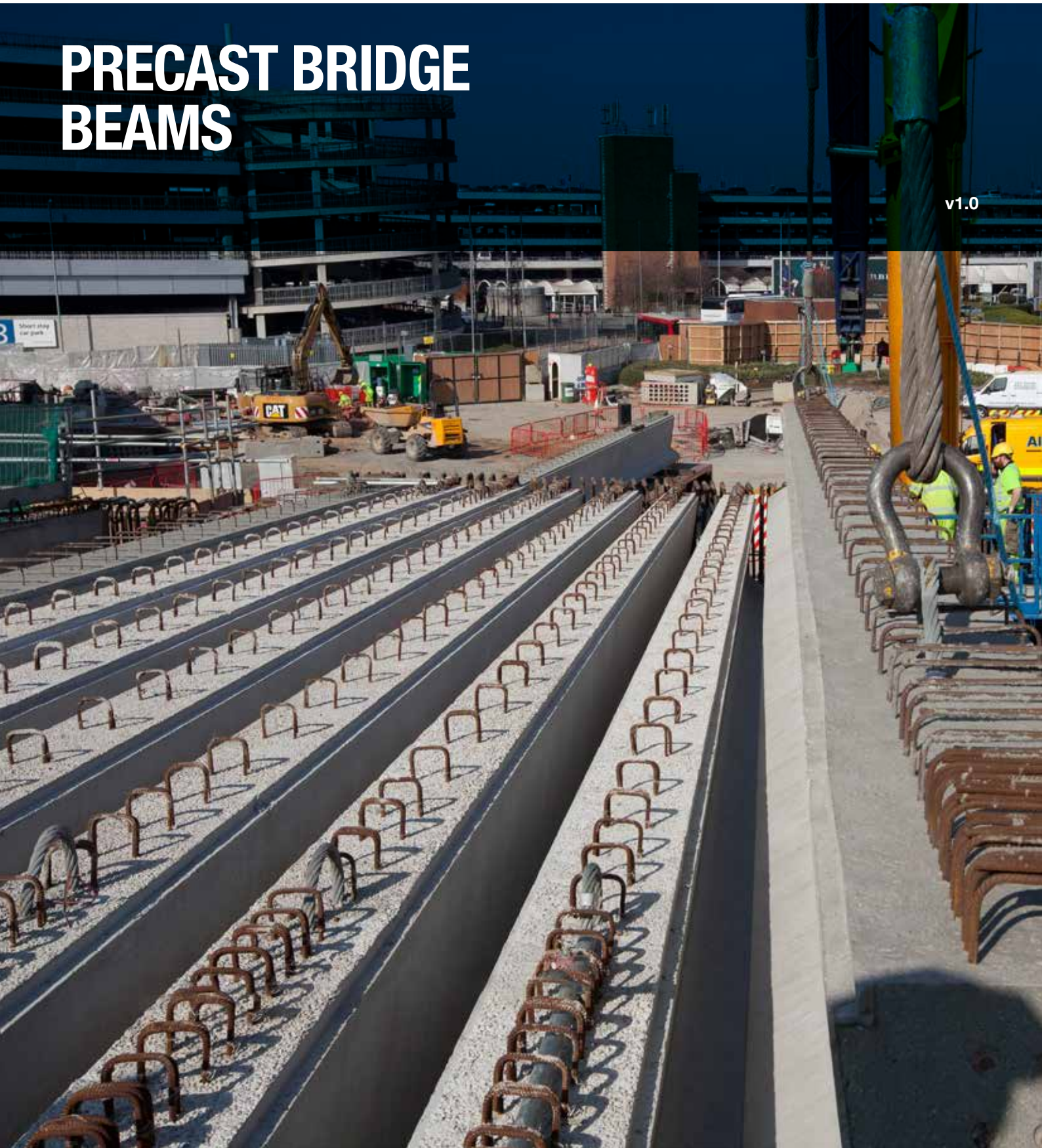
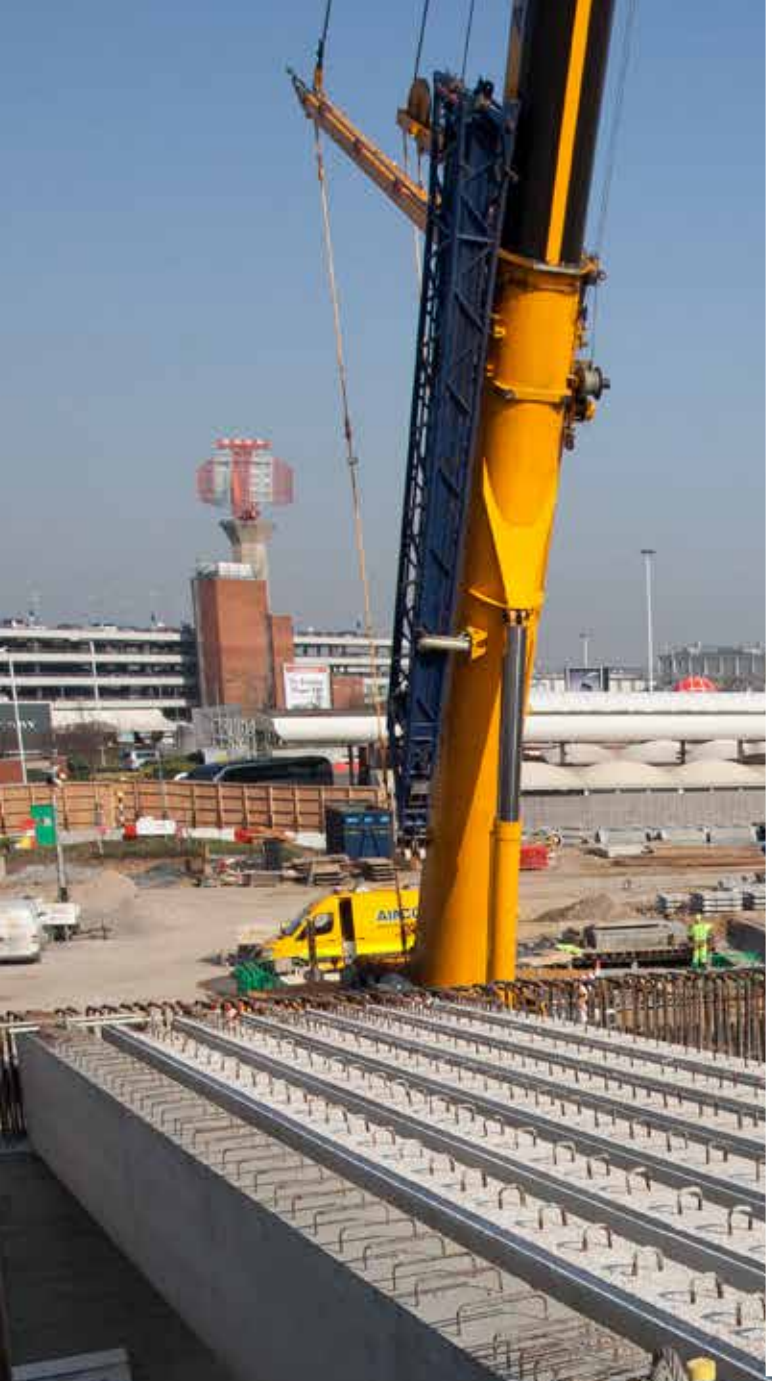
THINKING PRECAST?
THINK FP MCCANN

PRECAST BRIDGE BEAMS

v1.0





CONTENTS

INTRODUCTION

BUILD FASTER, STRONGER, AND MORE COST-EFFECTIVE BRIDGES WITH FP MCCANN'S PRECAST CONCRETE BEAMS

Are you tired of costly delays and on-site complications? Our precast concrete bridge beams are the answer. We deliver precision-engineered, factory-quality beams directly to your site, enabling you to complete your infrastructure projects ahead of schedule and under budget.

THE SMARTER CHOICE FOR MODERN BRIDGE CONSTRUCTION

Discover the benefits of switching to a precast solution for your next bridge project:

- Slash Construction Time: Our beams are manufactured off-site and delivered ready for immediate installation, dramatically reducing on-site labour and project timelines. This is the core of Accelerated Bridge Construction (ABC).
- Guarantee Superior Quality: Factory production allows for rigorous quality control that is impossible to achieve on-site. This means a stronger, more durable, and more reliable final structure with a 120-year design life.
- Reduce Project Costs: Faster construction, reduced labour, and minimal on-site waste all contribute to significant cost savings over the lifetime of your project.
- Minimise Public Disruption: Get in, get out, and do the job faster. Less time on-site means fewer road closures and less disruption to the public.
- Build Sustainably: Our manufacturing process minimises waste and recycles resources. Precast concrete is a durable, long-lasting material that reduces the need for future repairs and replacements.

OUR COMPANY

FP McCann is the UK's largest manufacturer and supplier of precast concrete solutions. We are committed to high quality, cost-effective and sustainable solutions tailored to meet clients' requirements.

From our fourteen UK manufacturing facilities, FP McCann offers solutions that include architectural and structural solutions, rooms, flooring, fencing, walling, shafts, tunnels, drainage, rail, power and agricultural products. FP McCann has worked on a large range of Design for Manufacture and Assembly (DfMA) projects across the UK. Our in-house Digital Engineering capability has grown in line with government and client expectations.

OUR COMPREHENSIVE PRECAST CONCRETE BUSINESS EXTENDS TO INCLUDE:

AGRICULTURE I BOX CULVERTS I BRIDGES I BUILDING PRODUCTS I CONCRETE ROOF TILES DOCK LEVELLER PITS I DRAINAGE I FENCING I FILTER BED SYSTEMS I FLOORING POWER & INFRASTRUCTURE I PRECAST OFF-SITE BUILDING SOLUTIONS RAIL I SPECIALIST PRECAST I TANKS & CHAMBERS I TUNNELS & SHAFTS I WALLING

Modern manufacturing plants at Alnwick (Northumberland), Armagh (Northern Ireland), Byley (Cheshire), Cadeby (Leicestershire), Ellistown (Leicestershire), Grantham (Lincolnshire), Lisnaskea (Northern Ireland), Littleport (Cambridgeshire), Lydney (Gloucestershire), Magherafelt (Northern Ireland), Toomebridge (Northern Ireland), Uddingston (Lanarkshire) and Weston Underwood (Derbyshire) incorporate the latest computerised batching, distribution, casting, curing and handling systems and are operated by skilled and experienced workforces to ensure consistency of quality. Their geographical spread gives us an unrivalled ability to serve the construction industry throughout the UK and Ireland.

By applying the DFMA principles, FP McCann's design engineers are able to evaluate individual precast concrete products part by part, in addition to documenting the assembly process step by step. This allows them to generate the cost, part count and assembly time to provide a benchmark to measure its success and identify the parts and process improvement opportunities. In turn, this has allowed FP McCann to design and manufacture more cost-effective and efficient high-quality precast concrete products with less wastage and greater on-site recycling. As a result, increased productivity, combined with a reduction in production time and costs, allows FP McCann to be more competitive within the marketplace.

OUR COMPANY

KEY

- Other Manufacturing Facilities
- Quarries / Manufacturing Locations

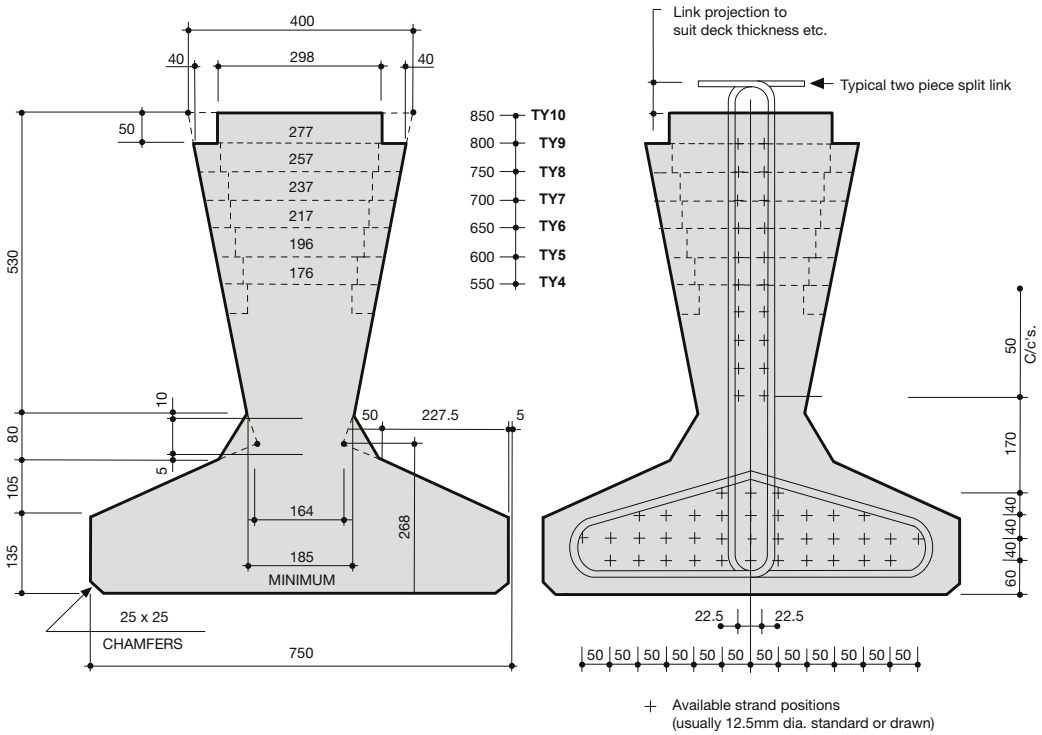
PRECAST BEAMS

Standard prestressed concrete bridge beam

TY Type 1 Beam Range

For use in beam and slab deck construction.

Simply supported spans up to 17.5m.



Section properties

Section	Depth mm	Area mm^2	Height of centroid above bottom fibre Yb mm	Section moduli $mm^3 x 10^6$		Approximate self weight kN/m
				Top fibre Zt	Bottom fibre Zb	
TY4	550	221300	193.45	13.91	25.64	5.53
TY5	600	235722	215.83	17.65	31.42	5.89
TY6	650	251158	240.07	22.07	37.68	6.28
TY7	700	267608	265.96	27.18	44.35	6.69
TY8	750	285073	293.28	32.99	51.38	7.13
TY9	800	303550	321.86	39.54	58.74	7.59
TY10	850	323044	351.52	46.83	66.41	8.08

Span loading 45 Units HB loading (inc. 2.4 kN/m^2 for finishes)

Span (m)	7	8	9	10	11	12	13	14	15	16	17	18
TY4												
TY5												
TY6												
TY7												
TY8												
TY9												
TY10												

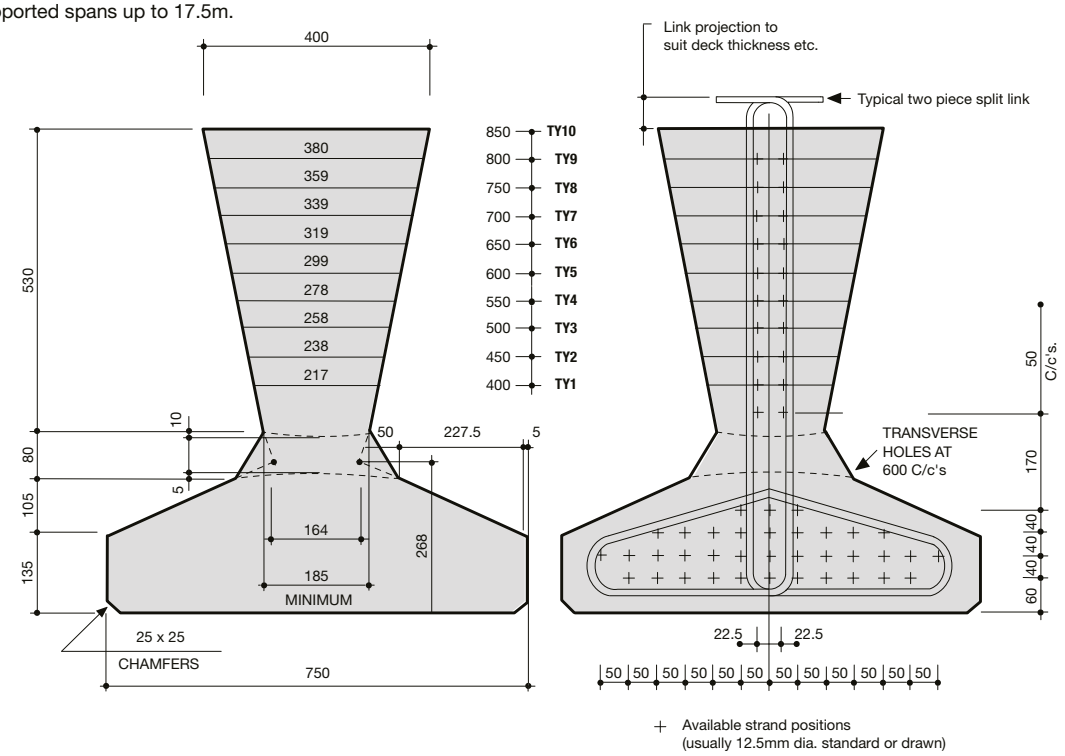
PRECAST BEAMS

Standard prestressed concrete bridge beam

TY Type 2 Beam Range

For use in solid infill deck construction.

Simply supported spans up to 17.5m.



Section properties

Section	Depth mm	Area mm^2	Height of centroid above bottom fibre Yb mm	Section moduli $mm^3 \times 10^6$		Approximate self weight kN/m
				Top fibre Zt	Bottom fibre Zb	
TY1	400	188790	145.55	7.69	13.45	4.72
TY2	450	200170	161.46	9.71	17.34	5.00
TY3	500	212560	179.77	12.34	21.99	5.31
TY4	550	225970	200.27	15.61	27.27	5.65
TY5	600	240390	222.78	19.54	33.09	6.01
TY6	650	255830	247.07	24.14	39.36	6.39
TY7	700	272280	272.94	29.42	46.03	6.81
TY8	750	289740	300.21	35.40	53.04	7.24
TY9	800	308220	328.69	42.11	60.38	7.70
TY10	850	327710	358.23	49.56	68.04	8.19

Span loading 45 Units HB loading (inc. 2.4 kN/m^2 for finishes)

Span (m)	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
TY1															
TY2															
TY3															
TY4															
TY5															
TY6															
TY7															
TY8															
TY9															
TY10															

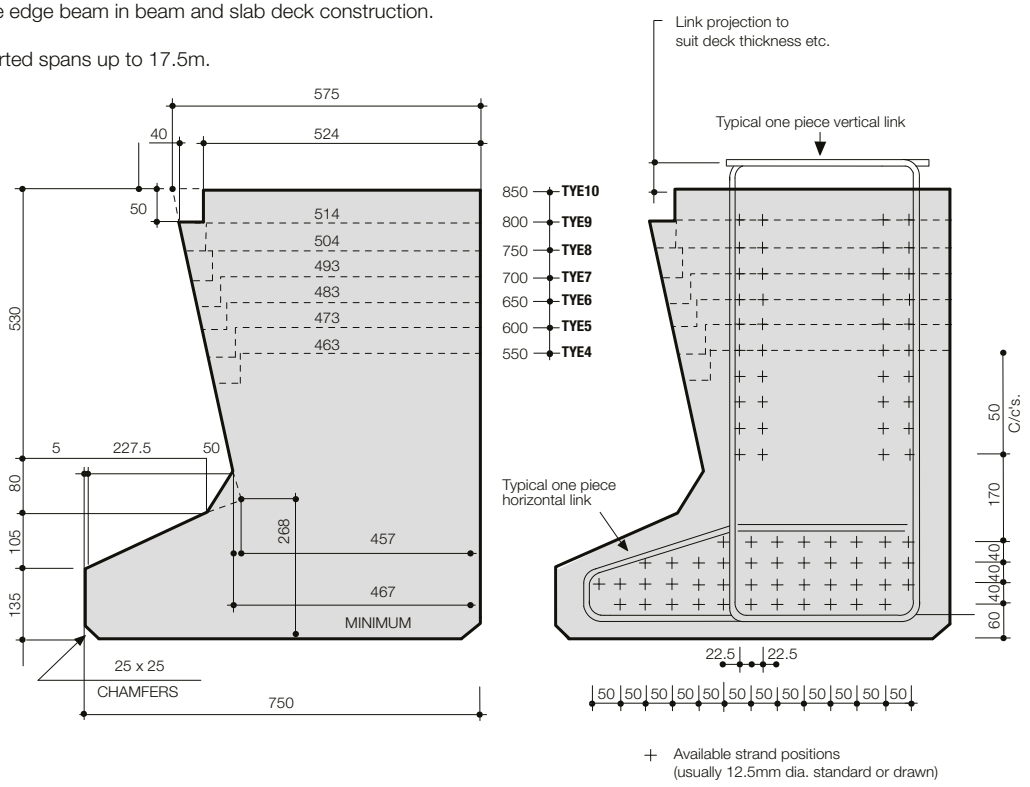
PRECAST BEAMS

Standard prestressed concrete bridge beam

TYE Beam Range

For use as the edge beam in beam and slab deck construction.

Simply supported spans up to 17.5m.



Section properties

Section	Depth mm	Area mm^2	Height of centroid above bottom fibre Yb mm	Section moduli $mm^3 \times 10^6$		Approximate self weight kN/m	Distance from vertical face to centroid Yc mm
				Top fibre Zt	Bottom fibre Zb		
TYE4	550	316670	246.79	28.87	33.01	7.91	300.01
TYE5	600	342630	271.33	32.48	39.34	8.56	296.88
TYE6	650	369100	296.39	38.70	48.17	9.23	294.50
TYE7	700	396070	321.90	45.55	53.50	9.90	292.54
TYE8	750	423550	347.79	53.02	61.31	10.59	291.54
TYE9	800	451540	374.03	61.13	69.62	11.29	290.77
TYE10	850	480040	400.57	69.89	78.41	12.00	290.37

Span loading 45 Units HB loading (inc. 2.4 kN/m^2 for finishes)

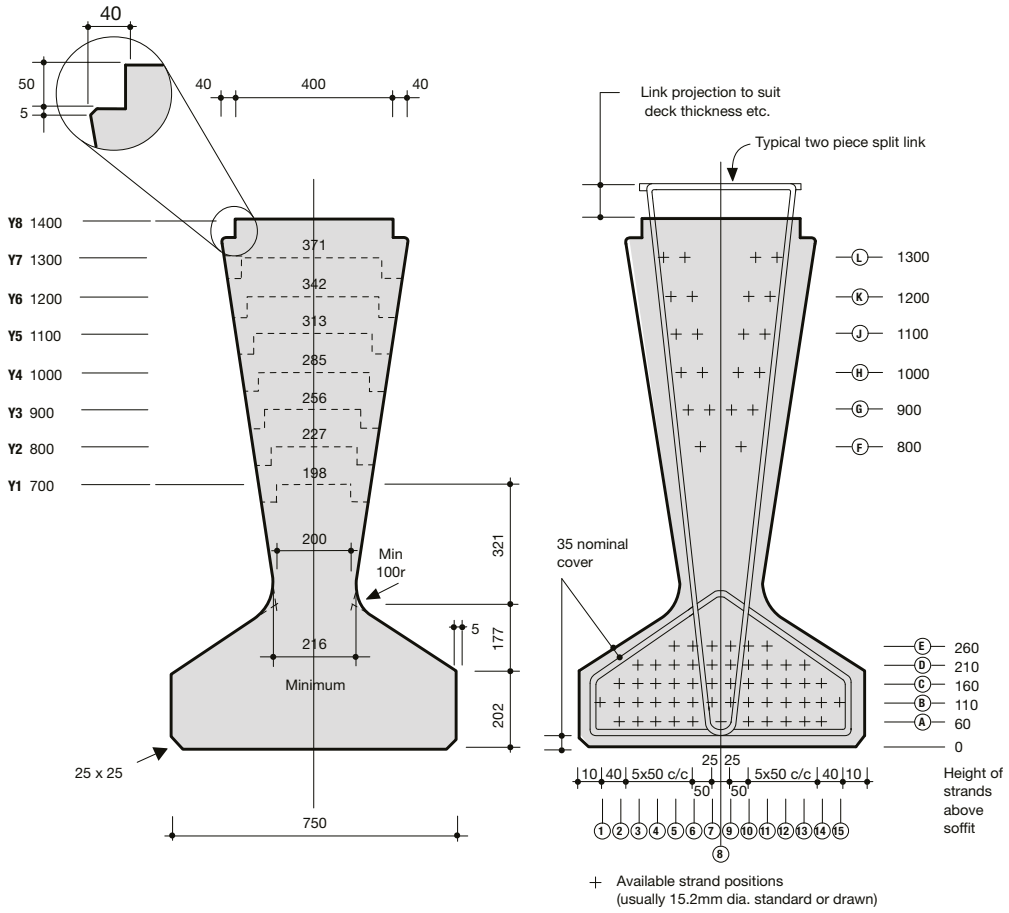
Span (m)	7	8	9	10	11	12	13	14	15	16	17	18
TYE4												
TYE5												
TYE6												
TYE7												
TYE8												
TYE9												
TYE10												

PRECAST BEAMS

Standard prestressed concrete bridge beam

Y Beam Range

Simply supported spans up to 32.0m. Allows inspection and maintenance of bearings.



Section properties

Section	Depth mm	Area mm^2	Height of centroid above bottom fibre Yb mm	Section moduli $mm^3 x 10^6$		Approximate self weight kN/m
				Top fibre Zt	Bottom fibre Zb	
Y1	700	309202	255	24.85	43.40	7.73
Y2	800	339882	299	35.02	58.78	8.50
Y3	900	373444	347	47.88	76.27	9.34
Y4	1000	409890	400	63.53	95.41	10.25
Y5	1100	449220	456	82.06	116.02	11.23
Y6	1200	491433	515	103.58	138.00	12.29
Y7	1300	536530	576	128.15	161.31	13.41
Y8	1400	584708	639	155.98	186.01	14.62

Span loading 45 Units HB loading (inc. 2.4 kN/m^2 for finishes)

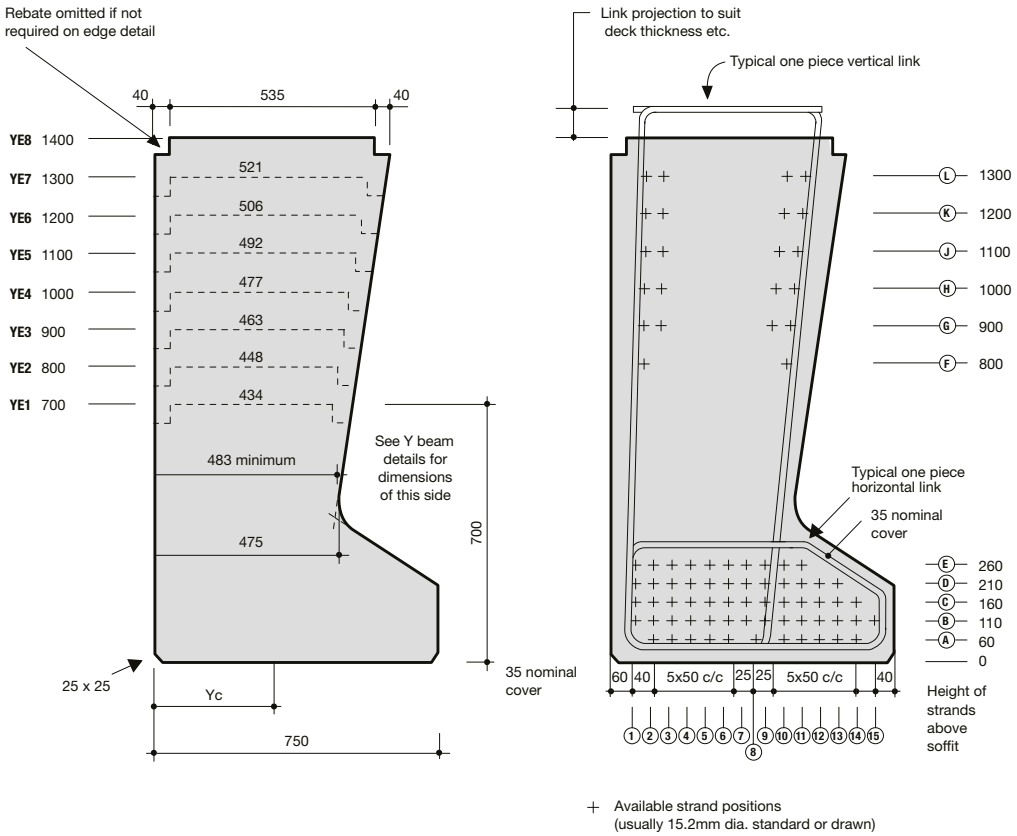
Span (m)	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Y1																			
Y2									Beams at 1.000cts										
Y3																			
Y4																			
Y5																			
Y6																			
Y7																			
Y8																			

PRECAST BEAMS

Standard prestressed concrete bridge beam

YE Beam Range

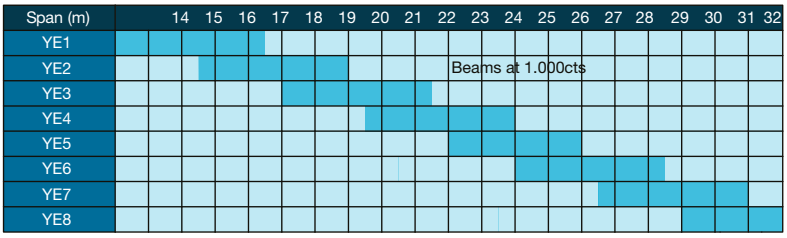
Simply supported spans up to 32.0m.



Section properties

Section	Depth mm	Area mm^2	Height of centroid above bottom fibre Yb mm	Section moduli $mm^3 \times 10^6$		Approximate self weight kN/m	Distance from vertical face to centroid Yc mm
				Top fibre Zt	Bottom fibre Zb		
YE1	700	414820	313	43.54	53.71	10.37	310
YE2	800	467669	362	58.24	70.52	11.69	305
YE3	900	521960	412	75.42	89.39	13.05	302
YE4	1000	577692	463	95.12	110.29	14.44	299
YE5	1100	634867	515	117.37	133.18	15.87	298
YE6	1200	693483	568	142.24	158.08	17.34	298
YE7	1300	753541	622	169.78	184.98	18.84	298
YE8	1400	815041	677	200.06	213.93	20.38	298

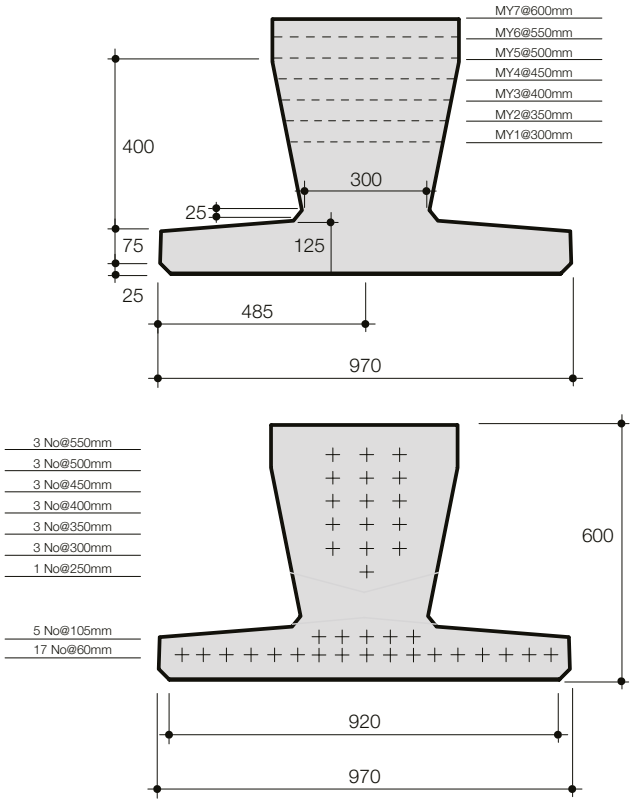
Span loading 45 Units HB loading (inc. 2.4 kN/m^2 for finishes)



PRECAST BEAMS

Standard prestressed concrete bridge beam

MY Beam Range



Section properties

Section	Depth mm	Area mm^2	Height of centroid above bottom fibre Yb mm	Section moduli $mm^3 \times 10^6$		Approximate self weight kN/m
				Top fibre Zt	Bottom fibre Zb	
MY1	300	170000	111.7	6.39	10.78	4.25
MY2	350	188500	132.6	9.05	14.84	4.71
MY3	400	208000	155.4	12.31	19.39	5.20
MY4	450	228500	179.6	16.18	24.37	5.71
MY5	500	250000	205.0	20.67	29.74	6.25
MY6	550	272000	230.9	25.61	35.40	6.80
MY7	600	294000	256.6	30.83	41.26	7.35

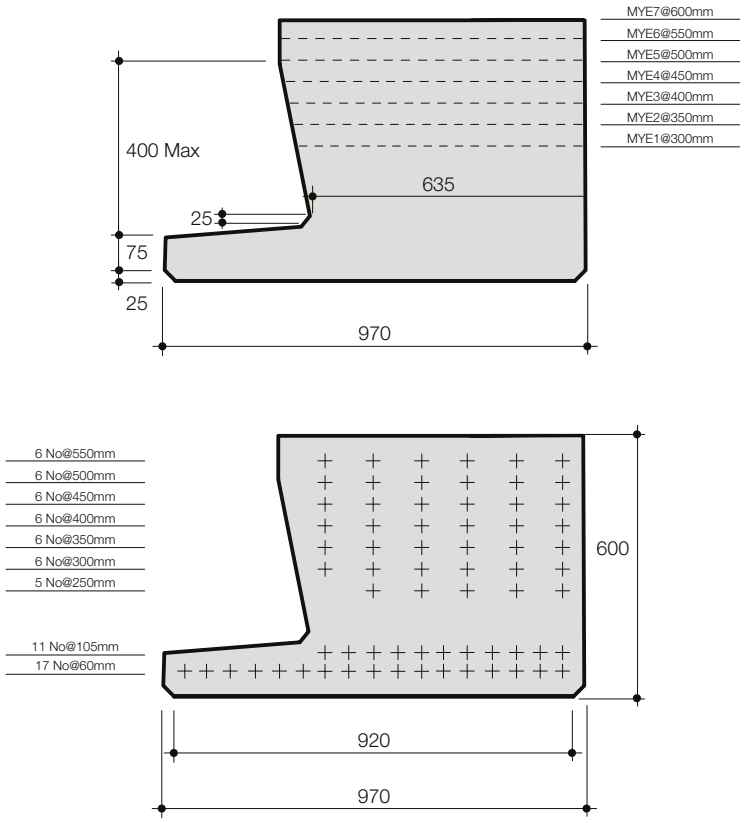
Span loading 45 Units HB loading (inc. 2.4 kN/m^2 for finishes)

Span (m)	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
MY1																
MY2																
MY3																
MY4																
MY5																
MY6																
MY7																

PRECAST BEAMS

Standard prestressed concrete bridge beam

MYE Beam Range



Section properties

Section	Depth mm	Area mm^2	Height of centroid above bottom fibre Yb mm	Section moduli $mm^3 \times 10^6$		Approximate self weight kN/m
				Top fibre Zt	Bottom fibre Zb	
MYE1	300	230200	136.0	10.77	12.99	4.25
MYE2	350	263700	160.0	14.84	17.61	4.71
MYE3	400	297700	184.6	19.58	22.85	5.20
MYE4	450	332200	209.6	25.01	28.69	5.71
MYE5	500	367200	234.9	31.12	35.13	6.25
MYE6	550	402400	260.3	37.85	42.13	6.80
MYE7	600	437700	285.6	42.12	49.65	7.35

Span loading 45 Units HB loading (inc. 2.4 kN/m^2 for finishes)

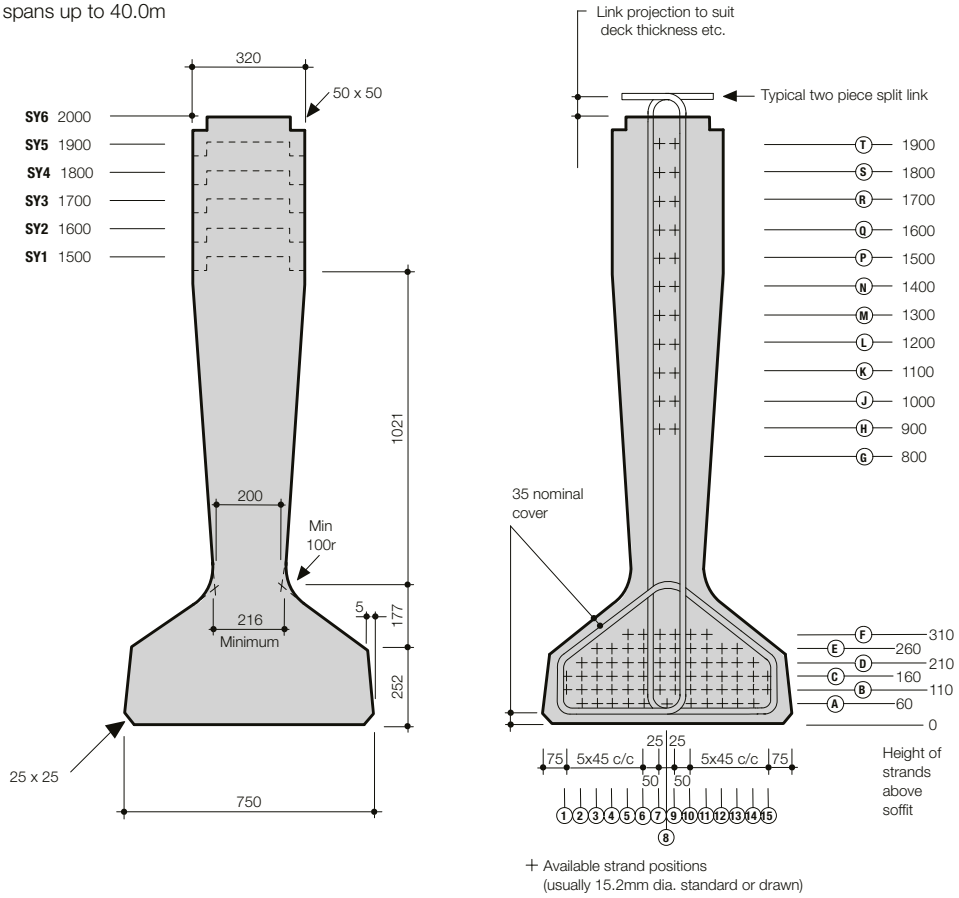
Span (m)	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
MYE1																
MYE2																
MYE3																
MYE4																
MYE5																
MYE6																
MYE7																

PRECAST BEAMS

Standard prestressed concrete bridge beam

SY Beam Range

Simply supported spans up to 40.0m



Section properties

Section	Depth mm	Area mm^2	Height of centroid above bottom fibre Yb mm	Section moduli $mm^3 \times 10^6$		Approximate self weight kN/m
				Top fibre Zt	Bottom fibre Zb	
SY1	1500	549158	598.35	132.59	199.81	13.73
SY2	1600	581158	650.06	153.97	225.00	14.53
SY3	1700	613158	701.59	176.16	250.69	15.33
SY4	1800	645158	752.98	199.16	276.98	16.13
SY5	1900	677158	804.23	223.09	303.97	16.93
SY6	2000	709158	865.36	247.89	331.72	17.73

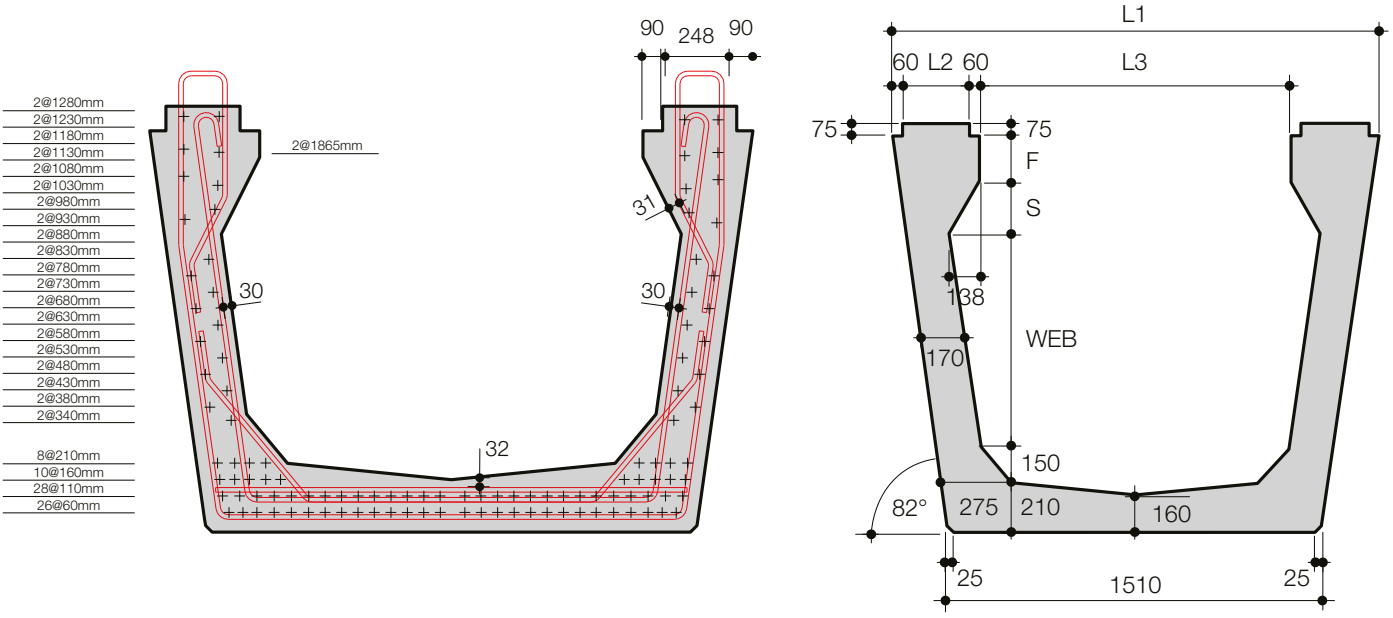
Span loading 45 Units HB loading (inc. 2.4 kN/m ^{2} for finishes)

Span (m)	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
SY1															
SY2										Beams at 1.400cts					
SY3															
SY4															
SY5															
SY6															

PRECAST BEAMS

Standard prestressed concrete bridge beam

W Beams Range



Section properties

Section	Depth mm	Area mm^2	Height of centroid above bottom fibre Yb mm	Section moduli $mm^3 \times 10^6$		Approximate self weight kN/m	Beam Top Dimensions					
				Top fibre Zt	Bottom fibre Zb		L1	L2	L3	Web	S	F
W1	800	572360	305.3	71.88	116.46	14.31	1704.4	203.2	1058	100	220	70
W3	900	606880	345.9	89.54	143.43	15.17	1732.4	203.2	1058	200	220	70
W5	1000	641400	387.5	108.76	171.88	16.00	1760.4	203.2	1114	300	220	70
W7	1100	692030	440.2	136.21	204.15	17.30	1788.4	210.2	1128	350	220	120
W8	1200	726550	484.2	159.46	235.73	18.16	1816.4	210.2	1156	450	220	120
W9	1300	761070	528.7	184.11	268.56	19.03	1844.4	210.2	1184	550	220	120

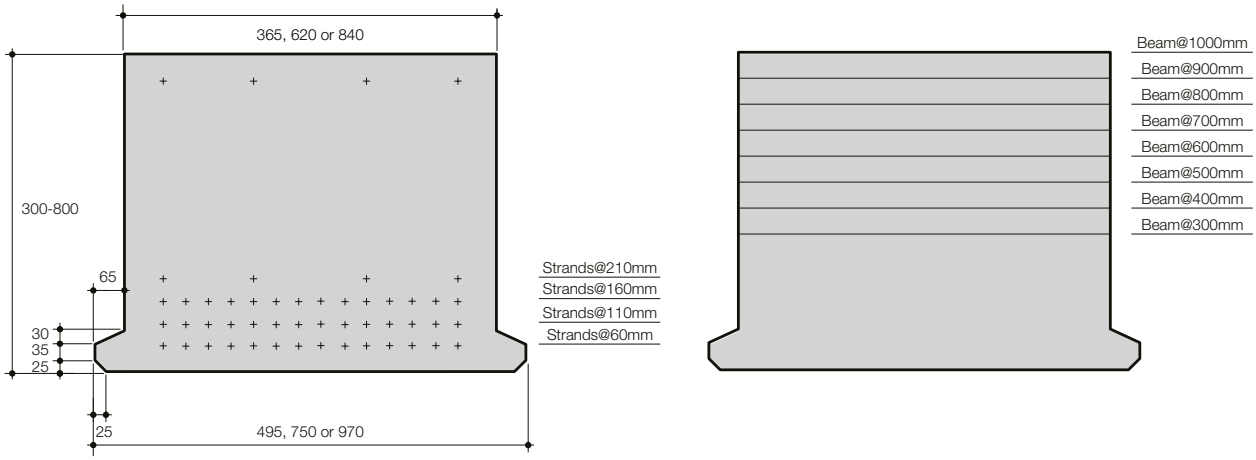
Span loading 45 Units HB loading (inc. 2.4 kN/m^2 for finishes)

Span (m)	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
W1															
W3															
W5															
W7															
W8															
W9															

PRECAST BEAMS

Standard prestressed concrete bridge beam

Box Beams Range



Section properties 495mm Wide

Section	Depth mm	Area mm^2	Height of centroid above bottom fibre Yb mm	Section moduli $mm^3 \times 10^6$		Approximate self weight kN/m
				Top fibre Zt	Bottom fibre Zb	
SD1	300	118625	142	5.85	6.55	2.97
SD2	400	155125	191	10.37	11.39	3.88
SD3	500	191625	240	16.11	17.46	4.79
SD4	600	228125	290	23.09	24.75	5.70
SD5	700	264625	339	31.28	33.26	6.62
SD6	800	301125	389	40.70	42.98	7.53

Section properties 750mm Wide

SD1	300	195125	145	9.70	10.38	4.88
SD2	400	257125	194	17.19	18.20	6.43
SD3	500	319125	244	26.77	28.09	7.98
SD4	600	381125	294	38.43	40.05	9.53
SD5	700	443125	344	52.15	54.09	11.08
SD6	800	505125	394	67.94	70.19	12.63

Section properties 970mm Wide

SD1	300	261125	146	13.01	13.69	6.53
SD2	400	345125	196	23.07	24.06	8.63
SD3	500	429125	246	35.95	37.26	10.73
SD4	600	513125	295	51.46	53.25	12.83
SD5	700	597125	345	70.14	72.05	14.93
SD6	800	681125	395	91.43	93.65	17.03

Span loading 45 Units HB loading (inc. 2.4 kN/m^2 for finishes)

Depth (mm)	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
300																					
400																					
500																					
600																					
700																					
800																					

PRECAST BEAMS

Standard prestressed concrete bridge beam

Typical Specification

Concrete

Transfer cube strength 40 N/mm ^{2}.
28 day cube strength 50 N/mm^2.
(Higher strengths can be accommodated where necessary).

Cement

Cement usually complies with B.S.12 - Portland.
The following may also be used:-
B.S.3892 - p.f.a.

Admixtures

Comply with B.S.5075 - Concrete admixtures.

Aggregates

Comply with B.S.882 - Concrete aggregates from Natural Sources.

Prestressing Strands

Comply with B.S.5896 with Class 2 relaxation.

12.5mm dia.standard at 123 kN max. initial force in inverted 'T' and 'TY' beams
(alternatively 12.7mm dia. drawn strand at 146.3 kN max. initial force can be used).

15.2mm dia.standard at 174 kN max. initial force in 'Y','YE', 'M','SY','U' and 'UM' beams
(alternatively 15.2mm dia. drawn strand at 210 kN max. initial force can be used).

Secondary Reinforcement

Complies with B.S.4449 or B.S.4482

Length shown on drawings

The length of beams shown on customers drawings is assumed to be the casting length of the beams and that the engineer has taken into consideration the effects of shrinkage and creep.

Tolerances

Unless specifically agreed otherwise beams will be made to the full tolerances shown in DTp specification. Clause 1710.8 (or B.S.8110 Part 1, Clause 6.11.3 and 6.11.4).

Surface Finish

Top. Rough as cast - DTp Class 2, Clause 1710.8.
Sides & Soffit. F5 - DTp Clause 1708.4 (or B.S.8110 Clause 6.1.3 Type A).

Camber

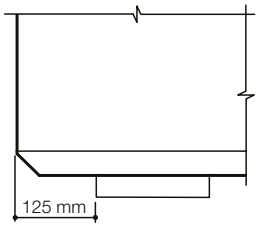
All prestressed beams will have an upward camber due to prestress.

Fixing, inserts, cast in sockets

In side, soffit and ends - should be avoided wherever possible.

Bearings

Bearings for bridge beams should be considered on the merits of each particular application. As a general rule, however, the edge of the bearing closest to the abutment should be detailed at least 125mm in from the end of the beam. (See sketch). Cast in items cannot project below the soffit line of prestressed units.



Weight

The customer should assume a concrete density of 2.5 t/m ^{3}.

Quality Assurance

We are a B.S.I. Registered Firm to BS.EN.ISO.9001

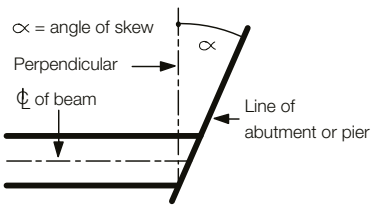
Quality Control

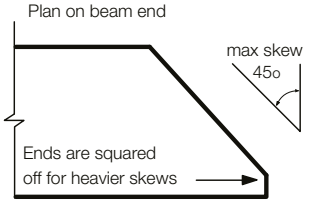
We carry out strict quality control procedures at all stages of manufacture. Copies of all necessary certificates on cement, aggregates, strand, stressing records, cube tests and beam tests are retained within our quality system.

Skews

Skewed ends to beams are expensive and should be avoided wherever possible. However, we are able to produce these details to any angle required, up to a maximum of 45 ^{o}, beyond which there is a risk that, during manufacture, damage to beam ends may result. Reinforcement. Only reinforcement in the end zone of the beam should be skewed. All other reinforcement in the body of the beam should be detailed square to the section.

Note: A square deck has a zero skew





Stacking

Positions of stacking timbers should be approx. 500mm from the ends of a beam and projecting links should be positioned accordingly.

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BOX CULVERTS
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BRIDGES
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BUILDING PRODUCTS
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DOCK LEVELLER PITS
Weston Underwood 01335 361269

DRAINAGE
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FENCING
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FILTER BED SYSTEMS
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FLOORING
Weston Underwood 01335 361269 Uddingston 01698 803300

POWER & INFRASTRUCTURE
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PRECAST OFF-SITE BUILDING SOLUTIONS
Byley 01606 843500 Grantham 01476 562277 Littleport 01353 861416 Toomebridge 028 7965 0471

RAIL
Littleport 01353 861416 Toomebridge 028 7965 0471

SPECIALIST PRECAST
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TANKS & CHAMBERS
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TUNNELS & SHAFTS
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