# Essex Highways



# Boxted Bridge ECC BR0059

**Principal Inspection** 

Inspection Date: March 2018









# Contents page

1 – Introduction5
1.1 – General Information5
1.2 – Scope of Report5
2 – Structure Details6
2.1 – General Description6
2.2 – Key Data6
2.3 – Deck Elements7
2.4 – Load Bearing Substructure7
2.5 – Durability Elements7
2.6 – Safety Elements7
2.7 – Structure History7
2.7.1 - General7
2.7.2 - Inspection7
2.7.3 - Maintenance8
2.7.4 - Assessment8
3 – Summary of Condition9
3.1 – Previous Condition9
3.2 – Current Condition9
4 – Inspection Details11
4.1 – General11
4.2 – Access and Equipment11
4.3 – Inspection Methodology11
4.3.1 - Visual Observations – Cracking12
4.3.2 - Photographs12
4.3.3 - Defect Drawings12
4.4 – Testing12
5 – Inspection Findings13
5.1 – General13
5.2 – Deck Elements
5.2.1 - Element 1: Primary Deck Element13





5.2.2 - Element 2: Secondary deck Elements - Transverse beams	14
5.2.3 - Element 3: Secondary deck Elements – Element from table 3	14
5.3 – Load Bearing Substructure	14
5.3.1 - Element 8: Foundations	14
5.3.2 - Element 9: Abutments	14
5.4 - Durability Elements	14
5.4.1 - Element 19: Finishes: Deck Elements	14
5.5 - Safety Elements	14
5.5.1 - Element 23: Handrail / Parapets / Safety Fences	14
5.5.2 - Element 24: Carriageway Surfacing	15
5.6 - Other Bridge Elements	15
5.6.1 - Element 26: Invert / River Bed	15
5.6.2 - Element 31: Wing walls	15
Discussion & Conclusions	16
6.1 - General	16
6.2 - Deck elements	16
6.3 – Load Bearing Structure	16
6.4 - Durability Elements	16
6.5 - Safety Elements	16
6.6 - Other Bridge elements	17
6.7 - Conclusions	17
7 - Recommendations	18
Appendix A	21
Appendix B	22
Appendix C	23
Appendix D	71
Appendix E	72





## 1 – Introduction

## 1.1 – General Information

Boxted Bridge is owned and maintained by Essex County Council and is located in Boxted, Essex, and carries the unclassified Wick Road over the River Stour on the Essex and Suffolk border (in the Dedham Vale and Stour Valley Area of Outstanding Natural Beauty).

Essex Highways were commissioned to undertake a Principal Inspection of Boxted Bridge. The site inspection was undertaken between the 12th and 22nd March 2018. Weather conditions during the inspection were wet with light showers on the 12th March, sunny on the 21st March and cloudy on the 22nd March.

## 1.2 - Scope of Report

This report describes the structure, its history and condition based on a Principal Inspection of the structure in accordance with the Code of Practice for Bridge Management and the Bridge Inspection Manual (BIM). It also sets out pertinent comment, conclusions and recommendations for any remedial or other action necessary to maintain the safety and integrity of the structure.

The findings of the inspection are summarised in a bridge inspection form based on the County Surveyors Society / ADEPT recommendations and the BIM. This structure specific inspection report will be used to determine the Bridge Condition Indicator (BCI) scores for the structure, which are summarised in section 3.2 of the report (A copy of the BCI Form is included in Appendix E).





## 2 – Structure Details

#### 2.1 – General Description

Boxted Bridge is located on the unclassified Wick Road, Boxted and crosses the River Stour on the Essex and Suffolk border.

The bridge, built in 1903, is a simply supported single span half-through steel deck on brick abutments, foundation type is unknown. The form of the structure is believed to have been dictated by navigation clearance requirements; commercial river traffic operated on the River Stour to Sudbury until around the 1914-18 War.

The deck is trapezoidal in plan, being wider at the south abutment than the north, and has an effective square span of 12.50 m. It comprises riveted plate girder primary edge and transverse secondary beams, with tertiary longitudinal rolled I-beam/channel sections and hogging plates.

There are no safety margins to separate the traffic and the half-through edge beams which are at risk of (and subject to) vehicle impact. The width between the traffic faces of the edge girders at the north abutment is insufficient to accommodate two traffic lanes. There is a significant hump in the vertical carriageway profile over the bridge which inhibits inter-visibility for oncoming traffic.

Maintenance of the structure has been deficient over a protracted period and elements of the bridge deck exhibit significant corrosion and there are cracks in the abutment walls which likely to have resulted from vehicle collisions with the east edge girder.

Brick retaining walls (with brick pilasters and stone copings) are located on the approaches to (and departures from) the bridge which support the highway above the level of the adjoining river banks.

Concrete post and steel tubular rail guardrails are provided on the southern approach/departure and timber post and wire fences are provided on the northern southern approach/departure.

#### No street lighting is provided in the area.2.2 – Key Data

Structure Ref:	59
OS Ref:	TM 601 234
Deck construction type :	Half-through Steel Deck
No of Spans:	1
Span lengths:	Span = 12.50m
Width of deck between parapets:	4.770m North
	6.750m South





## 2.3 – Deck Elements

#### **Primary Deck Elements**

The deck is trapezoidal in plan, being wider at the south abutment than the north, and has an effective square span of 12.50 m. It comprises riveted plate girder primary edge and transverse secondary beams, with tertiary longitudinal rolled I-beam/channel sections and hogging plates.

## 2.4 – Load Bearing Substructure

The bridge is supported on brick abutments, foundation type is unknown.

## 2.5 – Durability Elements

A paint system is applied to the beam elements.

#### 2.6 – Safety Elements

Brick pilasters and stone copings are located on the approaches to and departures from the bridge. The surfacing of the carriageway is tarmac topping.

## 2.7 – Structure History

#### 2.7.1 - General

Record information confirms that General Inspections have largely been carried out on a two-yearly basis. BCI scores and inspection comments are available from 2014 onwards on Essex Highways's bridge management system 'Confirm<sup>TM</sup>' and indicate that the main beams have small patches of moderate corrosion, delamination and loss of section. Minor corrosion around the rivets on top edge. Moderate deflection to top riveted plate at centre of top strings. Initial visual inspection showing moderate distortion of the plate girders.

#### 2.7.2 - Inspection

The known inspection history of the structure is as follows:

- General Inspection August 2012
- General Inspection August 2014
- General Inspection September 2016
- General Inspection May 2017
- General Inspection August 2017
- General Inspection February 2018





#### 2.7.3 - Maintenance

Maintenance of the structure has been deficient over a protracted period and elements of the bridge deck exhibit significant corrosion and there are cracks in the abutment walls which likely to have resulted from vehicle collisions with the east edge girder.

#### 2.7.4 - Assessment

The structure was assessed in 1992 in accordance with BD 21/84. The assessment found the deck to have a live load capacity of 3 Tonnes but this rating was with reservations as assumptions were made regarding edge girder effective length/U-frame action. Although the assessment recommended the structure be restricted to 3 Tonnes GVW no weight restriction was implemented and none exists to date.





# 3 – Summary of Condition

## 3.1 – Previous Condition

In 2018 a General Inspection of Boxted Bridge was undertaken which identified the following key defects / issues:

- The main beams have small patches of moderate corrosion, delamination and loss of section. Minor corrosion around rivets on top edge. Moderate deflection to top riveted plate at centre of top strings. Initial visual inspection showing moderate distortion of the plate girders.
- Some severe deflection noted to girder plates edges of the transverse girders being a lot worse at corners. Beams have moderate corrosion at the edges, delamination and loss of section in isolated areas
- Vertical crack to the north east corner of the north abutment. Area of weathered brickwork near top centre of north abutment.
- The paint system has failed
- The top flange of the edge girders, where it connects to the pilaster at south corner has minor perforations and has minor corrosion which is present at all four corners. The top edge of SW pilaster has been knocked and the coping stone is displaced slightly
- Shallow dip/pothole to carriageway near southeast corner.

## 3.2 – Current Condition

Based on visual observations and limited site testing details of the defects of the structure by element are described in Section 5 and discussed in Section 6 of this report.

Span 1	49.68	35.78
Overall Score	49.68	35.78 <sup>*1</sup>

The BCI scores derived from the BCI Form (Appendix E) are given below:

Table 3.1: Summary of BCI score for Boxted Bridge – 2018Principal Inspection

This structure has been the subject of a Principal Inspection in accordance with BD 63/07 'Inspection of Highway Structures', the Code of Practice for Bridge Management and the Bridge Inspection Manual (BIM). As far as could be inspected, the structure is in POOR condition, with an overall average BCI score of 49.68 and a risk ranking score of HIGH based on BCI(Crit) 35.78 as defined by the table 3.2 :





	BCI <sub>(Av)</sub>	BCI <sub>(Crit)</sub>	
Score Range	Overall Condition of the Structure	Overall Condition of Critical Elements –	RISK RANKING
100→95	No significant defects in any elements; Structure is in a <u>VERY GOOD</u> condition overall	Insignificant defects/damage; Capacity unaffected	
94→85	Mostly minor defects/damage; Structure in <u>GOOD</u> condition overall	Superficial defects/damage; Capacity unaffected	LOW
84→65	Minor-to-moderate defects/damage; Structure is in a <u>FAIR</u> condition overall; One or more functions of the bridge may be significantly affected	Superficial defects/damage; Capacity may be slightly affected	MEDIUM
64→40	Moderate-to-severe defects/damage; Structure is in <u>POOR</u> condition overall; One or more of functions of the structure may be severely affected	Moderate defects/damage; Capacity may be significantly affected	
39→0	VERY POOR - Severe defects/damage on a number of elements; One or more elements have failed; Structure is in very poor condition; Structure is unserviceable	Possible failure or actual failure of critical element; Severe defects/damage; Capacity may be severely affected; Structure may need to be weight restricted or closed to traffic	HIGH

 Table 3.2: Condition and risk ranking of the structure based on the overall BCI (Av) & BCI (Crit)





# 4 – Inspection Details

## 4.1 – General

The Principal Inspection was carried out between 12 and 22 March 2018 utilising the access arrangements and equipment described in section 4.2 below. The following describes the key weather observations and activities undertaken

Date / Shift Info :	Monday 12 March 2018, 09:00-13:00
Key Activities :	Visual Survey from Carriageway Level
Weather Conditions :	Light rain – 8°C
Date / Shift Info :	Wednesday 21 March 2018, 09:00-16:00
Key Activities :	Visual Survey from Carriageway Level and of the soffit
Weather Conditions :	Light clouds – 8°C
Date / Shift Info :	Monday 22 March 2018, 09:00-15:00
Key Activities :	Visual Survey of the Edge Girders
Weather Conditions :	Sunny – 9°C

## 4.2 – Access and Equipment

The River Stour is non-tidal. The water level at the time of the first inspection was high and the flow relatively fast. The water level on the 21st and 22nd March was low and the flow was not fast.

Access to the deck soffit and the abutments required the use of a pontoon. Access to inspect parapets outside the structure required the use of the pontoons and scaffolding. Life jackets were also used, together with the pontoon rope to provide safety to the inspection team.

Access to the River Stour was from the South East riverbank where the pontoon was also set up

## 4.3 – Inspection Methodology

The condition of the structure was assessed by a close visual observation within touching distance.





#### 4.3.1 - Visual Observations – Cracking

Cracks described in this report as 'hairline' have widths estimated to be less than or equal to 0.3mm. For cracks larger than this, the actual width is given. Current opinion is that nonstructural cracks width should not exceed structural crack widths permitted in reinforced concrete, i.e. they should not exceed 0.3mm wide. Cracks above this width are termed significant, as the durability of the structure may be affected.

#### 4.3.2 - Photographs

Photographs for each structure element and notable defects together with a Key Location Plan are included in Appendix C.

#### 4.3.3 - Defect Drawings

The defects recorded during the inspection are described in Section 5 of this report, and noted on defect sketches included in Appendix D.

#### 4.4 – Testing

No testing was undertaken as part of this inspection.





# 5 – Inspection Findings

## 5.1 – General

The reporting of the condition of individual elements is based on the Inspection Pro Forma as presented in CSS Guidance Note – Bridge Condition Indicators Volume 2 (BCI Vol. 2) July 2004 version.

Unless stated otherwise all visible elements of the structure were inspected and any defects of note detailed individually under each element heading. Any element of the structure present, but not accessible for inspection is also included in the following section of this report together with an appropriate comment.

Note: All photos referred to in section 5.2 - 5.7 are contained in Appendix C.

Based on the visual observations noted in the previous section, Boxted Bridge is considered to be in poor overall condition. The dominant observations are the severe corrosion and delamination of the top flange of the edge girders in close proximity to the south pilasters, the severe corrosion and delamination of the transverse beams, the severe deflection of the plates connected to the transverse members and the cracks in the abutments.

## 5.2 – Deck Elements

#### 5.2.1 - Element 1: Primary Deck Element

Both edge girders presented severe corrosion and delamination of the top flange in close proximity to the south pilasters (refer to Photograph 1.1.1, 1.1.2 and 1.1.3). Minor corrosion of the top flange following vehicle strikes is present (refer to Photograph 1.1.4, 1.1.5, 1.1.6 and 1.1.7).

Severe corrosion between the top flange and the additional plate at midspan has caused the top plate to deflect approximately 15mm (refer to Photograph 1.1.8, 1.1.9, 1.1.10 and 1.1.11) in both edge girders.

Severe corrosion at the top flange is present in the vicinity of the north pilasters (refer to Photograph 1.1.12 and 1.1.13).

Moderate and minor corrosion to the web of the main girder on the East Edge Girder (refer to Photograph 1.1.14, 1.1.15 and 1.1.16).

Moderate corrosion in proximity of rivets is present (refer to Photograph 1.1.17, 1.1.18 and 1.1.19).

Minor corrosion to the T- stiffeners in both edge girders (refer to Photograph 1.1.20, 1.1.21, 1.1.22, 1.1.23, 1.1.24, 1.1.25 and 1.1.26).

Moderate with localised severe corrosion of the bottom flange of the edge girders is present (refer to Photograph 1.1.27, 1.1.28, 1.1.29, 1.1.30, 1.1.31, 1.1.32, 1.1.33, 1.1.34, 1.1.35, 1.1.36, 1.1.37).

The east edge girder has slightly rotated at the top.





#### 5.2.2 - Element 2: Secondary deck Elements - Transverse beams

The transverse plate girders are in poor condition. The bottom flanges of all transverse girders are severely corroded and delaminated causing deflection between 5-15 mm of the flange. Loss of section is present in isolated areas (refer to Photograph 1.2.1, 1.2.2, 1.2.3, 1.2.4, 1.2.5, 1.2.6, 1.2.7, 1.2.8, 1.2.9, 1.2.10, 1.2.11, 1.2.12, 1.2.13, 1.2.14, 1.2.15, 1.2.16, 1.2.17 and 1.2.18).

The longitudinal plate girders have moderate corrosion at locations.

The edge Channel sections are severely corroded and delaminated. Major section loss is present with parts of the bottom flanges missing as a result. (refer to Photograph 1.2.19, 1.2.20, 1.2.21, 1.2.22, 1.2.23, 1.2.24, 1.2.25, 1.2.26, 1.2.27, 1.2.28, 1.2.29 and 1.2.30).

5.2.3 - Element 3: Secondary deck Elements – Element from table 3

Moderate corrosion to the plate edges and jack arches. Minor movement of several arches has occurred (refer to Photograph 1.3.1, 1.3.2, 1.3.3 and 1.3.4).

#### 5.3 – Load Bearing Substructure

#### 5.3.1 - Element 8: Foundations

The foundations were not visible for inspection. However the overall inspection findings did not find any evidence of settlement, adverse movement or distress that could be attributed to problems associated with the foundations.

#### 5.3.2 - Element 9: Abutments

A vertical crack is present at the north east corner of the north abutment. The brickwork is weathered and minor hairline cracks are present (refer to Photograph 1.9.1, 1.9.2, 1.9.3 and 1.9.4).

A vertical crack is present at the south east corner of the south abutment. The brickwork is weathered and minor hairline cracks are present (refer to Photograph 1.9.5 and 1.9.6).

#### 5.4 - Durability Elements

5.4.1 - Element 19: Finishes: Deck Elements The paint system has failed.

#### 5.5 - Safety Elements

5.5.1 - Element 23: Handrail / Parapets / Safety Fences

All four pilasters have moderate pointing loss.

The bricks at the top of the southwest pilaster have dislocated (refer to Photograph 1.23.1, 1.23.2, 1.23.3).

The northwest pilaster presents moderate weathering (refer to Photograph 1.23.4, 1.23.5, 1.23.6, 1.23.7, 1.23.8).





#### 5.5.2 - Element 24: Carriageway Surfacing

Moderate weathering of the carriageway surfacing, including a pothole near the southeast corner is present (refer to Photograph 1.24.1).

5.6 - Other Bridge Elements 5.6.1 - Element 26: Invert / River Bed

The river bed was not inspected as part of this inspection due to the high levels of water at the time.

#### 5.6.2 - Element 31: Wing walls

The northeast wingwall presents major deformation with a major crack throughout the height of the wall (refer to Photograph 1.31.1).

The southwest wingwall presents major deformation. The top 2 rows of brickwork have separated from the remaining wing wall (refer to Photograph 1.31.2 and 1.31.3).

The southwest and northwest wing walls present minor depth of pointing deterioration (refer to Photograph 1.31.4 and 1.31.5).





# **Discussion & Conclusions**

## 6.1 - General

Based on the visual observations noted in the previous section, Boxted Bridge is considered to be in poor overall condition. The dominant observations are the severe corrosion and delamination of the top flange of the edge girders in close proximity to the south pilasters, the severe corrosion and delamination of the transverse beams, the severe deflection of the plates connected to the transverse members and the cracks in the abutments.

The BCI Scores derived from the inspection BCI Form (See Appendix E) are given below:

Boxt	ed Bridge	BCI <sub>(Av)</sub>	BCI <sub>(Crit)</sub>	Deck Area (m <sup>2</sup> )
S	Span 1	49.68	35.78	75.456
Overall Score		49.68	35.78 <sup>*1</sup>	
Notes:	* <sup>1</sup> – lowest BCI Crit	ical taken rathe	er than average, as per	RJ requirement.

#### 6.2 - Deck elements

The main edge girders appear to be in poor condition. The bottom flanges are severely corroded in locations, especially in the vicinity of the channel beams. The webs appear to be in good condition with minor corrosion. The top flanges appear to have severe corrosion in the vicinity of the pilasters and at locations where there have been vehicle strikes.

The transverse beams bottom flanges are severely corroded causing the bottom plates to deflect significantly.

The longitudinal beams are in fair condition with minor corrosion.

The channel beams are in poor condition with major section loss of the bottom flange.

## 6.3 – Load Bearing Structure

Two major cracks are evident to both abutments, both on the east side of each abutments. The cracks are throughout the height of the wall.

## 6.4 - Durability Elements

The paint system has failed.

## 6.5 - Safety Elements

The east pilasters are in good condition. The west pilasters present moderate weathering with a significant crack on the northwest pilaster. The coping stone of the south pilaster had dislocated.





## 6.6 - Other Bridge elements

The wing walls are in poor condition. The Northeast and southwest walls have failed structurally due to structural cracks.

## 6.7 - Conclusions

The Principal Inspection found Boxted Bridge in poor overall condition with short to medium term concerns for the continued use of the structure.

There are a few concerns that may impact the longer term maintenance aspects of the structure as follows:

- The extent of the corrosion on the bottom flanges of the beams beneath the bridge that has caused the significant deflection of the bottom plates will impact any options that may be proposed for the strengthening of the existing structure, replacement may be a better option.
- The cracks on the abutments should be repaired.
- The Northeast and southwest wingwalls have failed structurally
- Given their deteriorated state, the vehicle strikes on the main girders provide a risk to the overall structural stability of Boxted Bridge

The current condition of the structural elements provides little confidence in their ability to undertake the current loading applied on the structure. Boxted Bridge was previously assessed as able to carry up to 3T loading, beyond 6 monthly monitoring visits, no measures have been imposed.

The defects identified in this inspection are the result of many years of deterioration in the structure and have been long standing without significant acceleration in deterioration. However, the deterioration will continue if intervention is not made and the hidden reserves in strength that the structure has will continue to be eroded. Should the monitoring identify an acceleration in the deterioration or movement within the structure, unplanned road closure may be required in order to ensure the safety of the public.

Steps should be taken in the years ahead to investigate options for the replacement or strengthening, if possible, of the structure. The requirement for significant investment should be expected.

Works to address these concerns are discussed in Section 7 of this report.





## 7 - Recommendations

Taking into consideration the findings of the visual inspection the following matters are recommended in order to maintain the safe use and operation of the structure and maintain the value of the asset over the longer term. The proposals for the remedial works on the edge girders would serve to arrest deterioration in the short to medium term but would not strengthen the Bridge. Design work should be considered to establish maintenance, strengthening or replacement options for the structure.

#### <u>Costs</u>

The below costs are approximate figures for the works including basic Traffic Management, Preliminary items and any temporary works involved.

#### Priority classification

- H High; work should be done during the next financial year to ensure the safety of the public or safeguard structural integrity or avoid a high cost penalty
- M Medium; work should be done during the next financial year; postponement carries some cost penalty

Element Remedial Work Recommended		Cost	Priority
Main Edge Girders	Corroded areas should be cleaned of corrosion products and repainted.	£15,000	М
Transverse and Longitudinal Girder	Corroded areas should be cleaned of corrosion products and repainted.	£15,000	М
Abutments	The structural cracks should be repaired	£30,000 (value includes works at abutments, wingwalls and pilasters)	М
Wing Walls	The cracks should be repaired. The displaced bricks should be replaced. The wing walls should be strengthened	£30,000 (value includes	М

L Low; work should be done within the next two financial years





		works at abutments, wingwalls and pilasters)	
Carriageway	The carriageway surfacing should be replaced.	£2,500	М
Pilasters	The pointing should be repaired. The displaced bricks and coping stone should be replaced.	£30,000 (value includes works at abutments, wingwalls and pilasters)	Н

Table 7.1: Recommendations for short, medium and long term





# Appendices











# Appendix B Record Drawings





# Appendix C Photograph Key Plan and Photographs

	General photos
G1	Elevations
G2	Along the carriageway
G3	Plan views
G4	Etc.

## For a single or multi span bridge

1.1.1	
1.1.2	Defects in primary deck of span 1
1.1.3	
1.2.1	
1.2.2	Defects in primary deck of span 2
1.2.3	
24.1.1	
24.1.2	Defects in carriageway surfacing over span 1
24.1.3	






























































































































































































































































































## Appendix D Defect Sketches










	KEY:								
			Co	prrosion					
			Pa	int loss					
			Se	ection loss					
			Sta	aining					
Rev.	Date		Descripti	on of revision		Drawn	Checked	Review'd	Approv'd
DR/	AWING STA	ATUS	IN	FORI	МАТ	ION			
		Es	se sh	<b>X</b>	NC				
Es	sex Higl	hways,	gn		y5				
Se Cr SCH	ex Hous elmsfor	se, 2nd Fl d, CM1 10 E	loor, Vict QH - Tel	toria Road l: 0345 603	South, 37631	© I	Essex C	ounty C	ouncil
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			S	HEET	10	)F 2			
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		integrated	expertise	<b>AY</b>	Ess	ex Coun	ty Cour	ncil	

# NOTES

1. All dimensions are in millimetres unless noted otherwise.

2. All levels are in metres above Ordnance Datum unless noted otherwise.



## Appendix E BCI Report Forms







	Sup	erficial		Ge	eneral	X	Pri	ncipal		Spec	ial		Form	1	of	1	for this structure
Borou	igh:			Colch	nester			Date:	2	22/03/2018		Next Insp	ection	Type:	GI	Date:	
Struc	ture N	lame:	Во	xted				S	tructure	Ref:						AIMS Ref:	n/a
Con	dition	Rating:	BC	CI <sub>Av</sub> :	49.68	BCI	rit :	35.78	O.S.E	6012	44	O.S.N	2	34419	¢	Primary deck form (Table 2)	6
Span	1	of	1	Spar	h Width:	5.76	Spa	n Length	(Abutme	ent Face)	12.5	Deck Are	a (m²):	75.456	ğ	Primary deck material (Table 4)	E
Al	abov	e grour	d elem	ents		Vee		NIa	Dhata	aranha?		Vee		NI-	U S	Secondary deck form (Table 3)	
		inspect	ed:		X	Yes	Ц	NO	Photo	graphs?	×.	Yes		NO	ğ		33
Numb	per of	constru	ction fo	orms in:	bridge/	span*		1	П	2		3		more	Bri	Secondary deck material (Table 4)	F
	(*del	ete as ap	propriate)		ionago,	opan		·	-	-	-	Ű	-	more	_		-
_								-	_			_			n	<b>.</b>	-
Set	No		Ele	ement D	Descriptio	on		S	Ex	Def	1	Р	W	Cost (£)		Comments	s/Remarks
															Sever	e corrosion of the top flange in c	lose proximity to the pilasters. Severe
	1	Primary	deck eler	ment (Ta	ble 2)			4	С	1.1		н			COFFOS	sion and section loss at the botto	m hange of the edge girders, slight
															COLLOS	sion at the web of the edge girder	rs. East girder has rotated at the top.
				1						ļ							
ents															Sever	e corrosion and section loss of th	he bottom flange of the transverse
, m	2	Seconde	n dook	Transve	erse beam	s		4	D	1.1		Н			and lo	ngitudinal beams. Significant sec	ction loss of the channel sections.
ш		element	iry deck 's												Delan	nination of the girder plates in all	transverse beams
Š	2		Element from Table 3						0	4.4		ц			Mode	rate corrosion of the steel plates	at the plates connections and jack
õ	3			Elemen		ne 5		3	C	1.1		п			arche	S.	
	4	Half join	ts					n/a				~					
	5	Tie bear	n/rod					n/a				~			<b> </b>		
	6	Parapet	beam or	cantileve	er			n/a				~			<b> </b>		
F	7	Deck bra	acing					n/a	^			~		_	N/- '	facto indicative of four lative i	100
50	8	Abutmat	iuris	arch opri-	oging)			1	A	25		~ H			NO de	arects indicative of foundation issi	ues.
tru	9	Spandro	its (INCL &	aron sprir ad wall	igilig)			4 n/2	U	3.5		~			Aua c		
bea	11	Pier/coli	imn	u wall				n/a				~			∦		
ad-l bsti	12	Cross-he	ad/cappi	ng beam	1			n/a				~			10		
Sul	13	Bearings	6					n/a				~			[		
	14	Bearing	plinth/she	elf				n/a				~					
ts	15	Superstr	ucture dr	ainage				n/a				~					
Jen	16	Substruc	ture drai	nage				n/a				~			L		
len	17 Waterproofing							n/a				~			1		
μ	18 Movement/expansion joints							n/a				~					
İli	19 Finishes: deck elements							5	С	4.1		Н			Paint	system has failed	
ura	20 Finishes: substructure elements							n/a				~					
Δ	21 Finishes: parapets/safety fences/handrails							n/a				~					
s	22 Access/walkways/gantries							n/a				~					
ent	ent														Mode	rate pointing lost. Deformation of	top of Southwest pillaster. Few bricks
leπ	23	Handrail	/parapets	/safety fe	afety fences			3	С	3.1		н			are di	slocated.	
ч								-	-	-							
afet	24	Carriageway surfacing						3	C	0.1		М			Potho	le near the southeast corner. Mo	derate weathering of the surfacing
ő	25	Footway	/verae/fo	otbridae	surfacing			n/a	0	3.1		~			r otrio	ie near the southeast corner. Wo	derate weathening of the surfacing
	26	Invert/riv	ver bed	g-	g			NI				~					
Its	27 Aprons							n/a				~					
mei	28 Fenders/cutwaters/collision prot.							n/a				~					
Ele	29 River training works							n/a				~			┣		
ge	30 Revetment/batter paving							n/a				~					
3rid	2 31 Wing walls						5	D	3.1		Н			Major	deformation of the wing walls. Fa	ailure due to structural cracks	
erE	a 32 Retaining walls							n/a				~			[[		
Ę	5 33 Embankments							n/a				~			1		
Ľ	34 Machinery							n/a				~					
ې ح	35	Approac	h rails/ba	rriers/wa	ills			n/a				~			<u> </u>		
illar	E 36 Signs							n/a				~					
lem l	ing and a state of the state of							n/a				~			[[		
⋖ш	38	Services						n/a				~					
	39																
1	40														1		
1	41	1													11		
1	42														11		
						8	Seve	rity Fr	- Extent	Def - Def	ect I - I	mpact P	- Priorit	v W - W/ork	Cater	ory Cost - Cost of Work	
	-						2010	,, <b></b>						,,	. ວິດເບີ້		
											MU	LTIPLE	DEFE	CTS			
Elen	nent		Defect	1	D	efect 2			Defect	3						0	
N	o	s	Ex	Def	s	Ex	Def	s	Ex	Def	1					Comments	
<u>⊢</u>	1	4	0	11	2	0	12	2	B	1.3							
	>	4	n I	11	3	C C	12	2	n	1.3							
	- 7	2	R	2.2	2	L C	3.5	-		1.5							
2	1	2	с С	3.2	5		3.5	3	C	37							
$\vdash$	•	<u> </u>		J.2	5		3.3	3	U	3.1							
F			<u> </u>		1	<u> </u>			-	L							
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### JACOBS

Sup	erficial	Gen Gen	eral	× P	rincipal		Special	Forn	1	of	1	for this structure
Borough:		Colche	ster		Date:		22/03/2018	Next Inspection	Type:	GI	Date:	
Structure N	ame:	Boxted			<u> </u>	Structure Ref:					AIMS Ref:	n/a
Name :	S. Dalto	n				Signed	1:				Date:	
					1	-					r	
Name :						Signed	1:				Date:	
								WORK REQUIR	ED			
Ref. No	. No Suggested Remedi						rk		Priority		Estimated Cost	Action/Work Ordered?
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Name :						Signed	1:				Date:	