



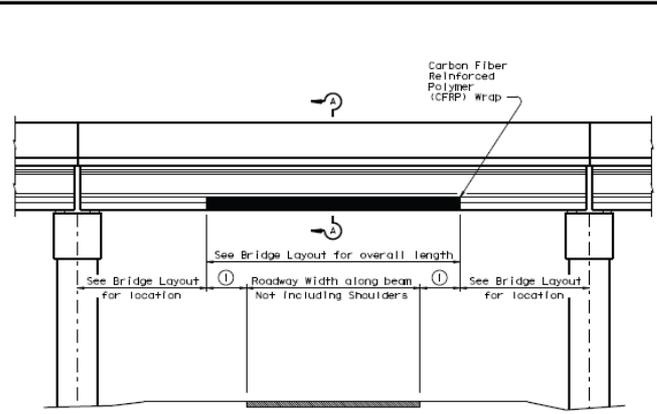
BRIDGE PROTECTIVE BEAM WRAP

TxDOT Bridge Presentations Webinar
Amy Smith, P.E.

BPBW Standard

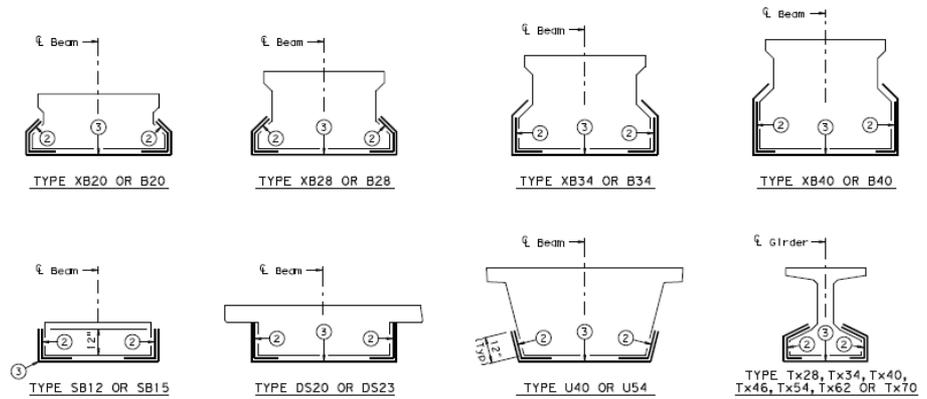
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TYPICAL BRIDGE ELEVATION

- ① 1'-0" Min, 3'-0" Max
- ② First layer - place 24" wide carbon fiber fabric sheets longitudinally on beams/girders, with fiber orientation parallel to beam/girder centerline. Locate sheets on bottom corners of beam/girder as shown. Fabric sheets may be overlapped 6" minimum in the longitudinal direction to achieve full installation length.
- ③ Second layer - place carbon fiber fabric sheets transversely on beam/girder, with fiber orientation perpendicular to beam/girder centerline. Wrap sheets on bottom and sides of beam/girder to limits shown. Butt joint wraps in the longitudinal direction to achieve full installation length.



SECTION A-A
Showing typical beam sections.

CFRP TABLE	
BEAM / GIRDER TYPE	(SQ FT) AREA PER LF
4XB20 OR 4B20	5.8
5XB20 OR 5B20	6.8
4XB28 OR 4B28	6.0
5XB28 OR 5B28	7.0
4XB34 OR 4B34	7.0
5XB34 OR 5B34	8.0
4XB40 OR 4B40	8.0
5XB40 OR 5B40	9.0
4SB12 OR 4SB15	6.0
5SB12 OR 5SB15	7.0
6DS20, 7DS20 OR 8DS20	7.0
6DS23, 7DS23 OR 8DS23	7.5
U40 OR U54	6.6
Tx28, Tx34 OR Tx40	5.6
Tx46, Tx54, Tx62 OR Tx70	5.9

CONSTRUCTION NOTES:
 If beams or girders are spaced closely together, install CFRP wrap prior to beam erection.
 For unpainted beams/girders, install approved CFRP system and apply the protective top coating with color and texture to match adjacent concrete. Mask adjacent concrete prior to coating.
 For painted beams/girders, install approved CFRP system and apply the protective top coating prior to painting. Paint concrete and CFRP to produce uniform finish, as specified elsewhere.

GENERAL NOTES:
 Provide and apply CFRP system, including protective top coating, in accordance with Item 4191, "Carbon Fiber Reinforced Polymer for Strengthening Concrete Structure Members."
 Install CFRP wrap to beams/girders shown on the layout, in the location and to the limits given.
 Payment for the Bridge Protective Beam Wrap is in accordance with Item 4191. Quantity is measured by the square foot of beam/girder surface area covered.

		Bridge Division Standard	
BRIDGE PROTECTIVE BEAM WRAP			
BPBW			
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NO.	DESCRIPTION	DATE	BY
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BPBW Standard

- Bridge Protective Beam Wrap (BPBW) standard
- New standard posted July 2013

- Replaces Bridge Protective Assembly (BPA) standard
 - The BPA was not effective
 - Often caused more damage
 - Can be a debris hazard itself

BPBW Standard

- A BPA that didn't work

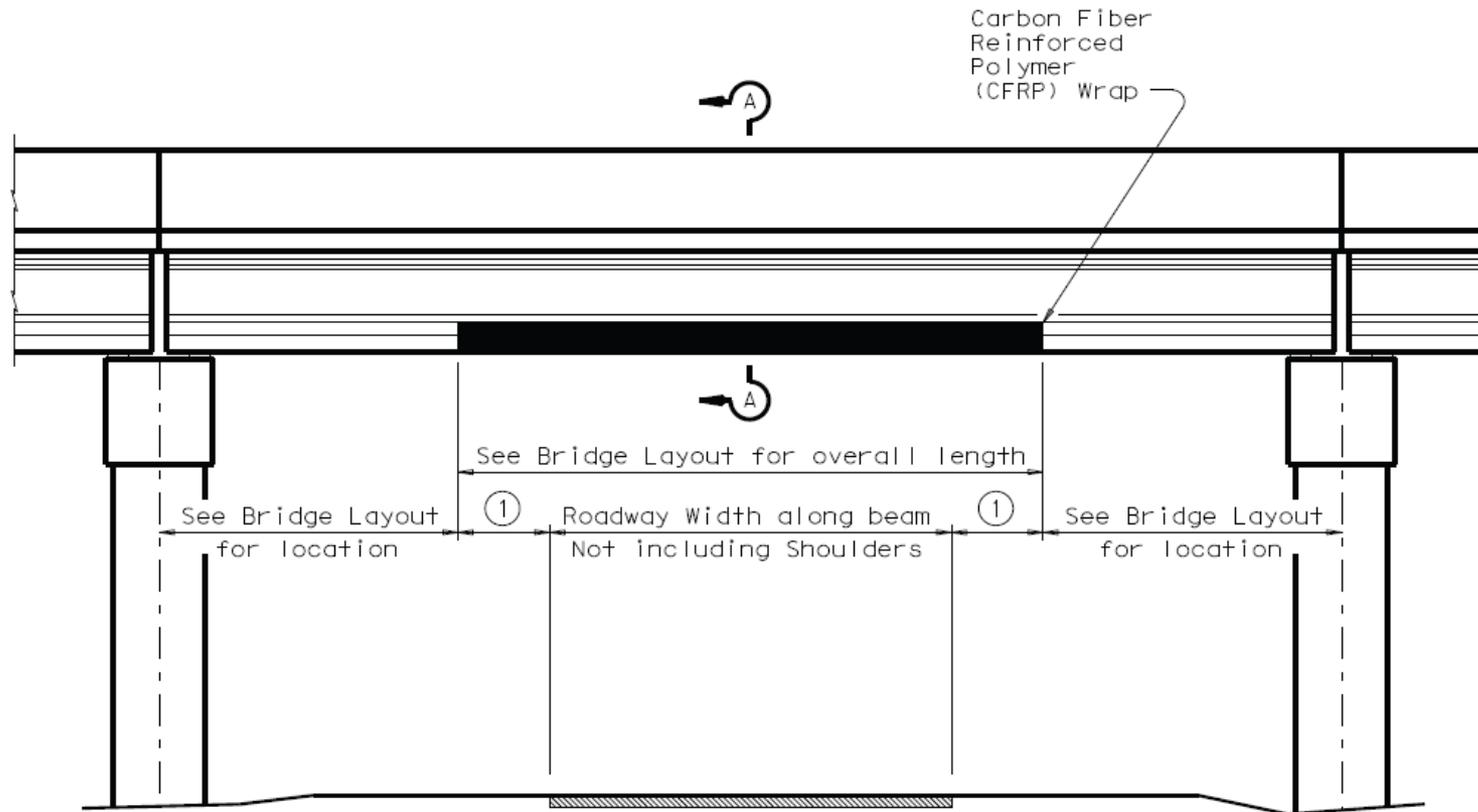




BPBW Standard

- A BPA that didn't work

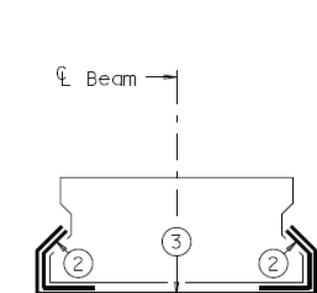




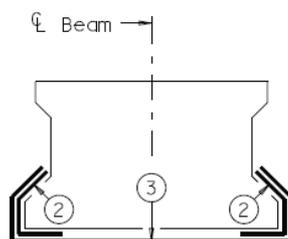
TYPICAL BRIDGE ELEVATION

BPBW Standard

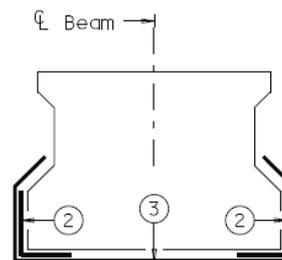
- 24" wide sheets of CFRP
- Placed in two layers –longitudinal and transverse



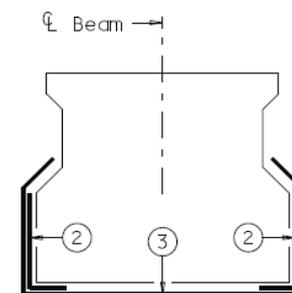
TYPE XB20 OR B20



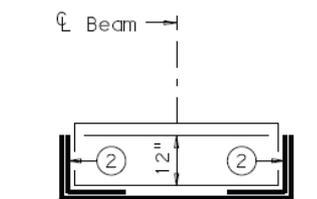
TYPE XB28 OR B28



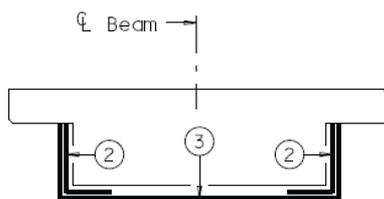
TYPE XB34 OR B34



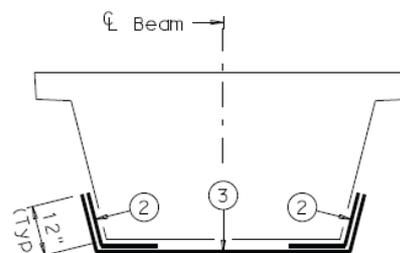
TYPE XB40 OR B40



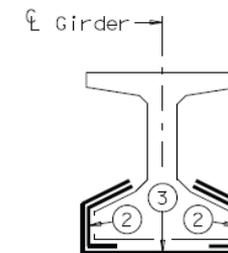
TYPE SB12 OR SB15



TYPE DS20 OR DS23



TYPE U40 OR U54



**TYPE Tx28, Tx34, Tx40,
Tx46, Tx54, Tx62 OR Tx70**

SECTION A-A

Showing typical beam sections.

BPBW Standard

- Beam hit with CFRP installed



BPBW Standard

- Minimal damage on exterior beam



BPBW Standard

- Benefits of the BPBW
 - Reduces total damage to beams
 - Concentrates the damage
 - Captures debris
- When to use the BPBW
 - High probability of over-height hits
- Payment per Item 4191, SF
 - \$22/SF in 12mo avg.
 - For 24” rdwy Tx54

$$30 \text{ ft} \times 5.9 \text{ sf/ft} \times \$22/\text{sf} = \$3,894 \text{ per girder}$$

- Have more questions?



OUR GOALS

MAINTAIN A SAFE SYSTEM
ADDRESS CONGESTION
CONNECT TEXAS COMMUNITIES
BEST IN CLASS STATE AGENCY

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