

Summary

Structure Key 5958 Agent Name A-One +

**Commissioned** 01/01/1957 **O.S. Grid Ref East/North** 601630 / 143450

Bridge Type Highway Underbridge

Length14.80Number of Spans1Date Inspected05/09/2018Overall ConditionFair

Weather Dry; Cloudy; Warm 15 Degrees Celsius

Inspected by

**Authorised by** 

**Authorisation date** 11/01/2019 **Method of Inspection** On foot

Equipment Used PPE; Inspection Kit; Camera

**Parts of Structure Not** Foundations, waterproofing and other buried elements.

Inspected

#### **General Description**

River Great Stour (Old) underbridge is a single span insitu reinforced concrete structure. The structure has a span of 14.80m and a width of 32.90m and carries the M20 motorway over the River Great Stour and a cycletrack. The South edge of the bridge is a seperate structure: River Great Stour (New) (#12433).

The original structure (constructed c.1957) had twin independant decks with a 6m (approx.) gap between them, each carrying one carriageway of the then A20 Ashford bypass. The original decks are insitu beam and slab (ribbed) decks each consisting of 8No. rectangular beams with a continuous deck slab. The 1980 refurbishment and extension overlaid the existing decks with a beam and slab deck with a new section of beam and slab covering the original gap between decks. The overlay slab is typically 175mm thick expanding to 250mm at the haunches and over the central gap and features 5No. beams over each original deck. The bridge is fitted with single element mechanical joints at both ends and a steel N2W4 parapet along its North edge.

The original beams appear cast directly onto the abutments and the new beams to the central gap bear upon steel pot bearings (3No. to each abutment). The abutments are mass gravity abutments with brick wingwalls (North side) founded on spread footings. The West abutment now features a cantilevered concrete cycleway that was added in 2001.

#### **Articulation**

The structure is free to both ends with restraint provided by natural friction at the bearing points. The overspan deck also now helps resist movement.

#### Inspection Summary

The inspection indicated that River Great Stour (Old) was in fair condition on the day of inspection. However, there is some defects that require attention in order to maintain the integrity of the structure. These include areas of spalling to the beams and slab soffit, potholes to the surfacing and failure of the east expansion joint within lane 1 London bound.

Subsequent to this inspection, the conduit to the North elevation was identified as a redundant service owned and operated by a now defunct third party. The conduit has been removed from the structure.

#### **Documents Reviewed as part of the Inspection Process**

**Document Ref:** Previous reports, as-built drawings as **Reason:** General Inspection. per BD 63/17.



## Inspection Photographs



001. North Elevation



002. East Abutment





003. West Abutment



004. Northwest Wingwall





005. Deck Soffit



006. North Parapet





007. Cycletrack-Walkway



008. Guardrail





009. North Fascia & Parapet Beam



010. Expansion joints.





011. View of Carriageway Looking East







### Observations/Defects Confirmed at this Inspection

Not Applicable	
Components	Deck 1 - M20 LB Carriageway (Lane 3 - HS)
Defect Type	CrCo - Cracked
Extent	SC - Defect present in 5% to not more than 20% of area or length of element
Severity	D2 - Minor: Defect is unlikely to be causing damage to the element or structure now or unlikely to do so in the near future
Priority	Low
Comments	There is transverse cracking of the surfacing parallel to the West expansion joint in the London bound carriageway across lane 1. (No action required at present)
Cause	Other Certainty Low
Comment on	The cracking may be occuring over the beggining of the upstand for the expansion joint. This may have
Cause	induced additional stresses in the pavement due to limited flexure of reduced surface thickeness.
	Congret view showing greating to

General view showing cracking to surfacing adjacent to the expansion joint.



Components	Dock 1 North Vorge
Components	Deck 1 - North Verge
Defect Type	MissCo - Missing
Extent	SC - Defect present in 5% to not more than 20% of area or length of element
Severity	D2 - Minor: Defect is unlikely to be causing damage to the element or structure now or unlikely to do so in the near future
Priority	Low
Comments	The service cable trough cover slab at west end of the North verge are missing.
Components	Deck 1 - M20 LB Carriageway (Lane 3 - HS)
Defect Type	PH - Pothole
Extent	SB - Defect present in not more than 5% of area or length of element
Severity	D2 - Minor: Defect is unlikely to be causing damage to the element or structure now or unlikely to do so in the near future
Priority	Low
Comments	There is a small pothole that has been temporarily filled in Lane 2 of the London bound carriageway. (No action required at present)



### Observations/Defects Confirmed at this Inspection

Substructure	
Components	West Abutment - West Abutment
Defect Type	Graf - Graffiti
Extent	SD - Defect present in 20% to not more than 50% of area or length of element
Severity	A2 - Defect in low tolerability condition
Priority	Low
Comments	There are large areas of graffiti on the West abutment of the structure.
Cause	Vandal Action Certainty High
Comment on	Vandalism
Cause	
	1. General view showing graffiti to

1. General view showing graffiti to the west abutment looking from the north end.



2. General view showing graffiti to the west abutment looking from the south end









<b>Observations</b>	/Defects	Confirmed	d at this	Inspection
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Components East Abutment - Northeast Wingwall, West Abutment - Northwest Wingwall

**Defect Type** Sp - Spalled area

**Extent** SE - Defect present in over 50% of area or length of element

Severity D2 - Minor: Defect is unlikely to be causing damage to the element or structure now or unlikely to do so

in the near future

**Priority** Low

**Comments** The Northern wingwalls both have areas of significant brickwork and mortar loss. The extent of the loss

is unlikely to cause further problems at present. (No action required at present)

Cause Freeze Thaw Action Certainty Medium

Comment on The brickwork is old (1957) and has been exposed to the weather throughout its life. The loss of

**Cause** brickwork might be attributable to frost damage as the brickwork appears saturated.

General view showing spalling brickwork and mortar loss to the wingwall.



**Components** East Abutment - East Abutment

**Defect Type** Cr - Crack of uncertain origin or a combination of causes

**Extent** SD - Defect present in 20% to not more than 50% of area or length of element

Severity D2 - Minor: Defect is unlikely to be causing damage to the element or structure now or unlikely to do so

in the near future

**Priority** Low

Comments The East abutment has numerous cracks with large amounts of leachate. A majority of the cracks and

leachate appear to be horizontal along construction joints, however a few are vertical in nature with

limited leaching.

Cause Unable to Determine Certainty High

Comment on

Cause



#### Observations/Defects Confirmed at this Inspection

General view showing cracking with leachates to the east abutment.



Components West Abutment - West Abutment

**Defect Type** Cr - Crack of uncertain origin or a combination of causes

**Extent** SC - Defect present in 5% to not more than 20% of area or length of element

Severity D2 - Minor: Defect is unlikely to be causing damage to the element or structure now or unlikely to do so

in the near future

**Priority** Low

Comments The West abutment has hairline cracks in isolated areas along its length with some exhibiting leaching

and rust staining. (No action required at present)

General view showing crack with rust staining to the west abutment.





### Observations/Defects Confirmed at this Inspection

Carriageway				
Components	Deck 1 - East Joint			
Defect Type	FrCo - Broken or fractured			
Extent	SC - Defect present in 5% to not more than 20% of area or length of element			
Severity	D4 - Severe: Defect is clearly causing damage to element or structure			
Priority	Medium			
Comments	The East expansion joint has failed across the offside wheel track of lane 1. The nosing has broken out around the reinforcement and the edge of the rail is close to the wheel track of lane 1. A section of rail has been removed.			
Cause	Anchorage Failure Certainty Medium			
Comment on				
Cause				
	General view showing expansion			

General view showing expansion joint to lane 1 has failed.





### Observations/Defects Confirmed at this Inspection

Miscellaneous	
Components	Deck 1 - Service Conduit/Pipe (North), East Abutment - Service Conduit/Pipe (North)
Defect Type	Lse - Loose
Extent	SC - Defect present in 5% to not more than 20% of area or length of element
Severity	D2 - Minor: Defect is unlikely to be causing damage to the element or structure now or unlikely to do so in the near future
Priority	Low
Comments	The service conduit/pipe fixed to the North face of the deck is loose at the East end and on the abutment. The section over the pedestrian/cycle path has been made safe with a tie to the parapet.
	1. General view showing that the

1. General view showing that the service conduit/pipe is disconnected from deck north face and abutment.



2. General view showing loose service conduit/pipe retain by strapping to parapet post.





#### Observations/Defects Confirmed at this Inspection

**Components** West Abutment - Cycleway Lighting (KCC) **Defect Type** FrCo - Broken or fractured

**Extent** SB - Defect present in not more than 5% of area or length of element

Severity D2 - Minor: Defect is unlikely to be causing damage to the element or structure now or unlikely to do so

in the near future

**Priority** Low

Comments The central light unit afixed to the West abutment is non-functional. (Delete defect, lighting units are now

functional)

General view showing lighting units to the west abutment are functional.





### Observations/Defects Confirmed at this Inspection

Superstructure					
Components	South Deck: Beams - Beam 19 (South), South Deck: Beams - Beam 17, South Deck: Beams - Beam				
_	18, Overlay Deck: Central Beams - Beam 11				
Defect Type	Sp - Spalled area				
Extent	SC - Defect present in 5% to not more than 20% of area or length of element				
Severity	D3 - Moderate: Defect is probably causing damage to element or structure, or is likely to do so in the				
	near future				
Priority	Medium				
Comments	There are numerous areas of delaminated and spalled concrete to beams 11, 17, 18 & 19. Some of				
	these areas have extensive areas of exposed reinforcement.				
Cause	Unable to Determine Certainty High				
Comment on	The original cause of the delamination and spalling is not known. It is possible that cracking allowed				
Cause	water ingress and subsequent corrosion of the reinforcement but this could not be confirmed.				
	2. General view showing spalling	50			
	and exposed reinforcement to soffit	7/A			

of beam 18 (south) (2).



3. General view showing exposed reinforcement to fascia of beam 18 (south).





#### Observations/Defects Confirmed at this Inspection

1. General view showing spalling and exposed reinforcement to soffit of beam 18 (south) (1).



Components Deck 1 - Overlay Deck: Central Beams, Deck 1 - North Deck: Beams, Deck 1 - South Deck: Beams

Defect Type Graf - Graffiti

**Extent** SB - Defect present in not more than 5% of area or length of element

**Severity** A2 - Defect in low tolerability condition

**Priority** Low

Comments There are various areas of graffiti to the beams of the structure.

2. General view showing graffiti to the deck beam.





#### Observations/Defects Confirmed at this Inspection

1. General view showing graffiti to the fascia beam at west end.



Components Deck 1 - South Deck: Slab

**Defect Type** Sp - Spalled area

**Extent** SC - Defect present in 5% to not more than 20% of area or length of element

Severity D2 - Minor: Defect is unlikely to be causing damage to the element or structure now or unlikely to do so

in the near future

**Priority** Low

**Comments** Several areas of spalled concrete and exposed reinforcement to the slab soffit adj to beam 17 & 18.

General view showing spalled and exposed reinforcement to south

deck soffit.





Observations/Defects Confirmed at this Inspection

Components East Abutment - East Abutment Bearings (Central Gap), West Abutment - West Abutment Bearings

(Central Beams)

Defect Type RCo - Rusty/Corroded

**Extent** SC - Defect present in 5% to not more than 20% of area or length of element

Severity D2 - Minor: Defect is unlikely to be causing damage to the element or structure now or unlikely to do so

in the near future

**Priority** Low

**Comments** There is minor surface corrosion to the bearings of the central beams. The corrosion is not considered

significant at present. (No action required at present)

General view showing surface corrosion to bearings of the central

beams.



Components Deck 1 - North Deck: Slab

**Defect Type** Cr - Crack of uncertain origin or a combination of causes

Extent SB - Defect present in not more than 5% of area or length of element

Severity D2 - Minor: Defect is unlikely to be causing damage to the element or structure now or unlikely to do so

in the near future

**Priority** Low

Comments Hairline cracking was identified to the underside of the deck slab at the North edge. The cracking is at

semi-regular intervals with no significant leaching. (No action required at present)



#### Observations/Defects Confirmed at this Inspection

General view showing cracking to the underside of the deck slab at north edge.



## Reviewed Maintenance Actions confirmed through this and outstanding from other Inspections N.B. The Origin of Work for each of these Maintenance Actions is Routine Inspection (currently Principal, General, Special and Monitoring).

Maintenance Object	Concrete Deck	Maintenance Action	Repair
Estimated Cost	£30,000	Recomm. Action Date	01/04/2020
Priority Category	2	Risk Score	93
Comments	Carry out concrete repairs to the aff	ected areas of the South	deck soffit. (07442)
Maintenance Object	Trench	Maintenance Action	Repair
Estimated Cost	£750	Recomm. Action Date	01/04/2020

**Priority Category Risk Score** 87 Comments Supply and install new paving stones to the North verge.

Maintenance Object Abutment **Maintenance Action** Repair £1.500 **Estimated Cost** Recomm. Action Date 01/04/2010

**Risk Score Priority Category** 

Comments Break out loose concrete and repair with a suitable repair mortar the area of spalling to the

bearing plinth.

Maintenance Object Abutment **Maintenance Action** Repair £10,000 **Estimated Cost** Recomm. Action Date 01/04/2020

**Priority Category** Risk Score 12

Comments Carry out concrete repairs to the East abutment as identified in the 2013-14 concrete repair

study. (07442)

#### Additions to the next Routine Maintenance

Clean graffiti from the structure.

#### Reviewed Maintenance Actions to be Referred to Third Parties

Correspondence Ref Unknown

Comments The conduit has been removed subsequent to the inspection.



#### Maintenance Actions Addressed By Inspector on Site

Maintenance Object General Maintenance Action Change Status

Origin of Work Routine Inspection

**Comments** Delete defect, lighting units are now functional.

#### Outstanding Observations/Defects NOT Confirmed at this Inspection

No observations or defects which were not confirmed were outstanding at the time of this inspection.

#### Reviewed Maintenance Actions from sources other than Inspections

N.B. Currently these would be maintenance actions with an Origin of Work not set to Routine Inspection, e.g. BACO Parapets or ASR.

Maintenance Object Expansion Joint

Origin of Work Not Specified Estimated Cost £45,000

**Priority Category** 

£45,000 Recomm. Action Date 01/04/2021

3 Risk Score 82

Comments Carry out replacement of the East Type 6 expansion joint, London bound. Consider combining

Maintenance Action

Repair

with resurfacing to address the potholes.

#### **Unreviewed Maintenance Actions from sources other than Inspections**

N.B. Currently these would be maintenance actions with an Origin of Work not set to Routine Inspection, e.g. BACO Parapets or ASR.

No other maintenance actions outstanding

#### Other Planned Inspections

N.B. These are the planned inspections in SMIS at the time of report production (Friday, 11 January, 2019), NOT at the time of the inspection.

Туре	Target Date	Reason
Principal	13/08/2020	

## Annex 1

**Structure Report** 



WARNING - Assume that Asbestos is present. Be familiar with SMIS Help Guide and follow your own safe working procedures.

Structure Summary key 5958

**Road** M20 **O.S. Grid Ref East/North** 601630 / 143450

1957 **Constructed** 1957

Maintaining Agent-Area A-One +-Area 4

Geographical Area Kent Custodian-Region HA-South East

Designer Kent County Council

Last Principal Inspection 05/02/2015 Last General Inspection 05/09/2018

PI Frequency (years) 6

Structure Type Bridge And Large Culvert

Bridge Type Highway Underbridge

High Load RouteNoHeavy Load RouteNoScour SusceptibleNoDBFONo

Original Design Loading Other

Number of Spans1Length14.80TensioningNot TensionedOverall ConstructionConcrete

#### **Description of Structure**

Commissioned

River Great Stour (Old) underbridge is a single span insitu reinforced concrete structure. The structure has a span of 14.80m and a width of 32.90m and carries the M20 motorway over the River Great Stour and a cycletrack. The South edge of the bridge is a seperate structure: River Great Stour (New) (#12433).

The original structure (constructed c.1957) had twin independant decks with a 6m (approx.) gap between them, each carrying one carriageway of the then A20 Ashford bypass. The original decks are insitu beam and slab (ribbed) decks each consisting of 8No. rectangular beams with a continuous deck slab. The 1980 refurbishment and extension overlaid the existing decks with a beam and slab deck with a new section of beam and slab covering the original gap between decks. The overlay slab is typically 175mm thick expanding to 250mm at the haunches and over the central gap and features 5No. beams over each original deck. The bridge is fitted with single element mechanical joints at both ends and a steel N2W4 parapet along its North edge.

The original beams appear cast directly onto the abutments and the new beams to the central gap bear upon steel pot bearings (3No. to each abutment). The abutments are mass gravity abutments with brick wingwalls (North side) founded on spread footings. The West abutment now features a cantilevered concrete cycleway that was added in 2001.

#### Articulation

The structure is free to both ends with restraint provided by natural friction at the bearing points. The overspan deck also now helps resist movement.



# Assessments, Inspection and Maintenance History Completed Inspections

Inspection Type	Inspection Date	Inspection Reason
General Inspection	05/09/2018	
General Inspection	30/09/2016	
Special Inspection (Special Inspection)	11/08/2016	Expansion joint was noted to have failed by inspector.
Principal Inspection	05/02/2015	
General Inspection	27/07/2012	
General Inspection	21/10/2010	
Principal Inspection	03/09/2008	
General Inspection	04/04/2006	
General Inspection	26/09/2004	
Principal Inspection	13/08/2002	
General Inspection	08/02/2002	
Principal Inspection	17/06/1996	
General Inspection	09/02/1993	
Principal Inspection	02/05/1991	
General Inspection	01/08/1988	

#### **Completed Assessments**

No completed assessments found

#### Maintenance Actions Completed Through Projects Created In SMIS

No maintenance actions found

#### **Additional Maintenance History**

A cantilevered cycleway was constructed to the West abutment in 2001.

The expansion joints were replaced with USL BEJ5s in July 2008.

Routine concrete repairs were completed in November 2008.

Parapets were replaced in April 2013.

Expansion joints in the Coast bound carriageway were replaced in Feburary 2015 due to failure of the joints.

#### **Features**

Bridge and Large Culvert has the Main Carriageway of the road M20 running over it maintained by Highways Agency

Bridge and Large Culvert has a Telecommunications service

Span 1 has the River Great Stour running under it maintained by Environment Agency

Span 1 has a Cycleway running under it maintained by Kent County Council

#### Interim Measures

No interim measures present



Constraints					
Component	Туре	Name	Description		
River Great Stour (Old)	Inspection Access	Working at Height	Inspection of the soffit and bearing shelf over the cycleway cannot be accessed by underbridge. Use of enclosed podium or similar required with suitable fall prevention given proximity of water.		
River Great Stour (Old)	Inspection Access	Working In Water	Close inspection of the East abutment and soffit requires working over water at height. Underbridge unit, suitable boat or similar arrangements required.		

#### Departures

No departures present

### Coating System for Steelwork

No Coating Systems for Steelworks present

### Coating System for Concrete

No Concrete Coating Systems Present



#### Inventory

N.B. Inspection Elements are added for Inspection purposes only. They are shown here for information only, and it should be noted that the list of Inspection elements is not comprehensive.

inspection elements is not com	prenensive.		
East Abutment			
Support Type	Mass Abutment	Material Type	Insitu Reinforced Concrete
Connection Type	Felt Strip	Facing Material	None
	•	. aomy matorial	140110
East Abutment Bearing	s (Central Gap)		
Туре	Sliding Bearings	Installation Date	01/01/1980
Product		No. of Bearings	3
East Abutment			
Support Type	Mass Abutment	Material Type	Insitu Reinforced
Connection Type	Felt Strip	Facing Material	None
	·		
Northeast Wingwall			
Anchoring System	Not Known	Length	4.80
Anchorning System	NUL KIIUWII		
		Height	5.90
Foundation 1			
Туре	Spread Footings		
	<u> </u>		
Northeast Embankmen			
Туре	Battered	Material	Granular
Slope		Anchoring System	None
Service Conduit/Pine (A	North) - (Inspection Element)		
	SER - Services		
Туре	SEK - SELVICES		
Span 1			
	Beam/Girder - At/Below Deck Surface	Skow	9.00
Min Width Between	13.86	Date Min Width Last	0.00
	13.00	Checked	
Supports		Спескей	
Features Data		Octor-III - I	
Critical Headroom		Critical Headroom	
		Last Checked	
Deck 1			
Structure Form Type	Simply Supported	Length	14.80
Construction Type	Beam And Slab	Width	32.90
Enclosure Type	Void Inaccessible	Construction Date	01/01/1957
Material Type	Insitu Reinforced Concrete	Material Name	Beams and Slab
Bearing 1 (East Abutme	ent)		
Туре	Sliding & Rocker	Installation Date	01/01/1957
Product		No. of Bearings	5
1 TOULGE		140. Of Dealings	J



North Parapet

Location Deck Edge Installation Date

LocationDeck EdgeInstallation Date02/04/2013FormVehicle ParapetModifiedNot Modified

DesignerMetor Services LtdModification DateM'facturer/FabricatorMetor Services LtdNominal Height

Baco Parapet TypeNot ApplicableModification DateBarrier TypeOther(Baco post only)

Material Infill Mesh Infill Primary Material Steel

Cont Perf Class N2 Parapet Group Not Applicable

Safety Fence Approach NWorking WidthW4Protection SystemNSafety Fence DepartureNProtection ReasonNot ApplicableProtection SystemN

BA 37/92 Ranking Data

Assessed Assessed Date

Contain Capacity Req Not Specified Containment Ranking

Containment Basis Not Known

Risk Features Below Risk Highway Carried Out
Risk Lavout Risk Containment Features

Risk Ranking 0.00 Priority Ranking 0.00

East Joint

Type Single Element Elastomeric In Metal Installation Date 01/07/2008
No. of Joints 1

Product Universal Sealants Britflex Bej5

West Joint

Type Single Element Elastomeric In Metal Installation Date 01/07/2008

No. of Joints

1

Product Universal Sealants Britflex Bej5

North Verge

M20 CB Carriageway

Central Reserve

M20 LB Carriageway (Lane 3 - HS)

North Parapet Beam

Material Type Insitu Reinforced Concrete

Overlay Deck: Slab

FormSlab HaunchedTypeSolidMaterialInsitu Reinforced ConcreteStrengtheningTypeNone

Overlay Deck: East Diaphragm

Material Insitu Reinforced Concrete

Strengthening Type None

Overlay Deck: North Deck Beams (Hidden)

ShapeBoxStrengthening TypeNoneTypeInsitu SolidEdge Beam?N

Material Insitu Reinforced Concrete

Overlay Deck: Central Beams

ShapeBoxStrengthening TypeNoneTypeInsitu SolidEdge Beam?N

Material Insitu Reinforced Concrete



Overlay Deck: South Deck Beams (Hidden)

ShapeBoxStrengthening TypeNoneTypeInsitu SolidEdge Beam?N

Material Insitu Reinforced Concrete

Overlay Deck: West Diaphragm

Material Insitu Reinforced Concrete

Strengthening Type None

North Deck: Slab

Form Slab Flat Type Solid

MaterialInsitu Reinforced ConcreteStrengtheningTypeOverspan Slab

North Deck: East Diaphragm

Material Insitu Reinforced Concrete

Strengthening Type None

North Deck: Beams

Shape Box Strengthening Type Overspan Slab

Type Insitu Solid Edge Beam? N

Material Insitu Reinforced Concrete

North Deck: West Diaphragm

Material Insitu Reinforced Concrete

Strengthening Type None

South Deck: Slab

Form Slab Flat Type Solid

MaterialInsitu Reinforced ConcreteStrengtheningTypeOverspan Slab

South Deck: East Diaphragm

Material Insitu Reinforced Concrete

Strengthening Type None

South Deck: Beams

ShapeBoxStrengthening TypeNoneTypeInsitu SolidEdge Beam?N

Material Insitu Reinforced Concrete

South Deck: West Diaphragm

Material Insitu Reinforced Concrete

Strengthening Type None

Service Conduit/Pipe (North) - (Inspection Element)

Type SER - Services

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Support Type Mass Abutment Material Type Insitu Reinforced Concrete

Connection Type Felt Strip Facing Material None

West Abutment Bearings (Central Beams)

Type Sliding Bearings Installation Date 01/01/1980

Product No. of Bearings 3

West Abutment

West Abutment

Support Type Mass Abutment Material Type Insitu Reinforced

Connection Type Felt Strip Facing Material None



Cycleway Lig	nting (KCC) - (inspection Element)	
Туре	LIG - Lighting	

Cycleway Parapet		
Location	Deck Edge	Primary N

LocationDeck EdgePrimary MaterialFormParapetMaterial InfillSolid InfillDesignerNot KnownNominal Height1.4

ManufacturerNot KnownInstallation Date01/01/2001

Baco Parapet Type Not Applicable Modification Date

Fence Guardrail Proprietary System

## Cycleway Type Walkway

Northwest Wingwall
Anchoring System Not Known Length 4.80
Height 5.90

## Foundation 2 Type Spread Footings

Northwest Embankment						
Туре	Battered	Material	Granular			
Slope		Anchoring System	None			

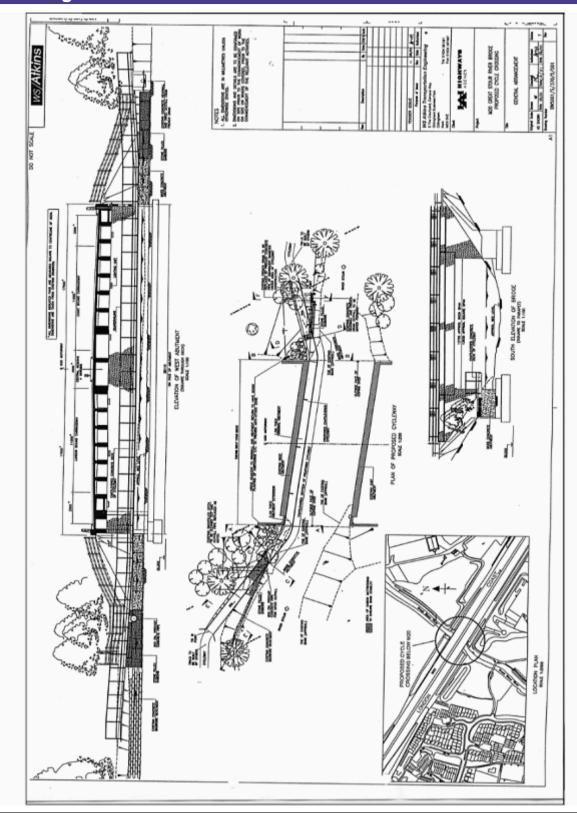


## **General Photograph**



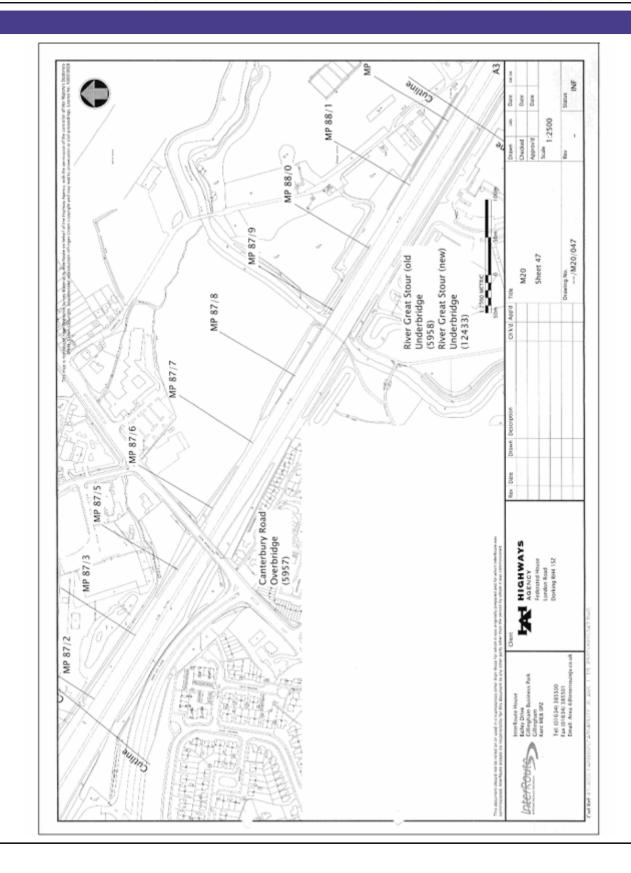


### **Elevation Drawing**





### Мар





## 1:50,000 Map

