

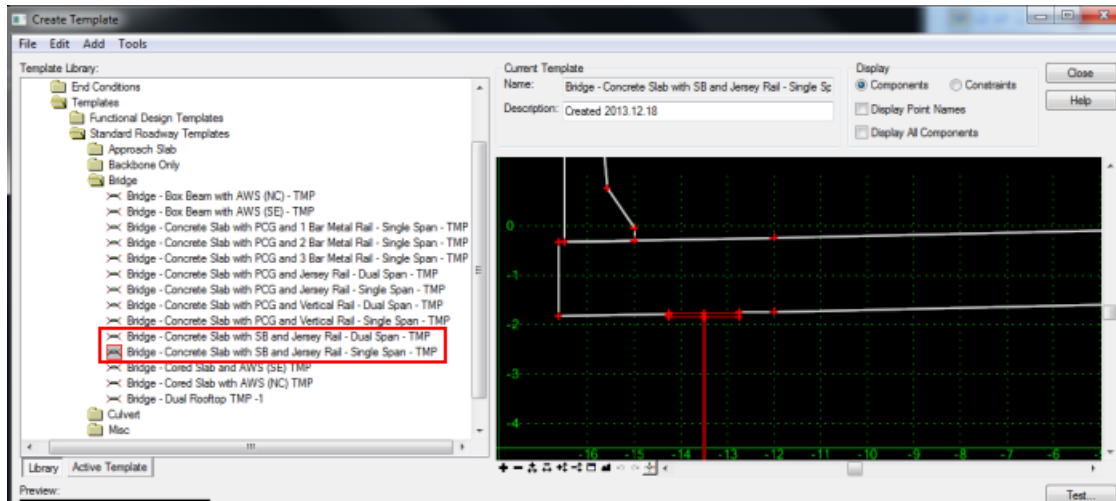
2_48 NEW STEEL BEAM BRIDGE TEMPLATES

Question:

I would like to model a steel beam superstructure for the bridge portion of my model.

Answer:

Two new bridge templates with a steel beam (SB) superstructure option have been created to go along with existing prestressed concrete girder (PCG) bridge templates.



It is not in our best interest from a Roadway perspective to design the number of members and spacing of the girders. They are detailed in the Structure plans. The purpose of these girder types is to give you a general idea/visualization of what is being proposed and more importantly the vertical clearance/clash detection simulations perform by Roadway Engineers in order for us to provide more accurate preliminary grade to the Structure Management Unit (SMU).

SMU may specify either an "I-Beam" or "Plate Girder" span type design. The Roadway Design Manual has the superstructure depth recommendations for both span types (Part I, 6-5, F-1 & F2) dependent on the span length. For all intents and purposes the steel beam template components can be used for either cases. However, adjust the superstructure depth accordingly.

FIGURE 1 6 - 5
F - 1

BRIDGE SUPERSTRUCTURE DEPTHS

SPAN TYPE	DESIGN SPAN	SUPERSTRUCTURE * DEPTH HS - 20
1 - BEAM	40'	3.1'
	45'	3.4'
	50'	3.5'
	55'	3.6'
	60'	3.7'
	65'	3.8'
	70'	3.9'
	75'	4.0'
	80'	4.0'
	85'	4.1'
PRESTRESSED GIRDER	40'	3.9'
	45'	3.9'
	50'	4.7'
	55'	4.7'
	60'	4.7'
	65'	4.7'
	70'	5.4'
	75'	5.4'
	80'	5.4'
	85'	5.4'
	90'	5.4'
	95'	6.2'
	100'	6.2'
	105'	6.2'
	110'	6.2'
115'	6.9'	
120'	6.9'	

* DEPTHS SHOWN ARE FROM TOP OF SLAB DIRECTLY
OVER EXTERIOR BEAM TO BOTTOM OF DEFLECTED
BEAM. THE SUPERSTRUCTURE DEPTH MUST BE
ADJUSTED FOR CROWN DROP.

REV. DATE 01/02/02

FIGURE 2

6 - 5
F - 2BRIDGE SUPERSTRUCTURE DEPTHS
-PLATE GIRDER SUPERSTRUCTURE-

THE DEPTHS LISTED BELOW ARE BASED ON THE FOLLOWING PARAMETERS, AND IF CONDITIONS DO NOT APPEAR TO MEET THESE NORMS, IT WILL BE NECESSARY TO DISCUSS THE SUPERSTRUCTURE DEPTH WITH THE STRUCTURE DESIGN UNIT.

PARAMETERS

- (a) 34', 40', 48', 56', OR 64' ROADWAY WIDTH
- (b) HS 20 LIVE LOAD
- (c) SIMPLE SPAN, COMPOSITE TYPE GIRDER
- (d) ASTM 588 UNPAINTED HIGH STRENGTH STEEL
- (e) STAY IN PLACE METAL FORMS
- (f) NO TRANSVERSE STIFFENERS
- (g) CONCRETE BARRIER RAILS

DESIGN SPAN (ft.)	SUPERSTRUCTURE DEPTH (ft.)*
39' - 0" to 45' - 0"	4' - 0"
> 45' - 0" to 65' - 0"	4' - 8"
> 65' - 0" to 90' - 0"	5' - 5"
> 90' - 0" to 105' - 0"	6' - 3"
> 105' - 0" to 120' - 0"	6' - 11"
> 120' - 0" to 150' - 0"	7' - 3"
> 150' - 0" to 160' - 0"	7' - 7"
> 160' - 0"	Consult with SDU

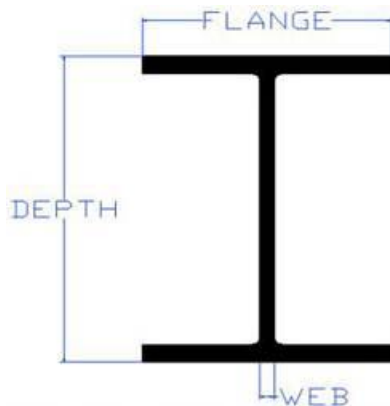
* DEPTHS SHOWN ARE FROM TOP OF SLAB DIRECTLY OVER EXTERIOR GIRDER TO BOTTOM OF DEFLECTED GIRDER. THE SUPERSTRUCTURE DEPTH MUST BE ADJUSTED FOR CROWN DROP. THESE DEPTHS ARE BASED ON SIMPLE SPAN GIRDERS. DEPTHS FOR CURVED GIRDERS OR CONTINUOUS GIRDERS SHOULD BE COORDINATED WITH STRUCTURE DESIGN.

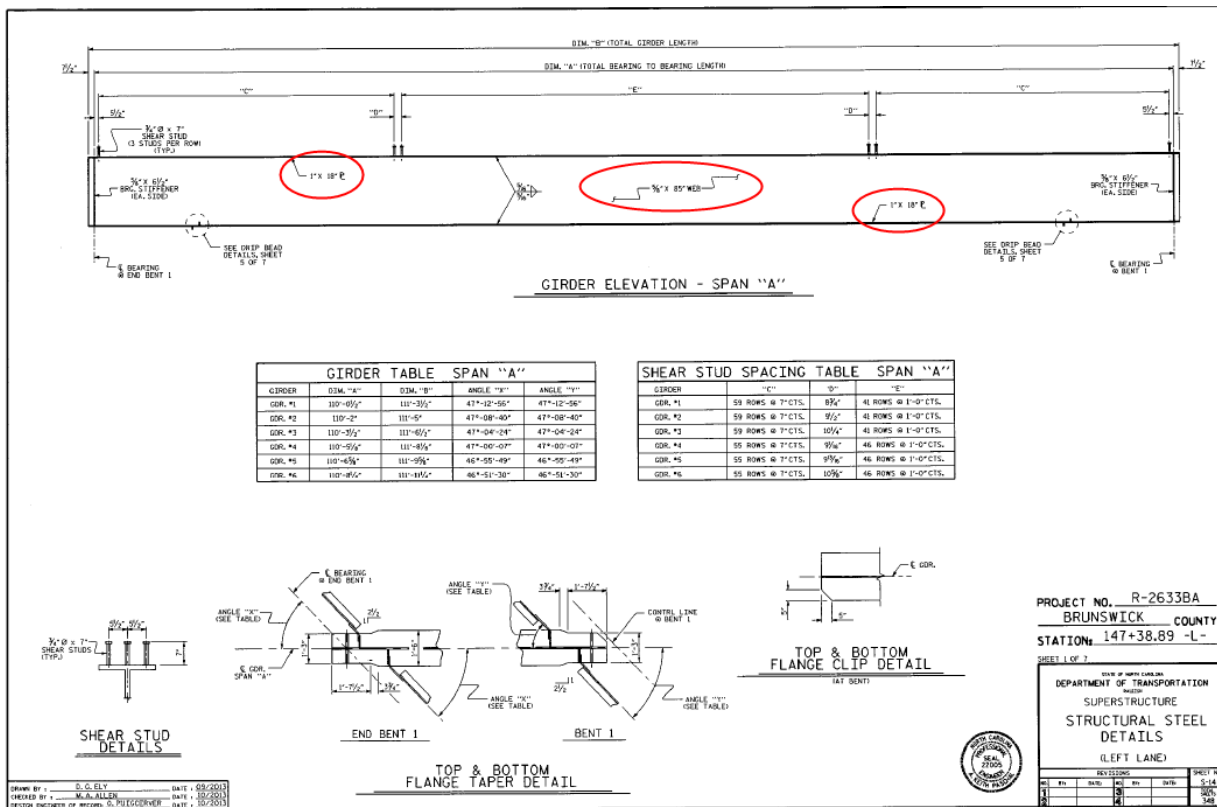
* FOR SPAN LENGTH UP TO 160 ft., ADEQUATE VERTICAL CLEARANCE SHOULD HAVE BEEN PROVIDED TO ALLOW FLEXIBILITY IN SELECTING THE TYPE OF SUPERSTRUCTURE.

REV. DATE 04/01/03

The steel beam template components were created with the following guidelines and defaults:

- Top and Bottom Flange 1" x 18" (Thickness x Width)
- Web $\frac{5}{8}$ " x 85" (Thickness x Depth)





Both girder types can be adjusted with the parametric constraint label "BR_Superstructure Depth" for vertical clearance calculations. Note this controls the depth of the **beam only**. Adjust this value with the "BR_Deck Depth" Parametric Constraint to come up with the final designed superstructure depth (top of slab to bottom of beam). Consider adding these girder options to your managed corridors when applicable.