

General Inspection Report for River Great Stour (Old) (/M20//87.80//)
 (Authorised)

Summary

Structure Key	5958	Agent Name	A-One +
Commissioned	01/01/1957	O.S. Grid Ref East/North	601630 / 143450
Bridge Type	Highway Underbridge		
Length	14.80	Number of Spans	1
Date Inspected	30/09/2016	Overall Condition	Fair
Weather	Clear and dry		
Inspected by			
Authorised by			
Authorisation date	16/11/2016		
Method of Inspection	The structure was inspected on foot		
Equipment Used	Camera		
Parts of Structure Not Inspected	Foundations		

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 separate structure: River Great Stour (New) (#12433).

The original structure (constructed c.1957) had twin independent 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

This inspection indicated that River Great Stour (Old) was in fair condition on the day of inspection.

The East expansion joint across lane 2 of the London bound carriageway had failed. A section of rail had already been removed, however the nosing was breaking up and the rail section was loose and vibrating in the off-side wheel track. This was reported to the NCC for removal.



The Southern beams and deck slab also have numerous areas of spalled and spalling concrete with numerous areas of exposed reinforcement.

General Inspection Report for River Great Stour (Old) (/M20//87.80//)

(Authorised)

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 Cause	The cracking may be occurring over the beginning of the upstand for the expansion joint. This may have induced additional stresses in the pavement due to limited flexure of reduced surface thickness.	
	Cracking to the London bound surfacing	
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 slabs at each end of the North verge are missing.	

General Inspection Report for River Great Stour (Old) (/M20//87.80//)

(Authorised)

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 Cause	
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	Other Certainty Medium
Comment on Cause	The brickwork is old (1957) and has been exposed to the weather throughout its life. The loss of brickwork might be attributable to frost damage as the brickwork appears saturated.
	Spalling area of brickwork to the Northwest wingwall
	


General Inspection Report for River Great Stour (Old) (M20//87.80//)

(Authorised)

Observations/Defects Confirmed at this Inspection

Northwest 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		

Possible rust staining to the East abutment (South deck)



General Inspection Report for River Great Stour (Old) (/M20//87.80//)

(Authorised)

Observations/Defects Confirmed at this Inspection

North deck, East abutment



South deck, 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	D1 - Defect is definitely not causing damage to element or structure
Priority	Low
Comments	The West abutment has hairline cracks in isolated areas along its length with some exhibiting leaching and staining (rust?). (No action required at present)

General Inspection Report for River Great Stour (Old) (/M20//87.80//)

(Authorised)

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	D5 - Defect is causing element to be non-functional	
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.	
Cause	Anchorage Failure	Certainty Medium
Comment on Cause		

Failed joint across lane 1




East expansion joint (London bound)



General Inspection Report for River Great Stour (Old) (/M20//87.80//)

(Authorised)

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	D1 - Defect is definitely not causing damage to element or structure	
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. (No action required at present)	
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	D1 - Defect is definitely not causing damage to element or structure	
Priority	Low	
Comments	The central light unit afixed to the West abutment is non-fuctional.	

General Inspection Report for River Great Stour (Old) (/M20//87.80//)

(Authorised)

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	D3S - Moderate: Defect may present a danger to the public 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 Cause	The original cause of the delamination and spalling is not known. It is possible that cracking allowed water ingress and subsequent corrosion of the reinforcement but this could not be confirmed.	

Exposed reinforcement to South deck beam






Exposed reinforcement to South deck beam and soffit



General Inspection Report for River Great Stour (Old) (/M20//87.80//)
(Authorised)

Observations/Defects Confirmed at this Inspection

Components	Deck 1 - Overlay Deck: Central Beams, Deck 1 - South Deck: Beams, Deck 1 - North 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.	
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.	
	Spalled concrete from the South deck soffit	
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	D1 - Defect is definitely not causing damage to element or structure	
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)	
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	D1 - Defect is definitely not causing damage to element or structure	
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)	

General Inspection Report for River Great Stour (Old) (/M20//87.80//)
(Authorised)

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	01/04/2018
Priority Category	2	Risk Score	93
Comments	Carry out concrete repairs to the affected areas of the South deck soffit. (07442)		
Maintenance Object	Abutment	Maintenance Action	Repair
Estimated Cost	£1,500	Recomm. Action Date	01/04/2010
Priority Category	3	Risk Score	25
Comments	Break out loose concrete and repair with a suitable repair mortar the area of spalling to the bearing plinth.		

Unreviewed Maint' 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	Abutment	Maintenance Action	Repair
Estimated Cost	£10,000	Recomm. Action Date	01/04/2020
Comments	Carry out concrete repairs to the East abutment as identified in the 2013-14 concrete repair study. (07442)		
Maintenance Object	Trench	Maintenance Action	Repair
Estimated Cost	£750	Recomm. Action Date	01/04/2020
Comments	Supply and install new paving stones to the North verge.		

Additions to the next Routine Maintenance

Comments	Clean the graffiti from the structure.
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Unreviewed Maintenance Actions to be Referred to Third Parties

Correspondence Ref	Reported to KCC; #241818
Comments	Repair the non-functional light. (Reported to KCC)

Maintenance Actions Addressed By Inspector on Site

Maintenance Object	General	Maintenance Action	Change Status
Origin of Work	Routine Inspection		
Comments	Silt and debris was confirmed as cleaned at this inspection.		

General Inspection Report for River Great Stour (Old) (/M20//87.80//)
(Authorised)

Outstanding Observations/Defects NOT Confirmed at this Inspection

Not Applicable

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	D1 - Defect is definitely not causing damage to element or structure		
Priority	Low	Emergency?	No
No. of images	0	Date last confirmed	05/02/2015
Comments	There is a small pothole that has been temporarily filled in Lane 2 of the London bound carriageway. (No action required at present)		

Miscellaneous

Components	West Abutment - Cycleway		
Defect Type	Deb - Debris, rubbish, etc. on or adjacent to the structure		
Extent	SD - Defect present in 20% to not more than 50% of area or length of element		
Severity	X1 - Adjacent element will not be affected		
Priority	Low	Emergency?	No
No. of images	0	Date last confirmed	05/02/2015
Comments	A build up of debris and silt has occurred along the edges of the cycletrack. (No action required at present)		

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.
 No other maintenance actions outstanding.

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.

Maintenance Object	Expansion Joint	Maintenance Action	Repair
Origin of Work	Not Specified		
Estimated Cost	£20,000	Recomm. Action Date	01/04/2018
Comments	Break out any additional areas of failed nosing and/or damaged rail and replace the damaged sections.		

Other Planned Inspections

N.B. These are the planned inspections in SMIS at the time of report production (Wednesday, 16 November, 2016), NOT at the time of the inspection.

Type	Target Date	Reason
General	13/08/2018	
Principal	13/08/2020	

Annex 1

Structure Report

Structure Report for River Great Stour (Old) (/M20//87.80//)

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
Commissioned	1957	Constructed	1957
Maintaining Agent-Area	A-One +-Area 4	Custodian-Region	HA-South East
Geographical Area	Kent	Last General Inspection	30/09/2016
Designer	Kent County Council		
Last Principal Inspection	05/02/2015		
PI Frequency (years)	6		

Structure Type Bridge And Large Culvert

Bridge Type	Highway Underbridge	Heavy Load Route	No
High Load Route	No	DBFO	No
Scour Susceptible	No	Length	14.80
Original Design Loading	Other	Overall Construction	Concrete
Number of Spans	1		
Tensioning	Not Tensioned		

Description of Structure

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 separate 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.

Structure Report for River Great Stour (Old) (/M20//87.80//)

Assessments, Inspection and Maintenance History

Completed Inspections

Inspection Type	Inspection Date	Inspection Reason
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 February 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

Structure Report for River Great Stour (Old) (/M20//87.80/)

Constraints

Component	Type	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

Structure Report for River Great Stour (Old) (/M20//87.80//)
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.

East Abutment

Support Type	Mass Abutment	Material Type	Insitu Reinforced Concrete
Connection Type	Felt Strip	Facing Material	None

East Abutment Bearings (Central Gap)

Type	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
		Height	5.90

Foundation 1

Type	Spread Footings
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Northeast Embankment

Type	Battered	Material	Granular
Slope		Anchoring System	None

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

Type	SER - Services
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Span 1

Structural Form Type	Beam/Girder - At/Below Deck Surface	Skew	9.00
Min Width Between Supports	13.86	Date Min Width Last Checked	
Features Data			
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 Abutment)

Type	Sliding & Rocker	Installation Date	01/01/1957
Product		No. of Bearings	5

Structure Report for River Great Stour (Old) (/M20//87.80//)
North Parapet

Location	Deck Edge	Installation Date	02/04/2013
Form	Vehicle Parapet	Modified	Not Modified
Designer	Metor Services Ltd	Modification Date	
M'facturer/Fabricator	Metor Services Ltd	Nominal Height	1
Baco Parapet Type	Not Applicable	Modification Date (Baco post only)	
Barrier Type	Other	Primary Material	Steel
Material Infill	Mesh Infill	Parapet Group	Not Applicable
Cont Perf Class	N2	Working Width	W4
Safety Fence Approach	N	Safety Fence Departure	N
Protection System	N	Protection System	N
Protection Reason	Not Applicable		
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 Layout		Risk Containment Features	
Risk Ranking	0.00	Priority Ranking	0.00

East Joint

Type	Single Element Elastomeric In Metal	Installation Date	01/07/2008
Product	Universal Sealants Britflex Bej5	No. of Joints	1

West Joint

Type	Single Element Elastomeric In Metal	Installation Date	01/07/2008
Product	Universal Sealants Britflex Bej5	No. of Joints	1

North Verge
M20 CB Carriageway
Central Reserve
M20 LB Carriageway (Lane 3 - HS)
North Parapet Beam

Material Type	Insitu Reinforced Concrete
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Overlay Deck: Slab

Form	Slab Haunched	Type	Solid
Material	Insitu Reinforced Concrete	Strengthening Type	None

Overlay Deck: East Diaphragm

Material	Insitu Reinforced Concrete
Strengthening Type	None

Overlay Deck: North Deck Beams (Hidden)

Shape	Box	Strengthening Type	None
Type	Insitu Solid	Edge Beam?	N
Material	Insitu Reinforced Concrete		

Overlay Deck: Central Beams

Shape	Box	Strengthening Type	None
Type	Insitu Solid	Edge Beam?	N
Material	Insitu Reinforced Concrete		

Structure Report for River Great Stour (Old) (/M20//87.80//)
Overlay Deck: South Deck Beams (Hidden)

Shape	Box	Strengthening Type	None
Type	Insitu Solid	Edge 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
Material	Insitu Reinforced Concrete	StrengtheningType	Overspan 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
Material	Insitu Reinforced Concrete	StrengtheningType	Overspan Slab

South Deck: East Diaphragm

Material	Insitu Reinforced Concrete		
Strengthening Type	None		

South Deck: Beams

Shape	Box	Strengthening Type	None
Type	Insitu Solid	Edge 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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West Abutment

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

Support Type	Mass Abutment	Material Type	Insitu Reinforced
Connection Type	Felt Strip	Facing Material	None

Structure Report for River Great Stour (Old) (/M20//87.80//)
Cycleway Lighting (KCC) - (Inspection Element)

Type	LIG - Lighting
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Cycleway Parapet

Location	Deck Edge	Primary Material	
Form	Parapet	Material Infill	Solid Infill
Designer	Not Known	Nominal Height	1.4
Manufacturer	Not Known	Installation Date	01/01/2001
Baco Parapet Type	Not Applicable	Modification Date	
Fence Guardrail	Proprietary System		

Cycleway

Type	Walkway
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Northwest Wingwall

Anchoring System	Not Known	Length	4.80
		Height	5.90

Foundation 2

Type	Spread Footings
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Northwest Embankment

Type	Battered	Material	Granular
Slope		Anchoring System	None

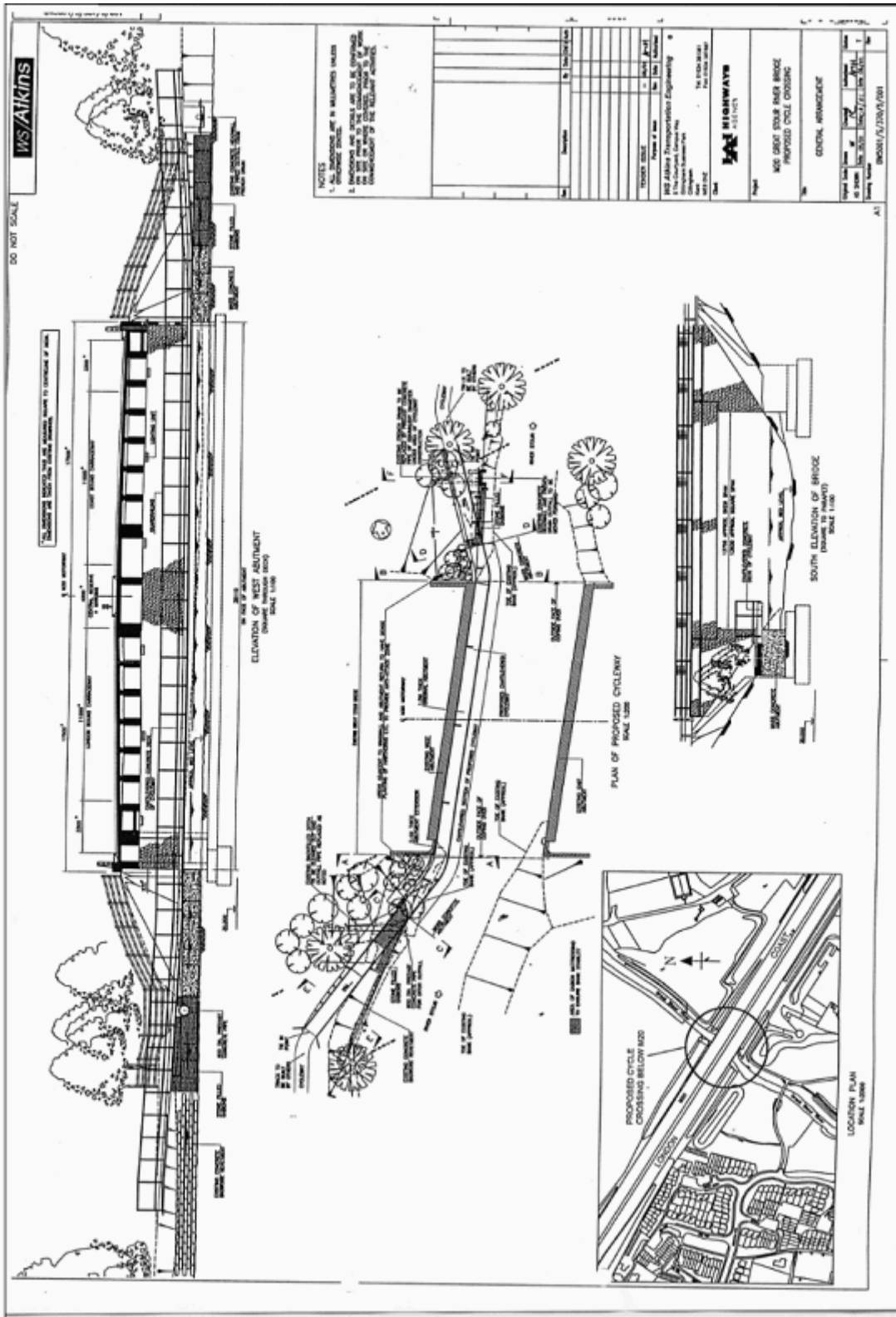
Structure Report for River Great Stour (Old) (/M20//87.80//)

General Photograph



Structure Report for River Great Stour (Old) (M20/87.80/)

Elevation Drawing



Structure Report for River Great Stour (Old) (/M20/87.80/)

Map

