



Job Title

Jersey Street Bridge

Report Type

Deconstruction Methodology
Report

Prepared for

Faithful and Gould on Behalf of
MCC

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21 March 2022

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Deconstruction Methodology Report

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1. Executive Summary

The following Deconstruction Methodology Report provides a description of the structural form and condition of the existing Jersey Street over bridge and outlines current constraints associated with proposed structural dismantling works as well as the anticipated sequence of deconstruction works.

The report intends to assist with identifying project risks and support costing and tendering purposes only and the contractor shall prepare their own proposal for the sequence of deconstruction for which he shall remain entirely responsible.

2. Introduction

Civic Engineers LTD have been instructed by Faithful and Gould as part of the wider proposed regeneration scheme of the Poland Street area of Ancoats in Manchester, to conduct a deconstruction methodology report of the existing bridge located on Jersey Street to inform the design of the planning process for the proposed redevelopment and land profiling of the street.

The basis of the report are the findings of a non-intrusive visual assessment of the Jersey Street bridge conducted on the 4th March 2022 by Civic Engineers. This survey comprised a walkover of the bridge structure, its approaches and surroundings. During the site visit it was not possible to access and visually inspect the bridge from the South Easterly elevation facing the Rochdale Canal. The initial condition and construction of the bridge on site has been determined through visual inspection only and no material samples or testing has been conducted to date.

The bridge has been reviewed in terms of visible structural arrangement, current condition and issues of safety and structural stability. In addition, the report also summarises notable information regarding the bridge history and surrounding site from a desktop study of publicly available information.

Historically, it is apparent that there has been an existing structure bridging across the former Jersey Street canal tributary dating back to before 1821 though it is unclear as to when this particular construction of the bridge was erected.

The proposed redevelopment plan of the wider Poland Street regeneration involves the development of the adjacent plots and provide an at grade green spine link between Ancoats Green and the Canal side. the proposed levelling of the land surrounding Jersey Street and requires the structural dismantling of the existing bridge to allow for reprofiling. Based on the site inspection there is evidence of a large number of utilities and services likely to run through or beneath the bridge which also need to be accommodated within the dismantling proposal.

3. Existing Site

3.1 Site Situation

Jersey Street is located to the north of the Ancoats Urban Village District, north of great Ancoats street and central Manchester. The bridge structure is situated approximately 80m northeast of the road junction between Jersey Street and Poland Street (figure 2). The bridge structure carries the Jersey Street highway over a small depression which is identified as the former canal arm extending from the Rochdale Canal to the south.

The immediate surroundings of the bridge include a series of surface car parks to the north as well as a workshop loading yard and derelict land to the south. This land is generally paved hardstanding.

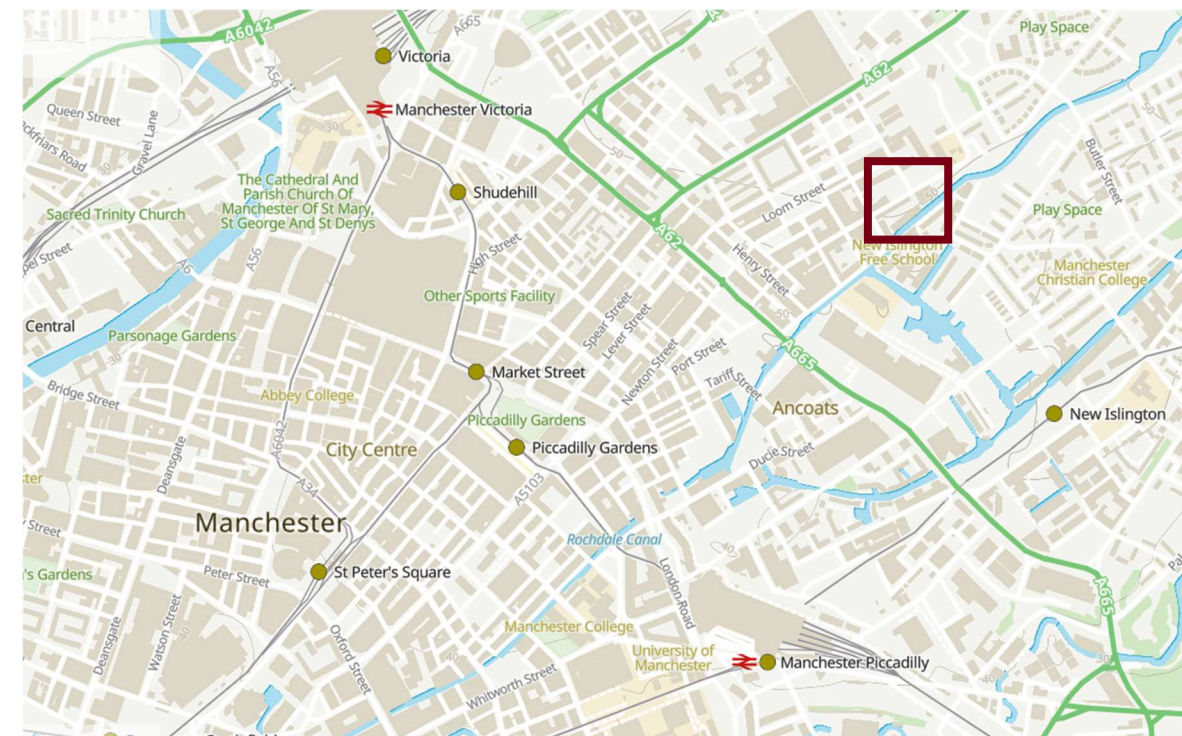


Figure 1. - Location of Jersey Street Bridge within Manchester Centre

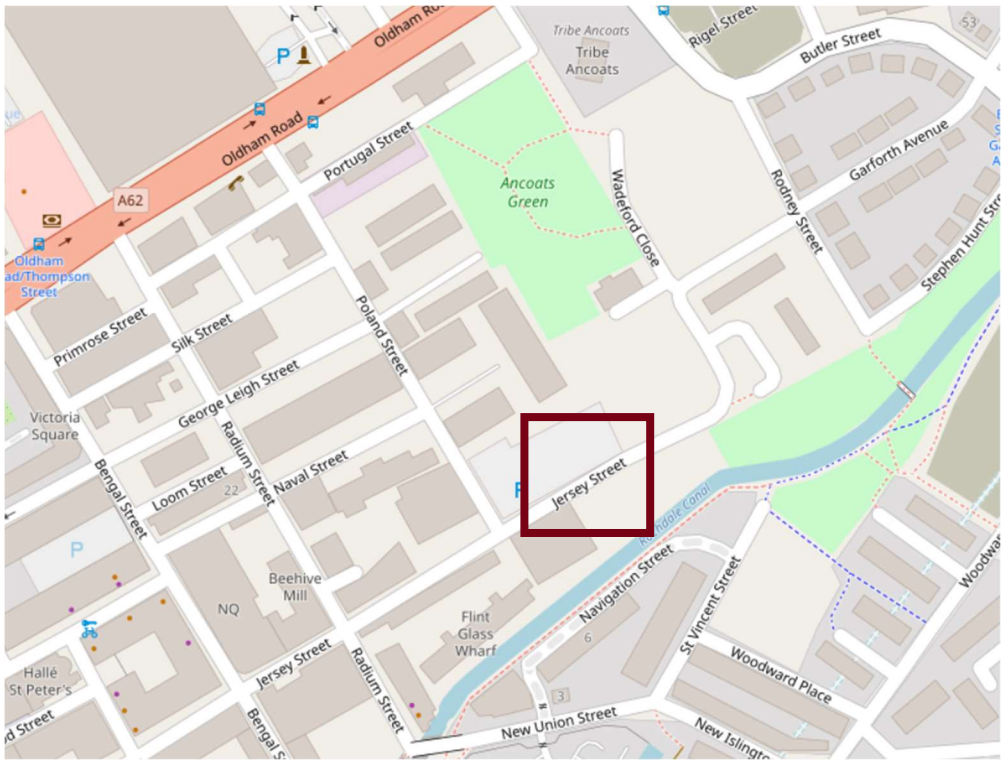


Figure 2- Location of Jersey Street Bridge within Poland Street Masterplan Zone



Bridge Ariel View Facing West



Bridge Ariel View Facing East



Bridge Approach from Jersey Street South



Bridge Approach from Jersey Street North

Figure 3- Ariel and Approach Views of Jersey Street Bridge

3.2 Development History

The Ancoats district is historically known for its former dense industry where clear signs of which are seen within the historic mapping in figure 4 with Poland Street and Jersey street serving as two of the major highways servicing the area.

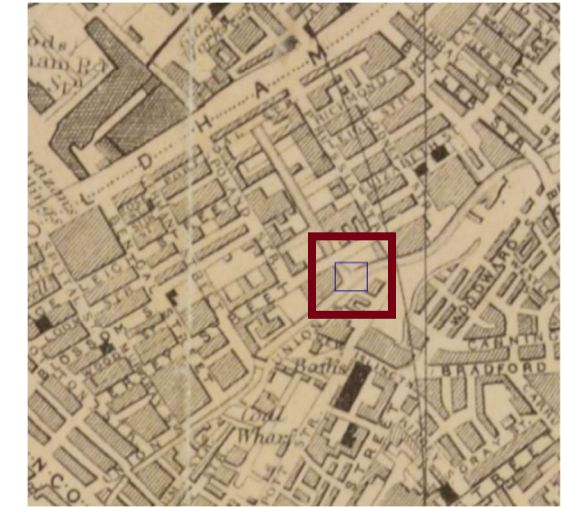
The Bridge was built to span a canal arm branching from the Rochdale Canal 40m to the south and a crossing has been located at this point from at least 1821 (figure 4).

Based on the available maps there is evidence that the canal arm existed until at least the early 1960's but the waterway has since been dammed at its junction with the Rochdale Canal and infilled.

The infilled canal arm to the south of the bridge is covered in vegetation and work has been completed in the past to infill the space beneath the bridge structure. It is thought that this may have been completed to shore the bridge structure and provide support to the bridge beams.



1821



1930



1960

Figure 4. - Historic Maps Showing Bridge Location

3.3 Site Boundary and Constraints

The site boundary extends approximately 3m to the north side of Jersey street and 10m to the south at the bridge location to allow for the setup of deconstruction works.

Based on the site inspection there were a number of utilities identified at both bridge approaches as seen in figure 5 as well as a substation located north of the bridge which may have an impact on the programme of works carried out for the proposed bridge deconstruction.

The bridge crosses an infilled canal arm. These were typically infilled by backfilling material into the waterbody, displacing the volume of water within and keeping the waterproof construction of the canal arm intact. It is likely that the ground either side of the canal is of poor quality containing contamination and organic material from its historic use., It is also possible that the groundwater is locally high, contained within the waterproof lining of the canal. This is to be validated through geotechnical testing as part of a further site investigation phase.

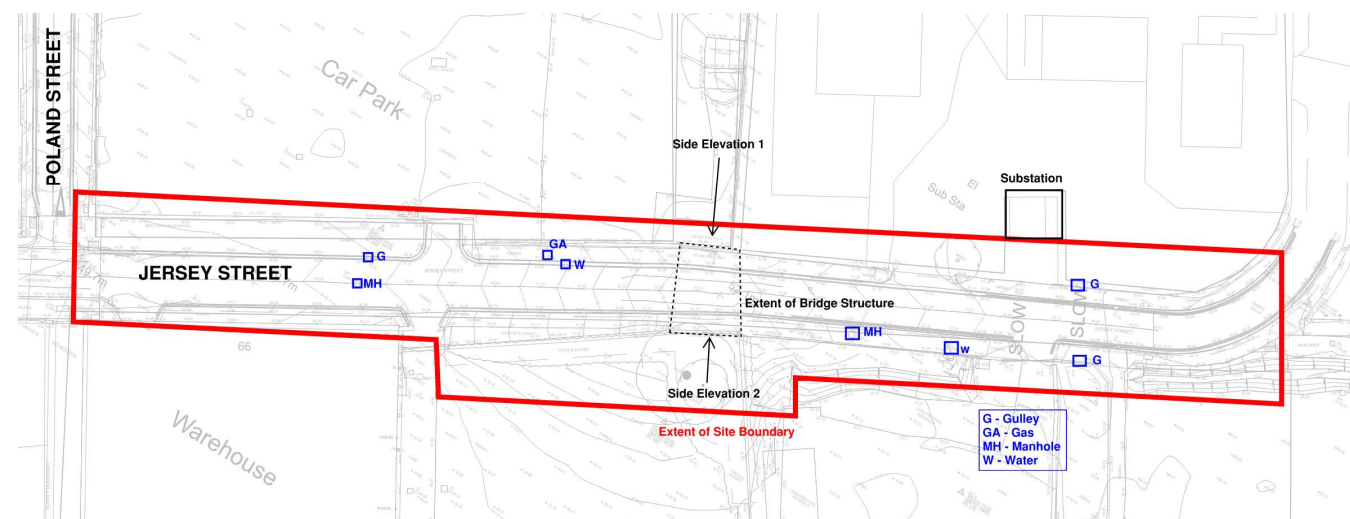


Figure 5. Site Boundary and Utilities Locations Identified on Site Visit

4. Existing Bridge Structure

The existing bridge is property of MCC and isn't known to have any conservation or heritage status.

The bridge span is approximately 8m between abutments with a crown of approximately 2.0m above surrounding highway level beyond the approaches. The width of the bridge deck is approximately 9.0m supporting the carriageway and footpaths to both sides.

To the south the road leads towards the Ancoats Urban Village and connects to Poland street serving as a feeder road to the A62, to the north the road lead through several small residential streets towards Miles Platting.

As seen in the extract of the landscape architect's services general arrangement for the site it is evident that a number of utilities routes including electricity, gas and communications cross the bridge alignment. The location of chamber lids within each bridge approach suggests that some of the services identified in the drawing cross the bridge. The Contractor is to confirm the location of all services prior to the commencement of dismantling works. Services either side of the bridge are to be protected throughout the duration of the works and services crossing the bridge are to be capped at the approaches and diverted.



Figure 6. - Extract of Landscape Architects utilities GA

During the site visit there was full access to the top of the bridge deck as well as the north elevation 1 shown in Figure 9. Due to lack of access to the loading yard space adjacent to the warehouse it was not possible to inspect the bridge from the southern elevation 2.

Above the bridge deck consists of two 1.4m high, 0.3m thick stone parapets constructed in 1.3mWx0.65mH blocks, which due to the slenderness of the parapet are assumed to be dowelled into one another at tied into the bridge deck at the base.



Figure 7. - North Side Bridge Parapet



Figure.8 - South Side Bridge Parapet

Based on the visible structure in Elevation 1, the primary structure of the bridge span consists of 2 No. 400x400mm rectangular metal beams spanning left-right with 30mm top flange and no visible bottom flange. The metal beams look to span onto circa 750mm wide stone upstands approximately 900mm high forming the bridge abutments.

Behind the primary beam the area beneath the deck and original depression level has been infilled with what appears to be a brick/stone/cement mix which may have been used to provide some level of bearing support of the bridge deck to ground level. Due to this infill and the metal beam, it was not possible to inspect the construction of the bridge deck itself though it is assumed that it consists of a concrete slab supported on metal beams spanning between abutments.



Figure 9. - Elevation 1 Photograph



Figure 10. - Bridge Bearing Position



Figure 11 - Stone Encasement Previously Concealing Primary Beam



Figure 12 - Infill Material

The bridge abutment structure comprises of dressed stone. Brickwork wing walls extend approximately 40m to the north and south from the edge of the bridge which support the approach road and act as retaining walls raising the approaches above the adjacent land. It is assumed that the approaches bear on compacted fill.



Figure 13 Bridge Abutment Masonry Wall

4.1 Structural Condition of the Bridge

Generally, the bridge appears to be in poor condition evidenced by spalling brickwork within the abutment and return walls, corrosion to the bridge beams and damage to the parapets.

It would appear that work has historically been undertaken to reduce the risk of structural damage and decay by infilling the void beneath the bridge beams to provide additional support the bridge deck. This may also have been completed as a response to increasing traffic loads experienced since the construction of the bridge.

In both of the depressions on either side of the bridge there is clear vegetation growth however this is very significant on the southern side where the vegetation has grown on the outer face of the parapet which may have affected its structural integrity. Additionally, the root spread of the mature tree growing within the recess on the southern side of the bridge may have an influence on the condition of the existing bridge foundations and bearing which may lead to instability.

5. Proposed Deconstruction Methodology

The following deconstruction methodology should be read in conjunction with the sketches contained within Appendix 1.

These below text and diagrams outline the anticipated sequence of deconstruction assumed in the structural dismantling of the bridge. These proposals are intended to assist with identifying project risks and support costing and tendering purposes only and should not be used for deconstruction. The Contractor is to prepare their own proposal for the sequence of deconstruction for which they shall remain entirely responsible. All items are based upon limited visual inspection and anecdotal information and therefore should be treated as preliminary and subject to change. Civic engineers are not responsible for the accuracy of anecdotal information. Contractor to allow for undertaking their own measured surveys and / or additional intrusive investigations to substantiate all information illustrated in this outlined proposal. Final detailing, methodology and phasing is the responsibility of the appointed specialist.

Site Setup

As the deconstruction of the bridge will restrict access to the site, it is advised that all plant equipment and material should be delivered and removed from site from the south approach to the bridge due to the narrow residential streets north of the site connecting Jersey Street to the A62. Because of this it may be advantageous for site plant equipment, cabins and other services to be stored in the car park space southwest of the bridge.

In order to mitigate the risk of soil and water contamination through leaching of debris, it may be suitable to locate dismantled materials on the same current hard standing car park space southwest of the bridge, away from the canal.

In order to carry out the deconstruction the section of Jersey street will need to be closed between the Poland Street intersection and where the road turns to the north. It is necessary for this closure to remain in place until deconstruction works are complete and the proposed releveling and construction of the new road is complete.

Structural Dismantling of the Bridge

Following the closure of the road, it is proposed that the dismantling of the bridge is carried out in stages. This should start with the removal of the stone parapets, assumed to be tied into either the bridge decking or the primary beams.

Following this the road surfacing covering the deck is to be removed using an excavator to expose the structure of the deck below. Once complete the assumed concrete deck spanning between primary beams should be lifted out if possible. Once the structural deck has been dismantled and stored the metal beams should then be lifted out of position and stored on site. If the lifting out of the deck proves complex it is possible for the primary beams to be removed in order to break up the deck and allow for it to be removed from its position however this may prove to be more complex to be carried off site.

Once the structure of the bridge has been removed the remaining infill and bridge abutment material should be removed using an excavator and where possible sorted, crushed, and reused for the desired releveling of the site to produce the new road. The remaining fill material should then be taken off site via Poland street connecting to major roads. Once works are complete and site services have been removed the site will then need to be cleared of any leftover debris that may potentially lead to site contamination.

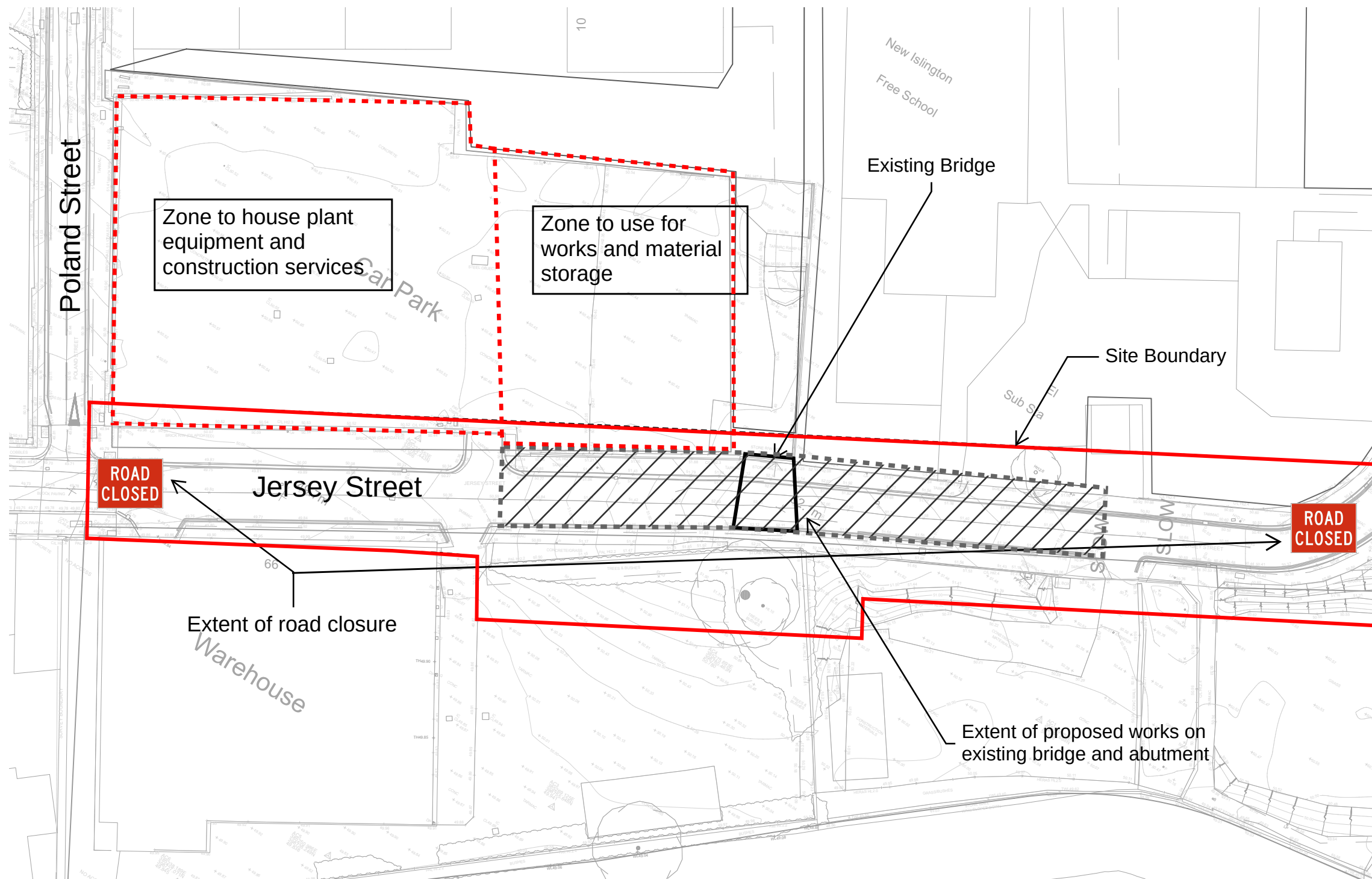
6. Residual Risk

As the bridge provides a pathway for a number of utilities there is a significant risk of damage to these services during demolition. To mitigate unplanned disruption a GPR survey should be carried out to locate utility locations at an adequate distance from both sides of the bridge in order to cap them off and redirect services prior to deconstruction works.

As the material and construction of the bridge is still partly unknown there is the risk of contamination of soil and waterways as a disturbance of the ground during deconstruction. During works it may be prudent to carry out a contamination survey of the exposed land during deconstruction to understand the appropriate measures for the storage of materials.

As there is a large amount of vegetation growing on either side of the existing bridge which could be affecting its structural integrity, there is the risk that if left unmanaged could cause damage to the proposed new road. Therefore, it is advised that during deconstruction works, any significant vegetation adjacent to the road network should be removed prior to commencing works for the proposed scheme.

Appendix 1 – Structural Engineering Sketches



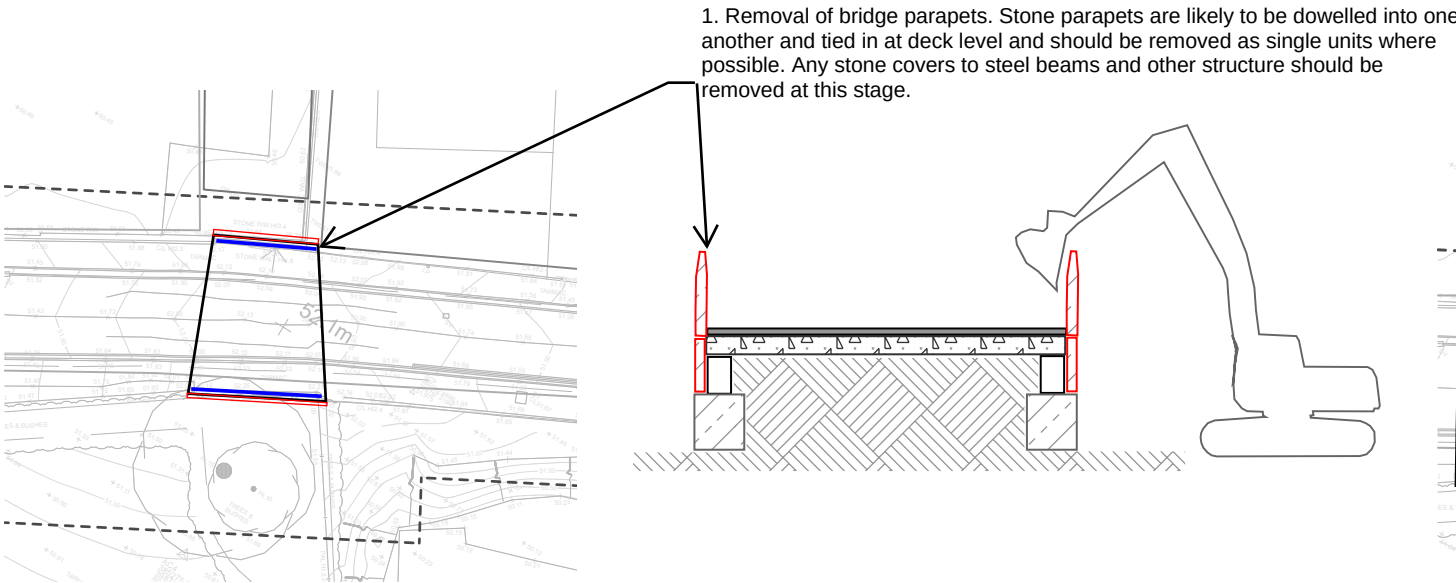
Jersey Street Works Location Plan

21.03.22	P01	For Information	AW	CH
Date	Rev	Description	Drawn	Chkd
 Civic Engineers MANCHESTER / LONDON / LEEDS / GLASGOW www.civicingineers.com				
Project		Poland Street		
Title		Location Plan of Key Works Areas		
Status		FOR INFORMATION		
Project Number 1826-01	Scale @ A3 -	Date Created 21.03.22	Drawn AW	Checked CH
Drawing Number 2201-CIV-S-SK-001				Revision P01

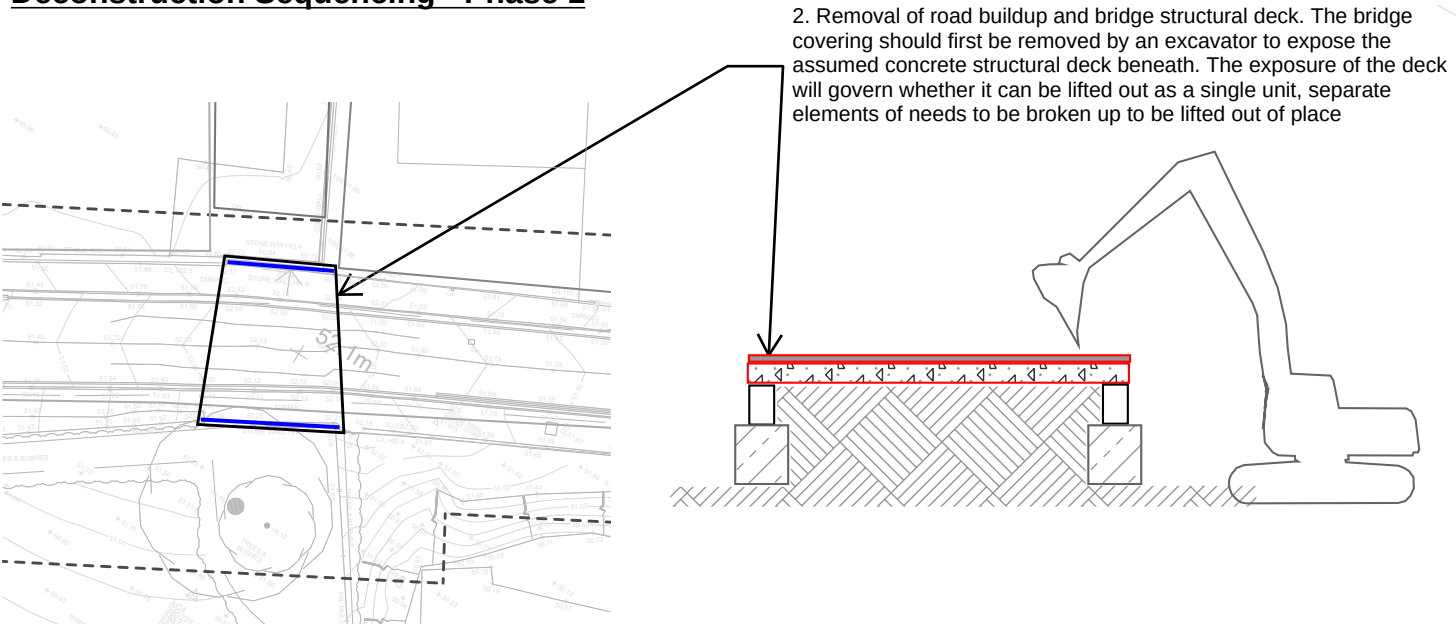
1. Existing bridge structure based upon non-intrusive walkover survey conducted March 2022.
2. Demolition contractor is to undertake all surveys required to understand the existing structure and inform the safe dismantling methodology for the bridge.



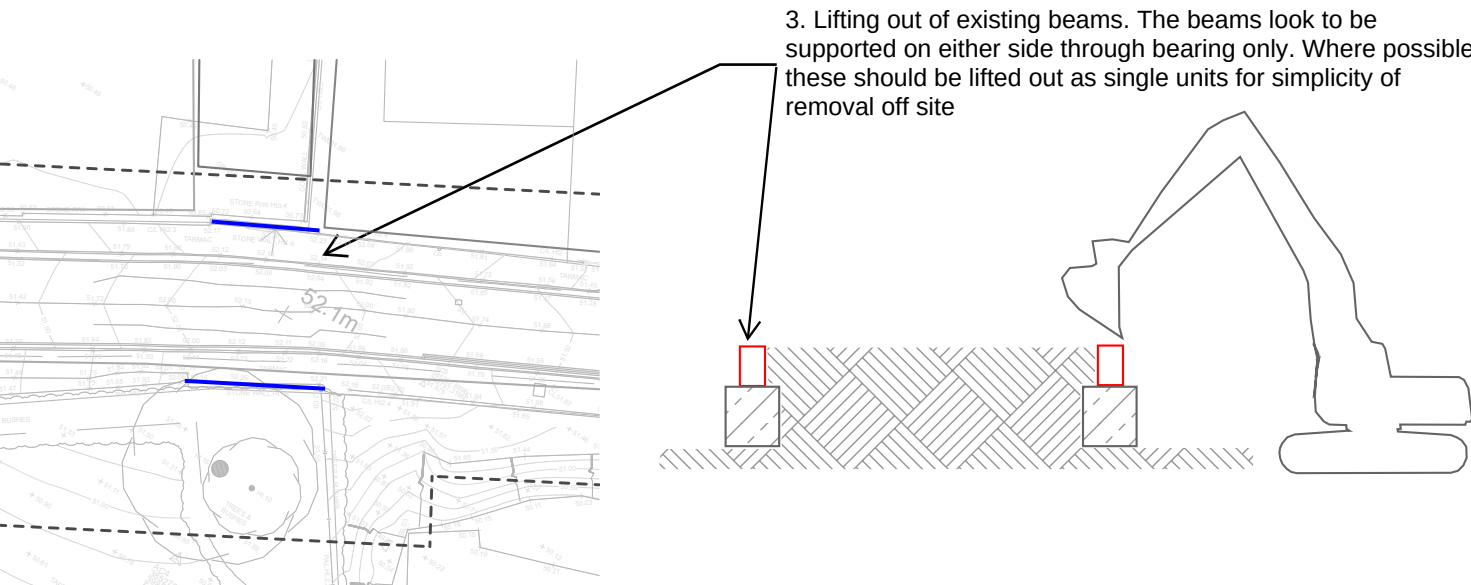
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Project Poland Street				
Title Existing Bridge Structure				
Status FOR INFORMATION				
Project Number 1826-01	Scale @ A3 -	Date Created 21.03.22	Drawn AW	Checked CH
Drawing Number 2201-CIV-S-SK-002				Revision P01



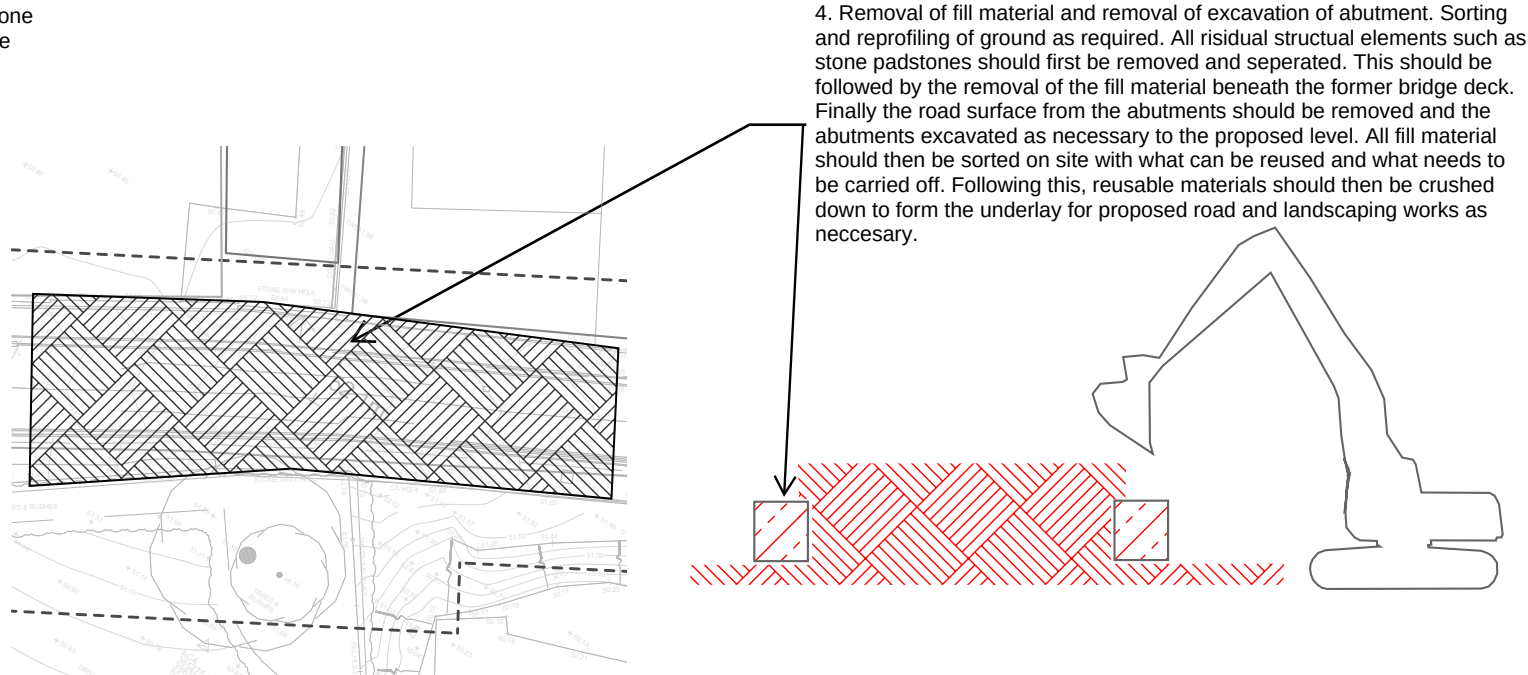
Deconstruction Sequencing - Phase 1



Deconstruction Sequencing - Phase 2



Deconstruction Sequencing - Phase 3



Deconstruction Sequencing - Phase 4

Note
The following sketches outline the anticipated sequence of deconstruction assumed in the structural dismantling of the bridge. These proposals are intended to assist with identifying project risks and support costing and tendering purposes only and should not be used for deconstruction.

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Date	Rev	Description	Drawn	Chkd
 MANCHESTER / LONDON / LEEDS / GLASGOW www.civicingineers.com				
Project			Poland Street	
Title			Proposed Deconstruction Sequence	
Status			FOR INFORMATION	
Project Number	Scale @ A3	Date Created	Drawn	Checked
1826-01	-	21.03.22	AW	CH
Drawing Number				Revision
2201-CIV-S-SK-003				P01

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