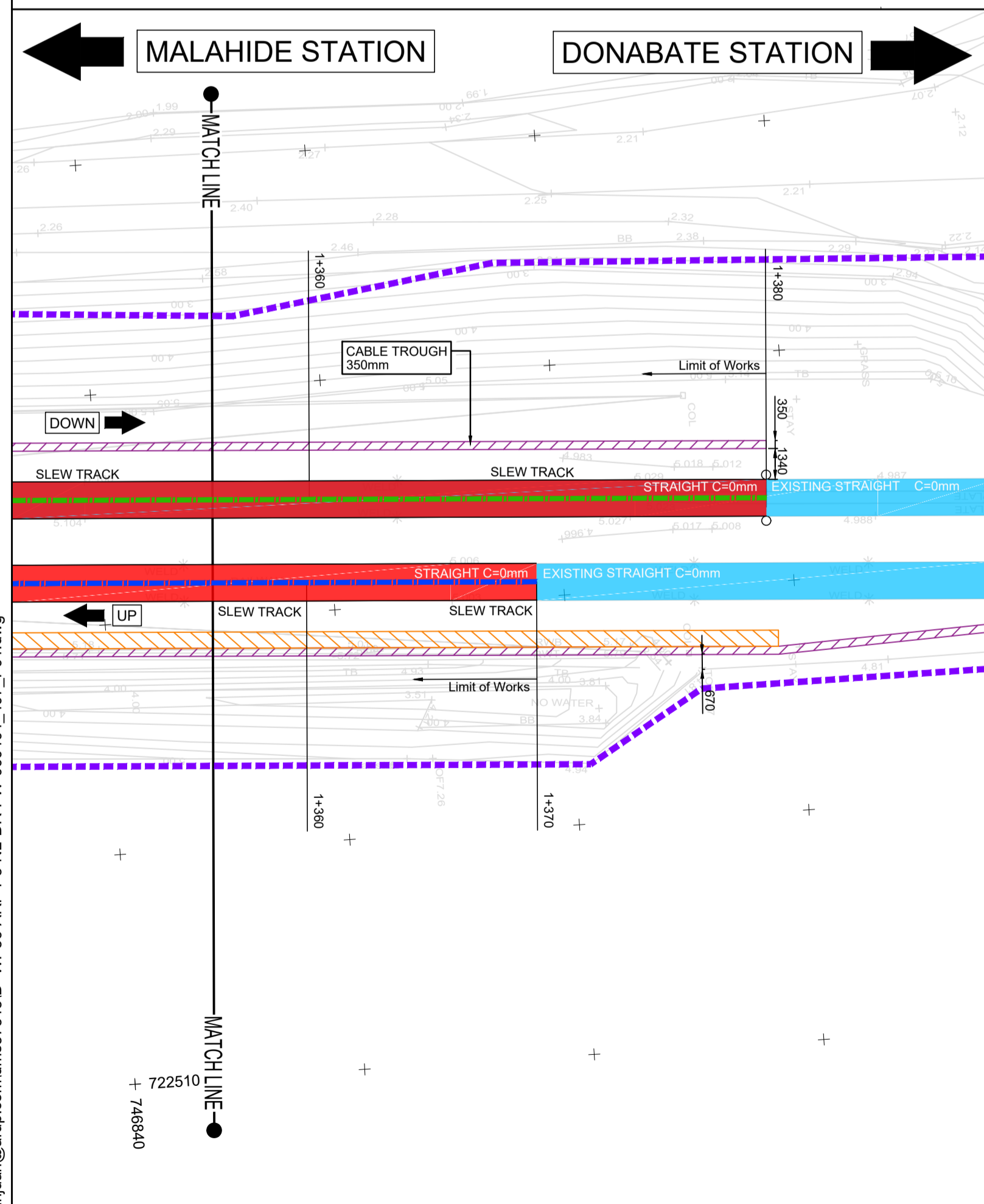
Drawn: SS, Checked: TS, Approved: RS
QMS Code: 280275-00

Project Title DART+ COASTAL NORTH	
Drawing Title MALAHIDE STATION PRELIMINARY HORIZONTAL TRACK ALIGNMENT	
Drawing File Name D+WP56-ARP-P3-NL-DR-PW-000405	Sheet Number 2 of 3
Status S3	Rev P02

DO NOT SCALE USE FIGURED DIMENSIONS ONLY



- KEY**
- RUNNING LINE
 - SIDINGS
 - PROPOSED TRACK WORK
 - TRACK WORK TO BE REMOVED
 - EXISTING STATION PLATFORMS
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- Notes**
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Rev	Date	Drn	Chk'd	App'd	Description
P01	13/01/2023	SS	TS	RS	---
P02	20/04/2023	SS	TS	RS	For review and comment

Client

Engineering Designer

Date 13/01/2023 **Scale** 1:200 @ A1
1:400 @ A3



Project Code D+WP56 **Originator Code** ARP

Drawn SS **Checked** TS **Approved** RS

QMS Code 280275-00

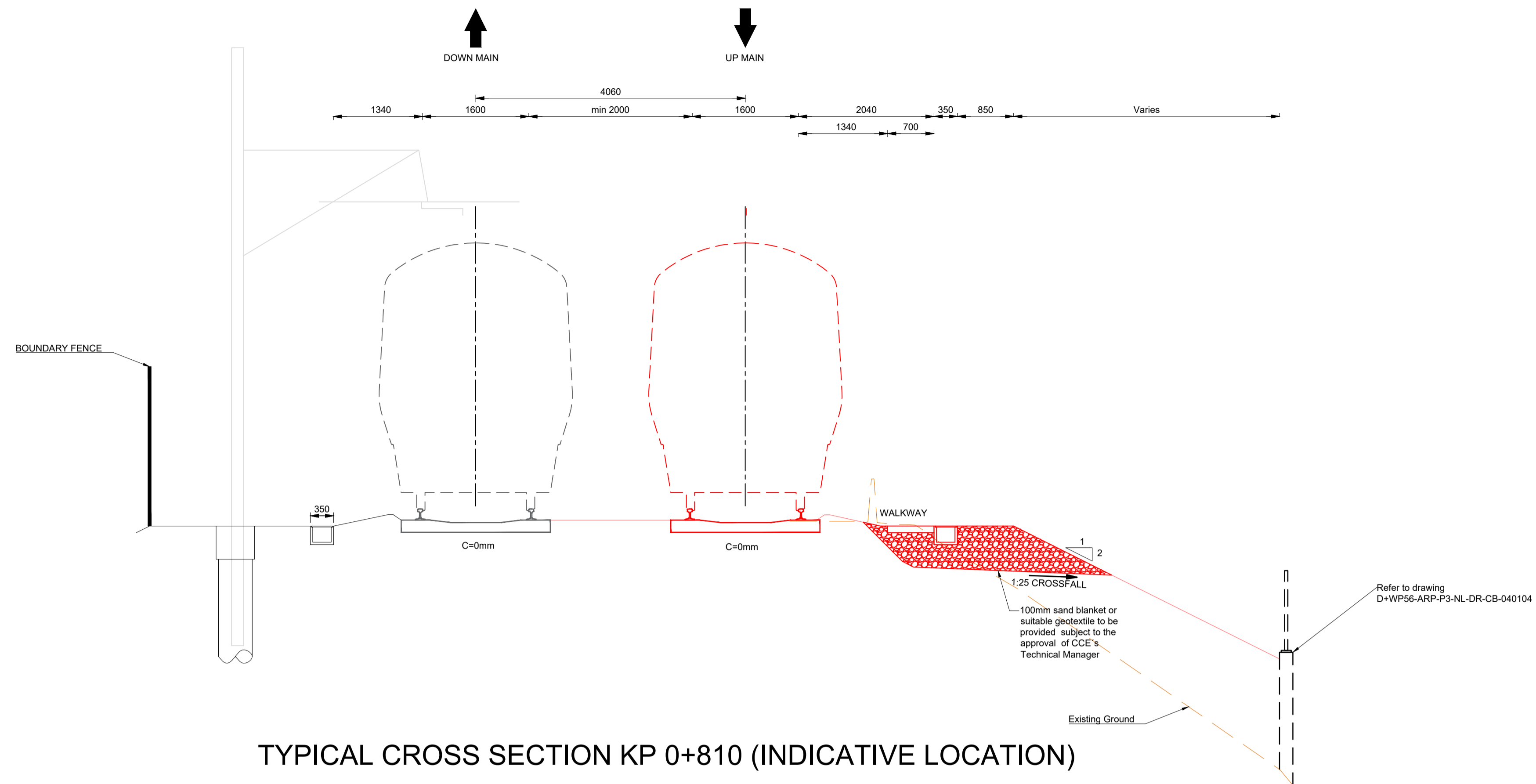
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Drawing Title			
MALAHIDE STATION PRELIMINARY HORIZONTAL TRACK ALIGNMENT			
Drawing File Name	Sheet Number	Status	Rev
D+WP56-ARP-P3-NL-DR-PW-000406	3 of 3	S3	P02

DO NOT SCALE USE FIGURED DIMENSIONS ONLY

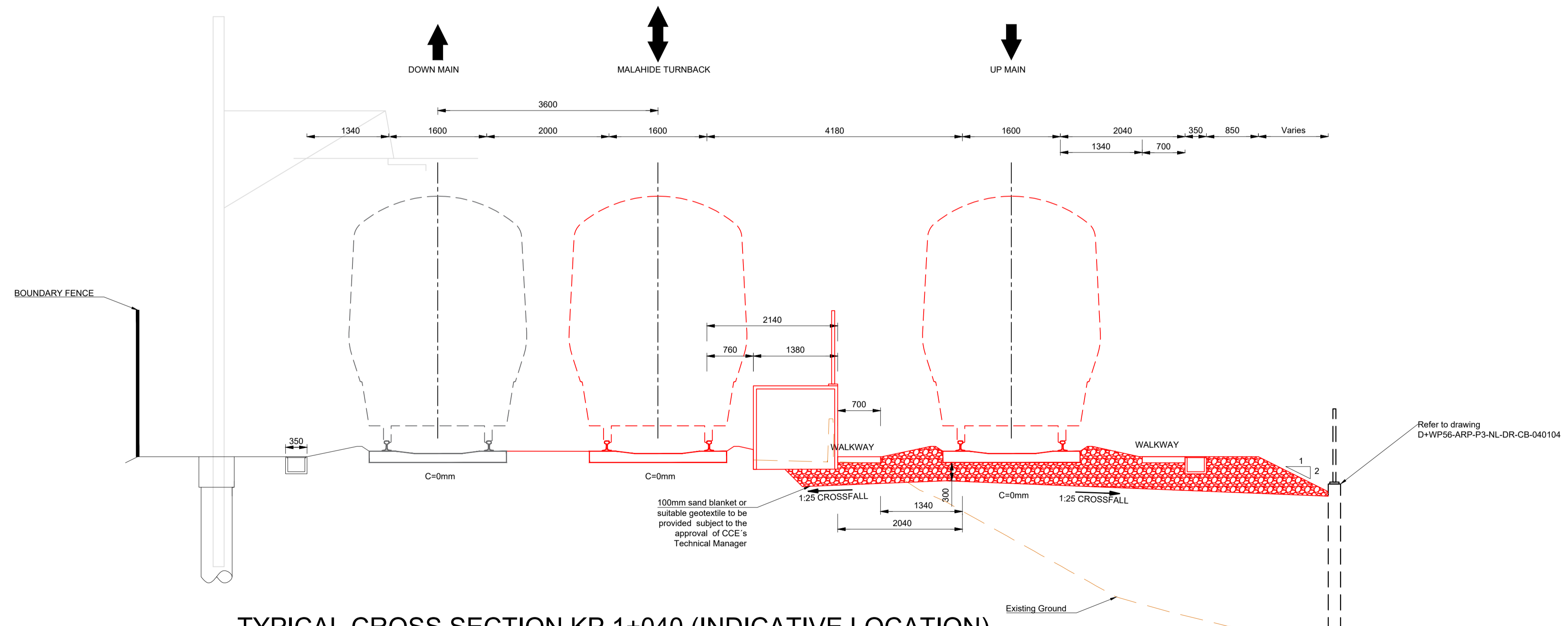
KEY
 PROPOSED TRACK WORK
 EXISTING TRACK

Notes

- Chainages, levels and coordinates are shown in meters. All other dimensions are shown in millimeters, unless otherwise stated.
- Calculated Throw effects: End Throw - 21440/1200 = 17.9mm + 0.5mm tolerance = 18.4mm, (20mm). Cant effect should not impact the wall clearance as the cant is applied on the near rail.
- For Cross Sections chainage location refer to Malahide Plan View drawings: D+WP56-ARP-P3-NL-DR-PW-000404-407
- OHLE elements have not been shown as part of this submission. Please refer to OHLE Preliminary Design for Further Details.



TYPICAL CROSS SECTION KP 0+810 (INDICATIVE LOCATION)



TYPICAL CROSS SECTION KP 1+040 (INDICATIVE LOCATION)

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Rev	Date	Drn	Chk'd	App'd	Description
P01	13/01/2023	SS	TS	RS	---
P02	20/04/2023	SS	TS	RS	For review and comment


Client



Date 13/01/2023 **Scale** 1:50 @ A1
1:100 @ A3

Project Code D+WP56 **Originator Code** ARP

Engineering Designer





Drawn SS **Checked** TS **Approved** RS

QMS Code 280275-00

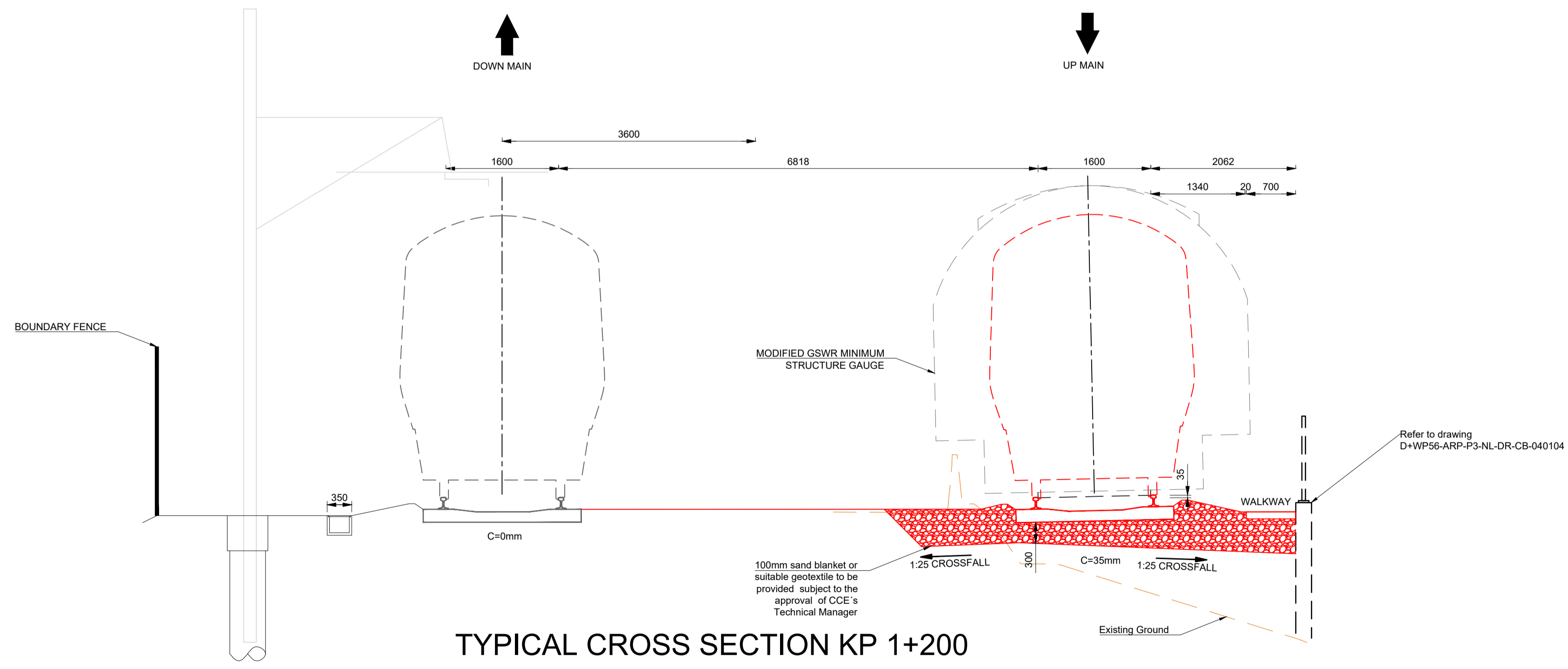
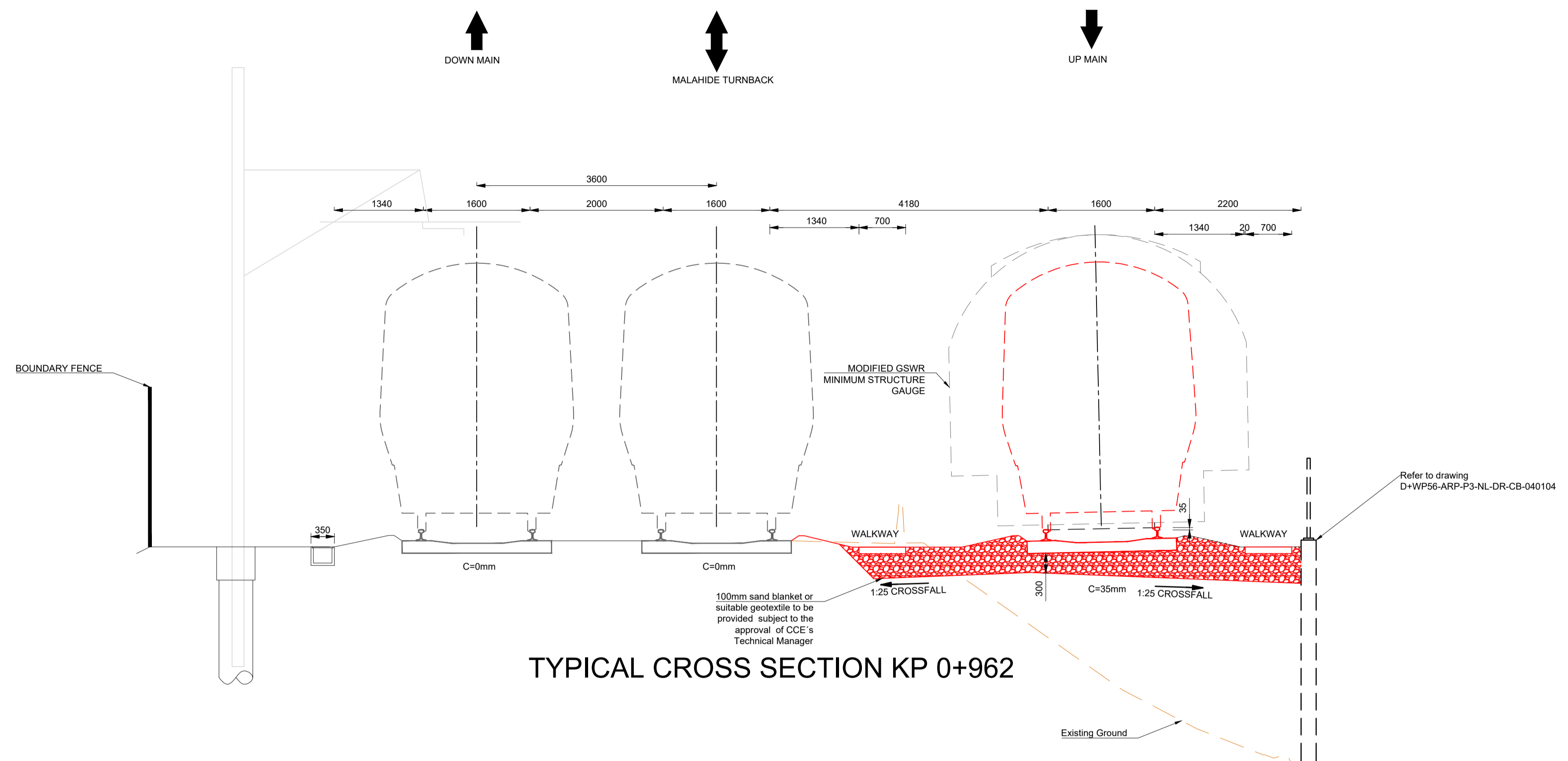
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Drawing Title MALAHIDE STATION PRELIMINARY TYPICAL CROSS SECTIONS			
Drawing File Name D+WP56-ARP-P3-NL-DR-PW-000414	Sheet Number 1 of 2	Status S3	Rev P02

DO NOT SCALE USE FIGURED DIMENSIONS ONLY

KEY
 PROPOSED TRACK WORK
 EXISTING TRACK

Notes

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- Calculated Throw effects: End Throw - $21440/1200 = 17.9\text{mm} + 0.5\text{mm tolerance} = 18.4\text{mm}, (20\text{mm})$. Cant effect should not impact the wall clearance as the cant is applied on the near rail.
- For Cross Sections chainage location refer to Malahide Plan View drawings: D+WP56-ARP-P3-NL-DR-PW-000404-407
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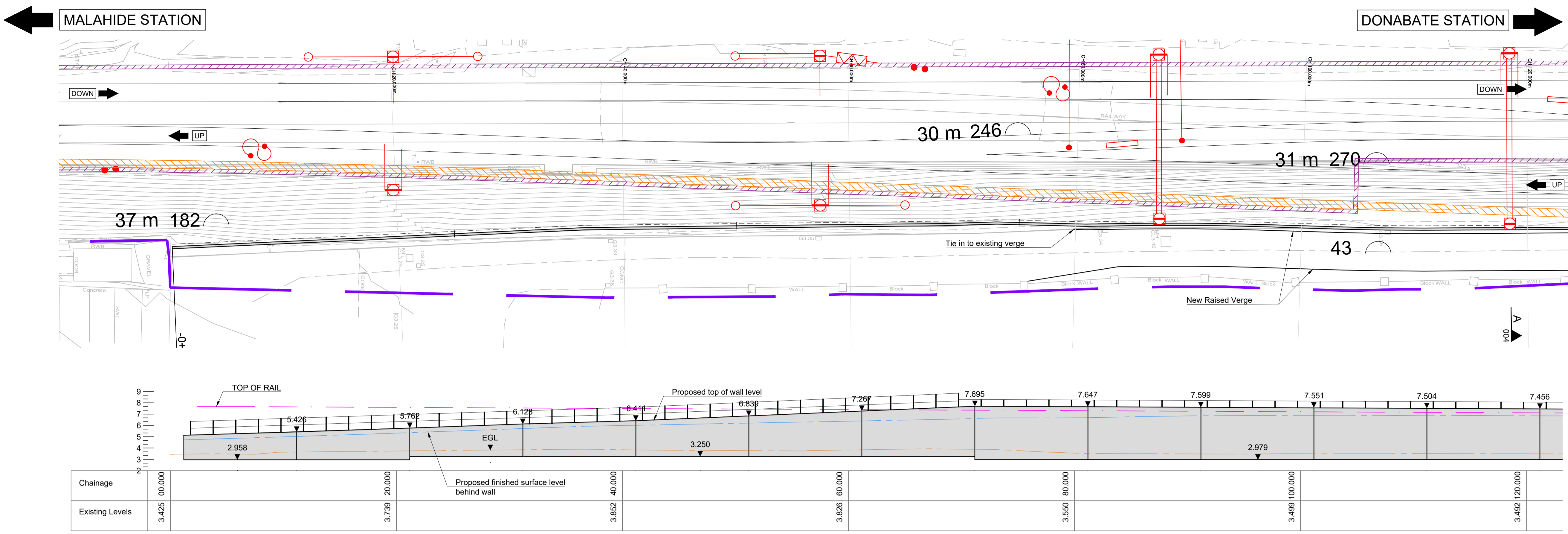
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  	Rev	Date	Drn	Chk'd	App'd	Description
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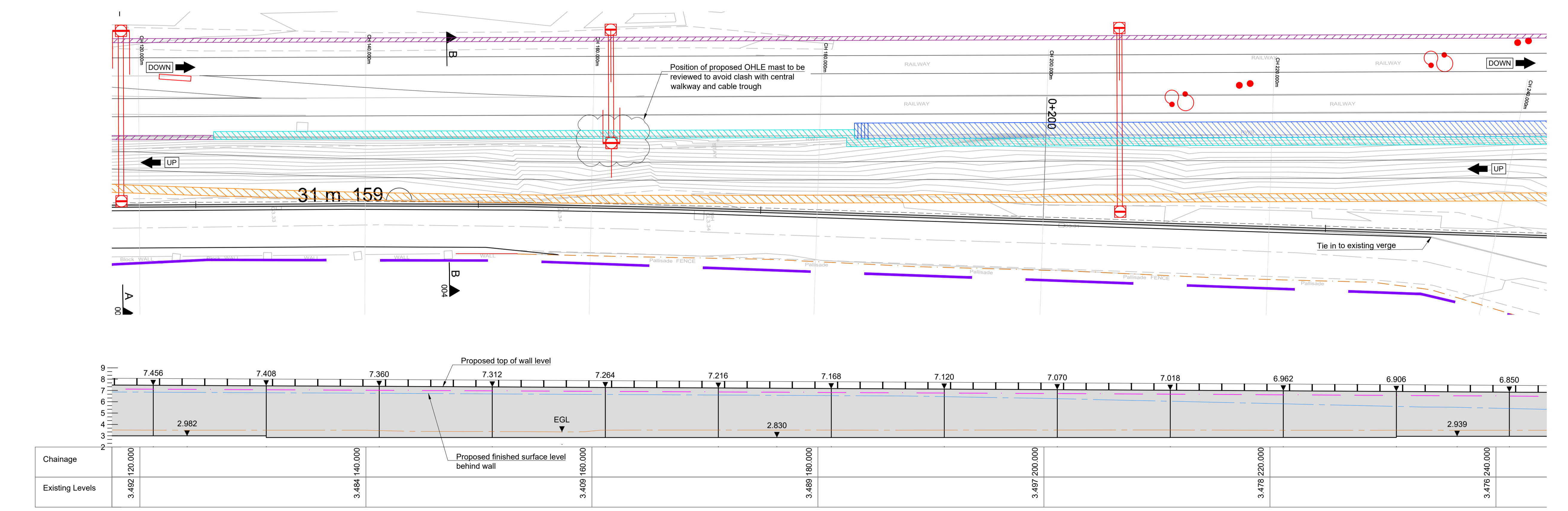
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Date	Scale	Drawn	Checked	Approved
13/01/2023	1:50 @ A1 1:100 @ A3	SS	TS	RS
Project Code	Originator Code	QMS Code		
D+WP56	ARP	280275-00		

Project Title				DART+ COASTAL NORTH			
Drawing Title				MALAHIDE STATION PRELIMINARY TYPICAL CROSS SECTIONS			
Drawing File Name	Sheet Number	Status	Rev				
D+WP56-ARP-P3-NL-DR-PW-000415	2 of 2	S3	P02				

DO NOT SCALE USE FIGURED DIMENSIONS ONLY



- LEGEND:
- IRISH RAIL PROPERTY BOUNDARY
 - OHLE MAST
 - DRIVERS RAISED 1.38m WALKWAY
 - CESS WALKWAY
 - COMBINED CABLE TROUGH/WALKWAY
 - CABLE TROUGH
 - TOP OF RAIL LEVEL
 - PROPOSED FINISHED SURFACE LEVEL BEHIND WALL
 - EXISTING GROUND



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Rev	Date	Drn	Chk'd	App'd	Description
P01	09/12/2022	TP	NM	RS	For review and comment
P02	14/04/2023	TS	NM	RS	For review and comment

Client: **Iarnród Éireann Irish Rail**

Engineering Designer: **ARUP**

Date: 14/04/2023 | Scale: as shown @ A1 @ A3

Project Code: D+WP56 | Originator Code: ARP

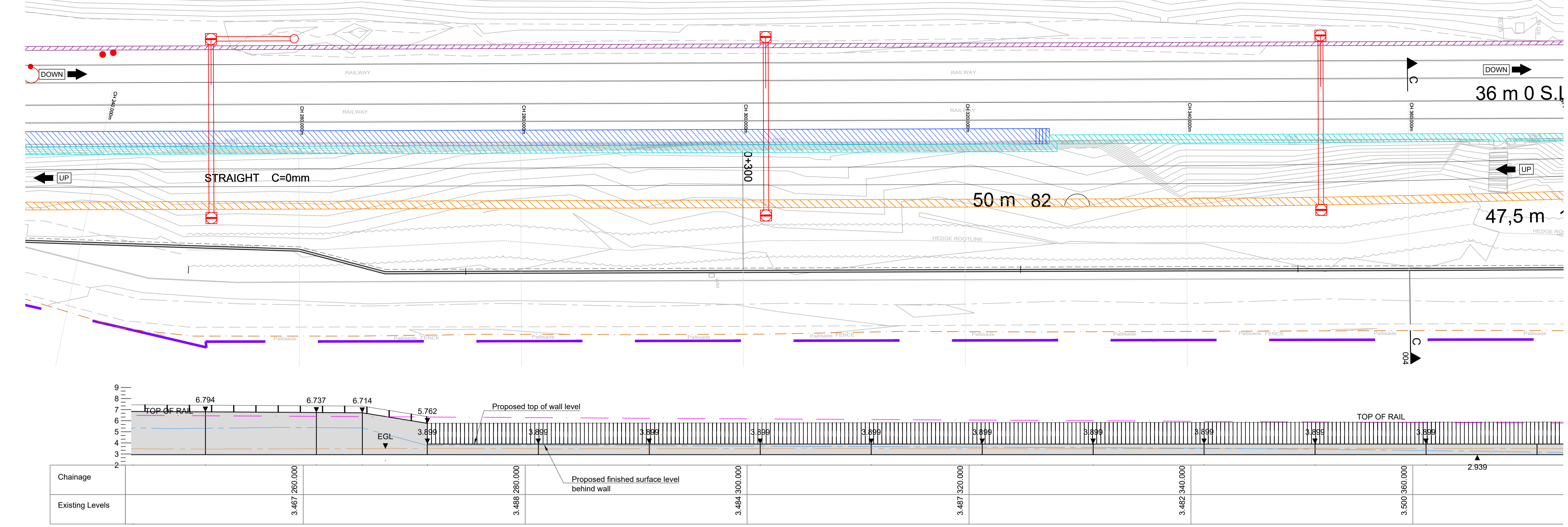
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Drawn: TS | Checked: NM | Approved: RS

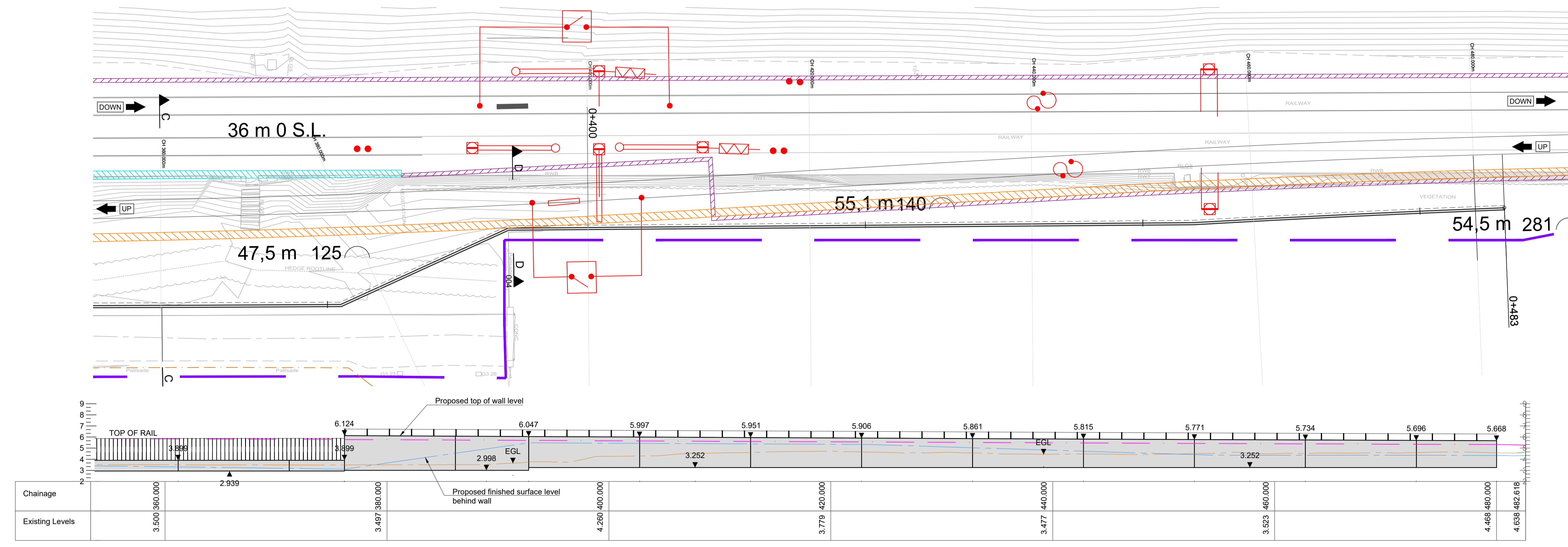
Project Title: DART+ COASTAL NORTH			
Drawing Title: MALAHIDE TUNBACK RETAINING WALL PLAN AND ELEVATION			
Drawing File Name: D+WP56-ARP-P3-NL-DR-CB-040102	Sheet Number: 1 of 2	Status: S3	Rev: P02

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- LEGEND:
- IRISH RAIL PROPERTY BOUNDARY
 - OHLE MAST
 - DRIVERS RAISED 1.38m WALKWAY
 - CESS WALKWAY
 - COMBINED CABLE TROUGH/WALKWAY
 - CABLE TROUGH
 - TOP OF RAIL LEVEL
 - PROPOSED FINISHED SURFACE LEVEL BEHIND WALL
 - EXISTING GROUND



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Rev	Date	Drn	Chk'd	App'd	Description
P01	09/12/2022	TP	NM	RS	For review and comment
P02	14/04/2023	TS	NM	RS	For review and comment

Client: **Iarnród Éireann Irish Rail**

Engineering Designer: **ARUP**

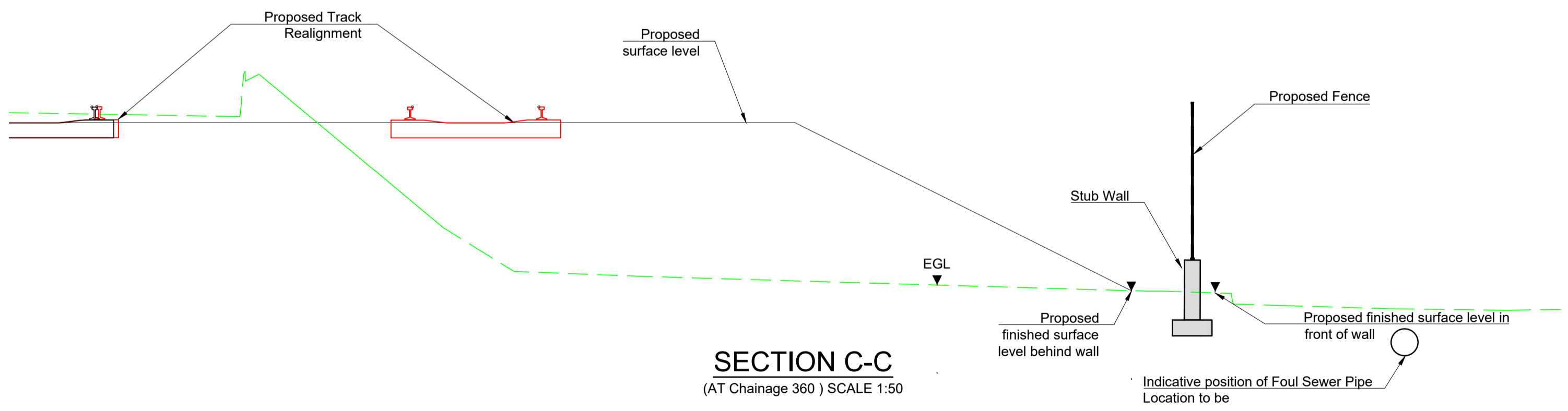
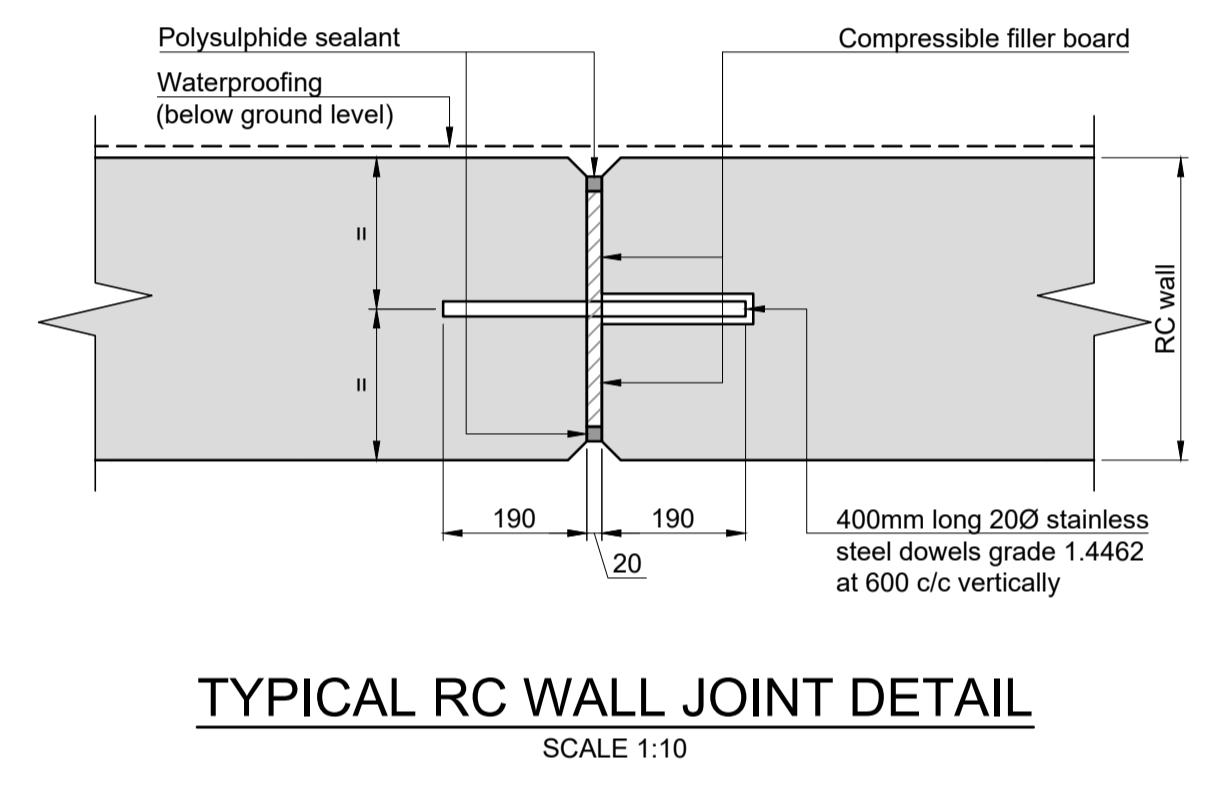
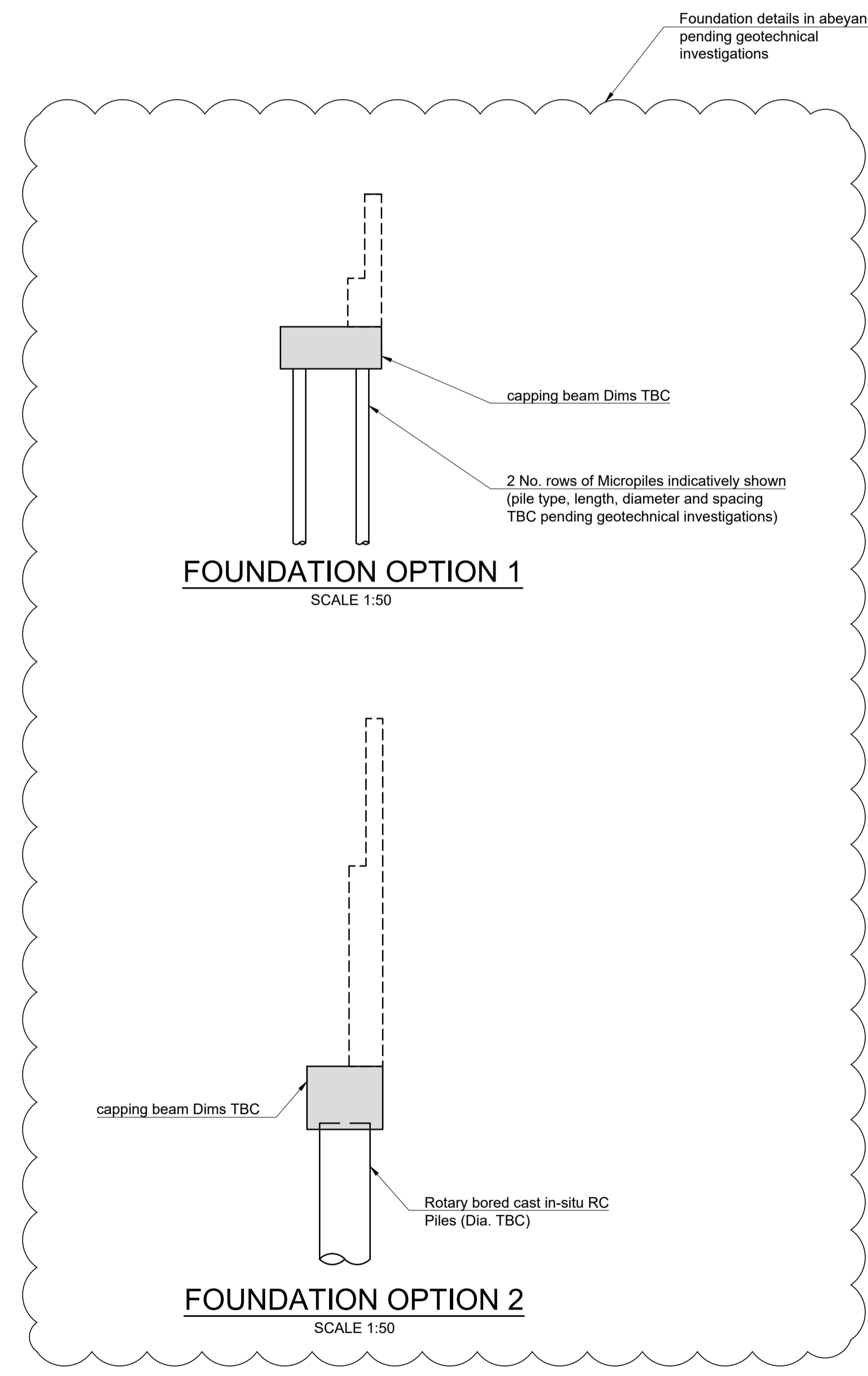
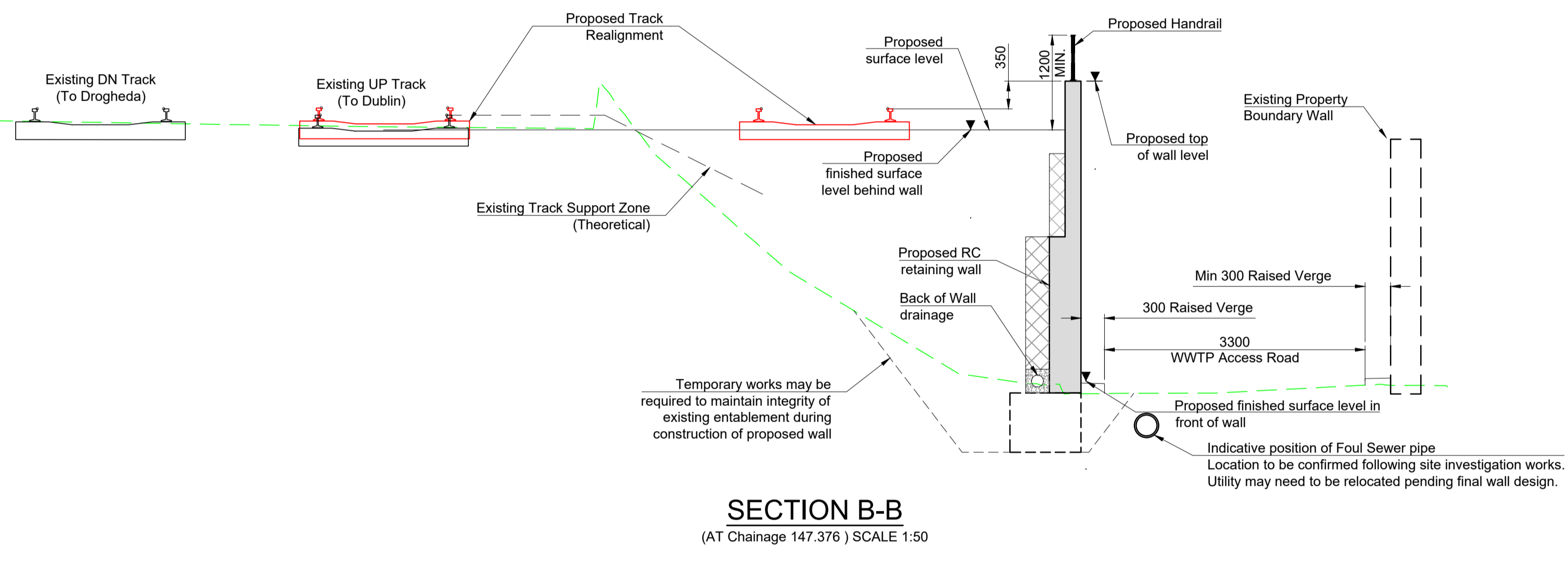
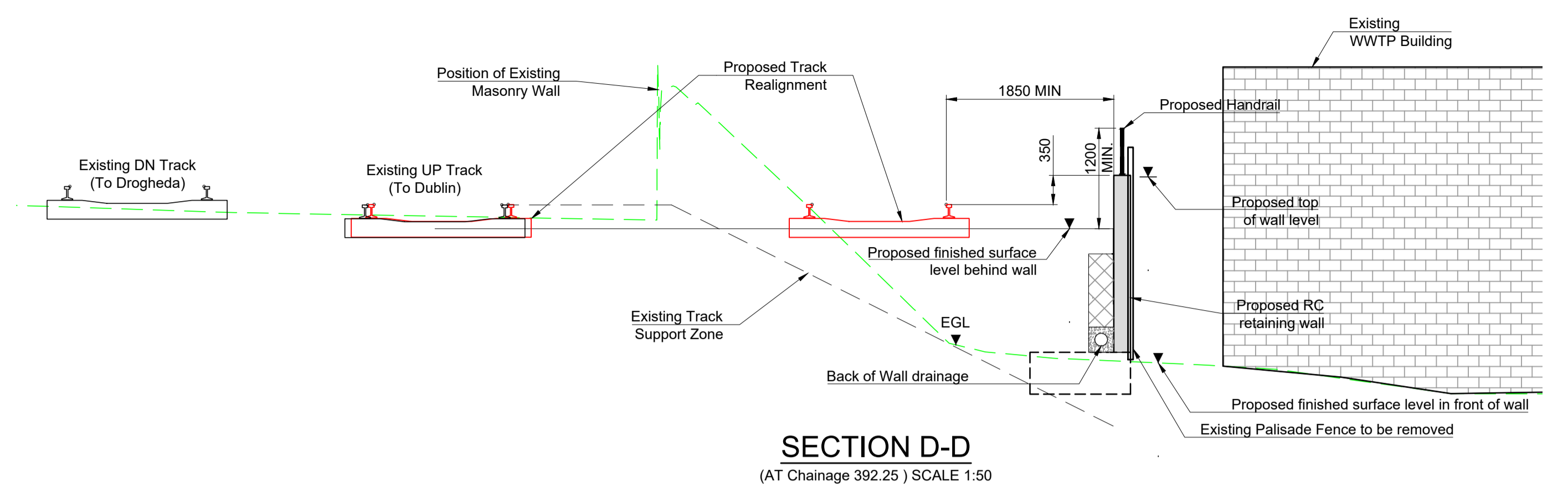
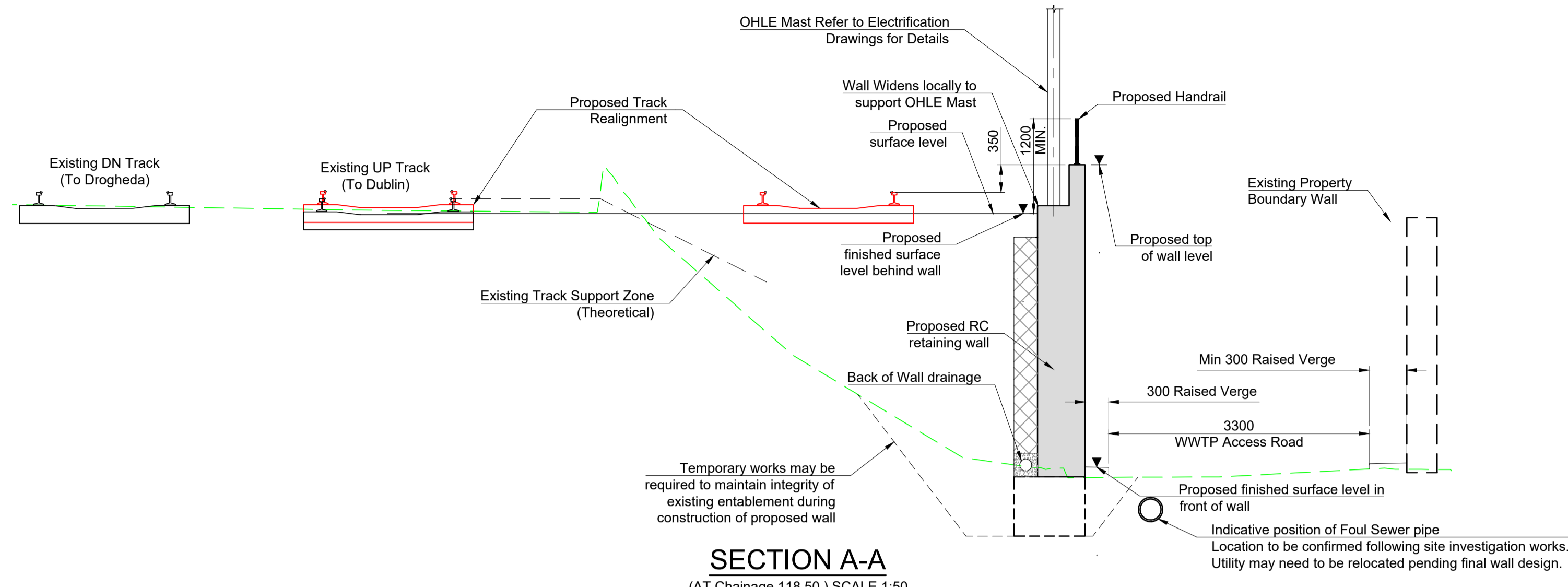
Date: 09/12/2022 | Scale: as shown @ A1 @ A3

Project Code: D+WP56 | Originator Code: ARP

QMS Code: 280275-00

Drawn: TS | Checked: NM | Approved: RS

Project Title: DART+ COASTAL NORTH	
Drawing Title: MALAHIDE TUNBACK RETAINING WALL PLAN AND ELEVATION	
Drawing File Name: D+WP56-ARP-P3-NL-DR-CB-040103	Sheet Number: 2 of 2
Status: S3	Rev: P02



- NOTES:
- ALL MEASUREMENTS IN MILLIMETERS UNLESS NOTED OTHERWISE.
 - ALL LEVELS ARE METERS ABOVE ORDINANCE DATUM.
 - DO NOT SCALE FROM THIS DRAWING
 - PRELIMINARY DETAILS BASED ON LIMITED AVAILABLE HISTORIC GROUND INVESTIGATION INFORMATION.
 - DESIGN TO BE ASSESSED BASED ON SITE SPECIFIC GROUND INVESTIGATION COMPLETED UNDER DART+ NORTHERN LINE STAGE A GI.
 - EXISTING GROUND LEVELS TAKEN FROM SURVEY CONDUCTED BY APEX SURVEYS LTD AND DATED 16/09/2022
 - EXISTING UTILITIES ARE SHOWN INDICATIVELY. EXISTING SERVICES ARE TO BE CONFIRMED ON SITE PRIOR TO ANY CONSTRUCTION WORKS.
 - BACK OF WALL DRAINAGE SHALL BE OUTLET TO EXISTING STORMWATER NETWORK OR SUITABLY DESIGNED SOAKAWAYS.
 - REFER TO DRAWING D+WP56-ARP-P3-NL-DR-PW-000405 FOR INFORMATION ASSOCIATED WITH THE TRACK ALIGNMENT.
 - BURIED CONCRETE SURFACES SHALL BE TREATED WITH TWO COATS OF EPOXY RESIN WATERPROOFING PAINT.
 - ALL EXPOSED CONCRETE SHALL BE IMPREGNATED WITH A HYDROPHOBIC PORE LINER.

C:\bms\arup-eur-pw-01\lonesz.sularz@arup.com\dms286361D-WP56-ARP-P3-AL-M2-CB-000003.dwg

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<p>Project Code</p> <p>D+WP56</p>		<p>Originator Code</p> <p>ARP</p>		<p>QMS Code</p> <p>280275-00</p>		<p>Drawing File Name</p> <p>D+WP56-ARP-P3-NL-DR-CB-040104</p>	<p>Sheet Number</p> <p>1 of 1</p>	<p>Status</p> <p>S3</p>	<p>Rev</p> <p>P02</p>																

DO NOT SCALE USE FIGURED DIMENSIONS ONLY