

# New Precast Filler Beam Bridges for Railway Gauge-Clearance



## Client

Various Contractors for Network Rail

## Project Description

This project information sheet describes eight highway bridge deck reconstructions which were completed using a variety of applications of the use of filler joist construction for the new spans. Six of these were for on-line reconstruction, five of which reused existing foundations and one had remodelled foundations. Two bridges were reconstructed on a new alignment of the road with new foundations. This form of construction targets absolute minimum construction depth to limit the extent of the Works over the tracks and on the approaches.

## Cass Hayward Role(s)

- Options studies
- Design of new and reconstructed underline bridges
- Design of demolition schemes for existing bridges
- Design and checking of temporary works

## Projects Statistics

- The designs have been completed for single, double and triple spans as suited to the track layout below
- The spans have been of equal and variable lengths and in symmetric and asymmetric arrangements
- Spans have been provided for single and double tracks up to a maximum length of 21.5m and set at skews up to 30°
- Bridges have accommodated highways up to 12m wide including footways
- The varieties of application over the eight sites is illustrated in the table below. The reference to “steel soffits” highlights a Cass Hayward development of the traditional form where the filler “beams” have a common continuous WR steel bottom flange obviating the need for a bottom shutter. “Integral spans” have full superstructure/substructure structural continuity and so require no bearings. The steel soffits and integral construction contribute greatly to the drive for more slender bridge decks

Bridge	Alignment		Spans		Soffit		Structural Form		
	Online	Offline	Old	New	Concrete	Steel	Simply supported	Continuous	Integral
GWML Sharps OB	✓		1	1	✓		✓		
GWML Shackles OB	✓		1	1	✓		✓		
SWB Badminton OB	✓		1	1		✓	✓		
<u>SWM</u> Shrivenham OB		✓	1	1		✓			✓
<u>SWM</u> Rogiet Road OB		✓	5	2		✓			✓
<u>SWM</u> Huggets Road OB	✓		3	3		✓			✓
<u>SWM</u> Llandeenny Road OB	✓		3	3		✓		✓	
Streatham Common OB	✓		1	1		✓			✓

## Special Features

- The designs are for a site assembly of offsite manufactured components providing the entire new structure comprising bridge spans, parapets, substructures and retention for the approaches
- Where required for structural purposes adjacent components have interlocking reinforcement at site-filled joints
- High containment parapets are provided at all bridges using precast concrete with a high quality feature finish, brick cladding or reinforced masonry
- Components and their assembly are modelled in 3D CAD to help to ensure fit at site