Design and Analysis of Straight Highway Bridges Tutorial (for Continuous Steel Plate Girder Bridges)

C. C. Fu, Ph.D., P.E.

The BEST Center

Department of Civil & Environ. Engineering

University of Maryland

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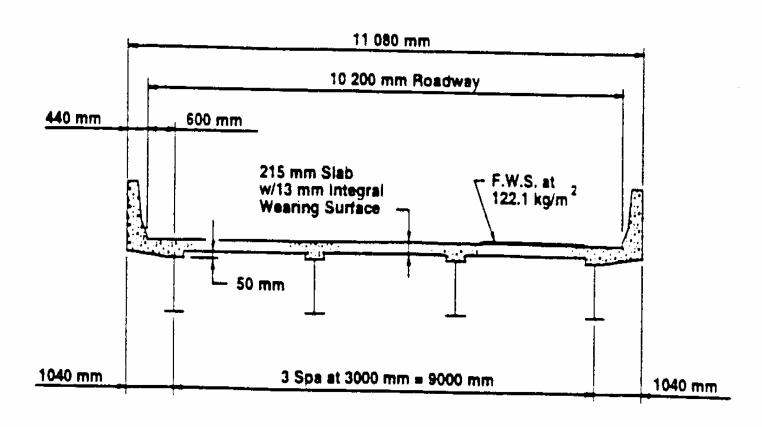
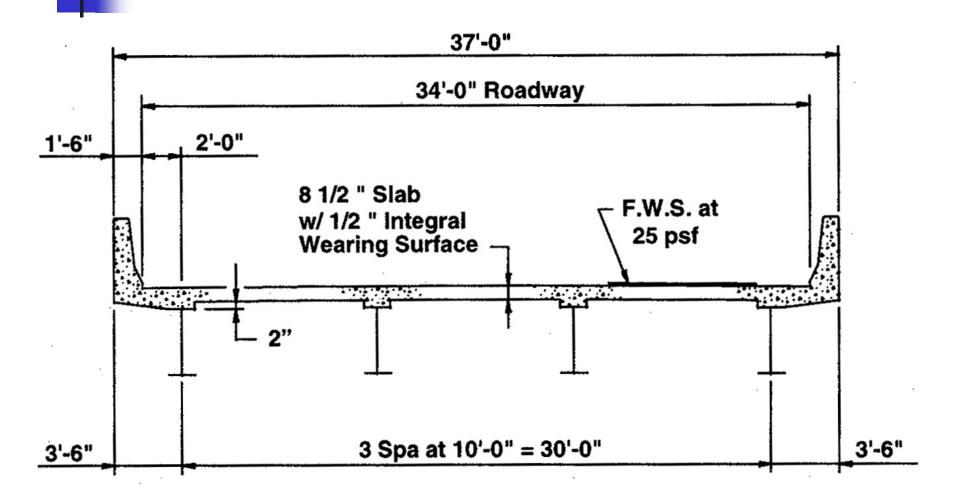
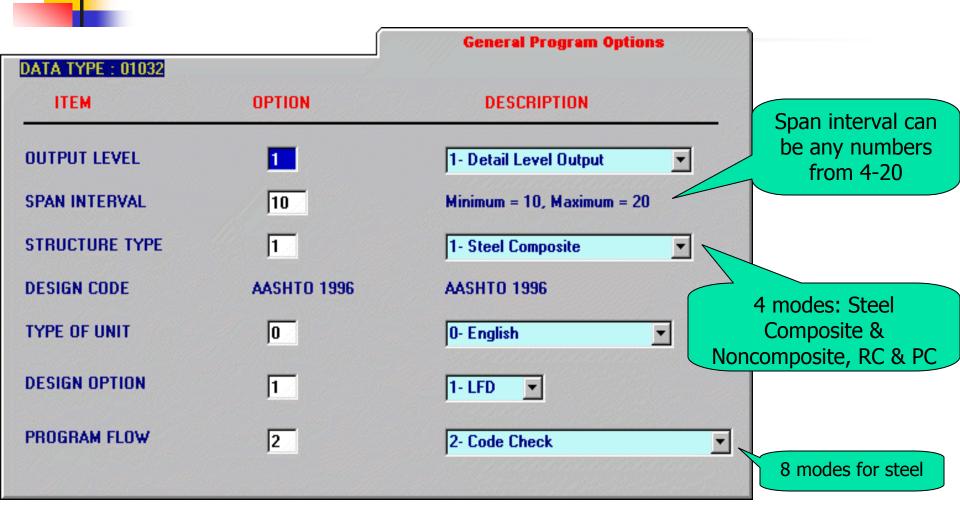
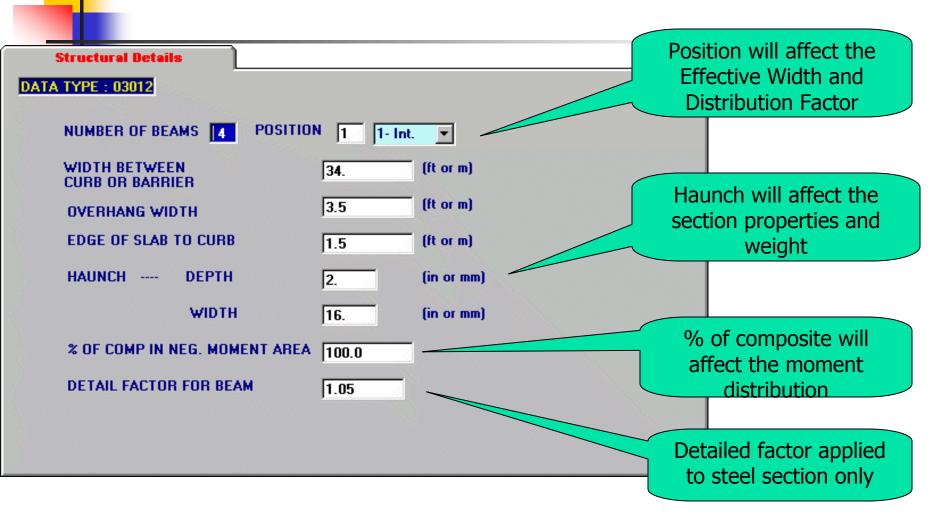


Figure 1: Typical Bridge Cross Section







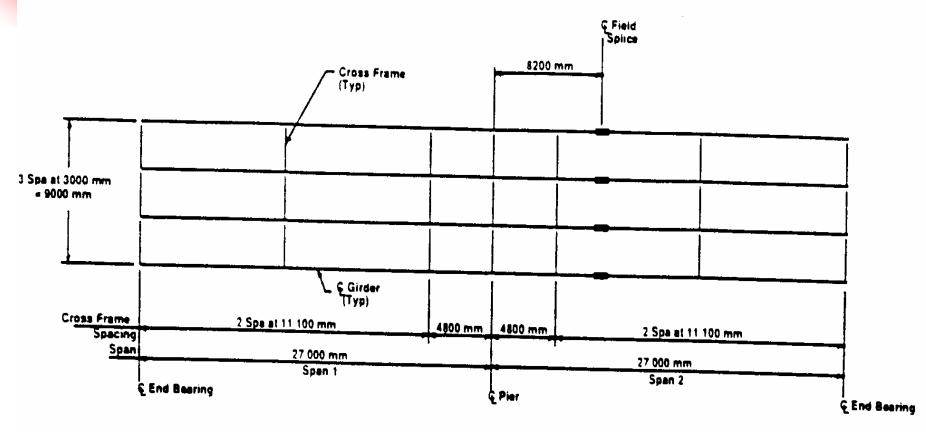
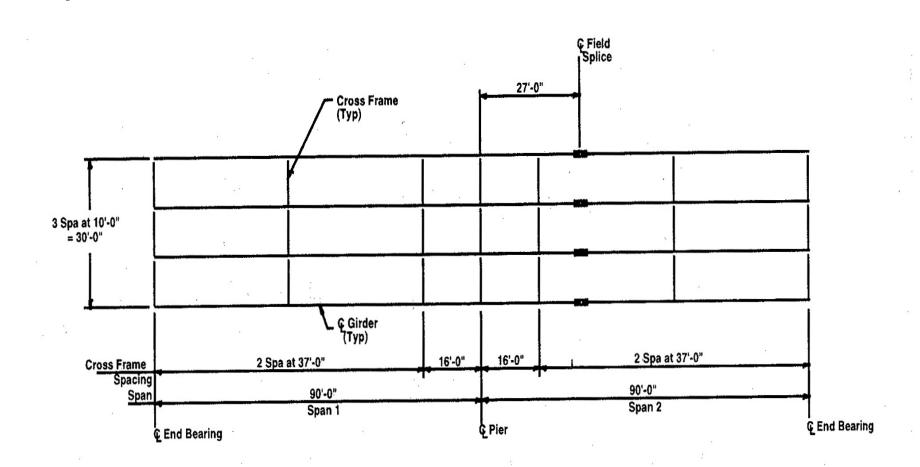


Figure 2: Framing Plan

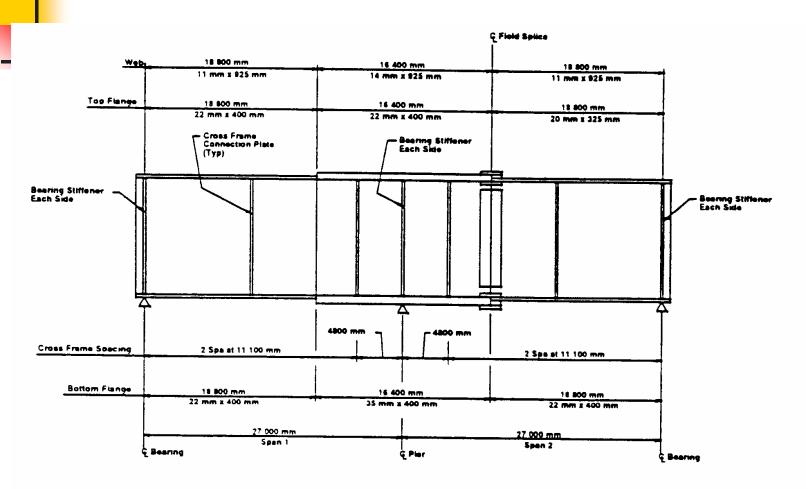




	Span Le	engths	<u></u>	
DATA TYPE : 03022 (Ft. or n	n)			Distance between
SPAN NO. 1 90.	SPAN NO. 6			centerlines of bearings
SPAN NO. 2 90.	SPAN NO. 7			
SPAN NO. 3	SPAN NO. 8			
SPAN NO. 4	SPAN NO. 9			
SPAN NO. 5	SPAN NO. 10			
* Maximum allowed span nu	nbrer is 10			

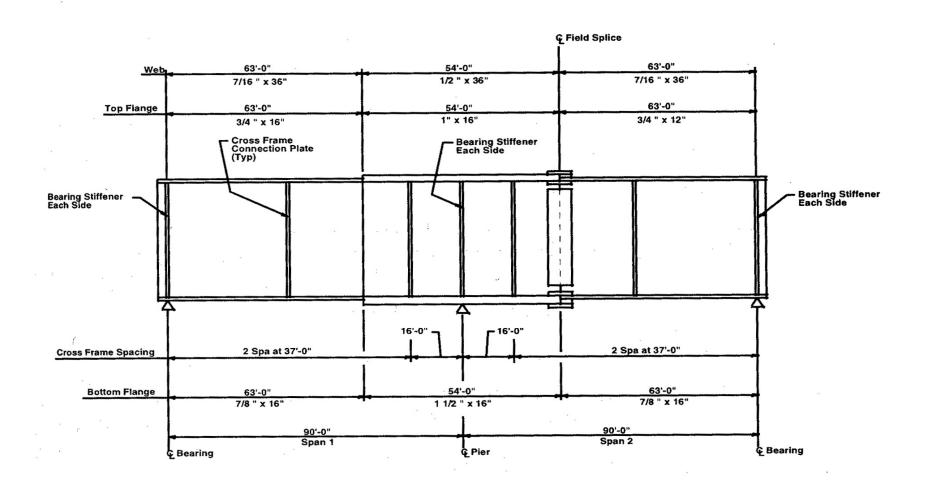


Beam Spacings	•	
beam spacings		
DATA TYPE: 03042 (Ft or m) SPACING NO. 1 10.	SPACING NO. 6	Spacing is required for Distribution Factor and
SPACING NO. 2 10.	SPACING NO. 7	DL calculation
SPACING NO. 3	SPACING NO. 8	
SPACING NO. 4	SPACING NO. 9	
SPACING NO. 5	SPACING NO. 10	
* Maximum number of beam spacing * No. of spacings = no. of spans * If only spacing no. 1 is defined, to of the spacing is equal to the first	he rest	



NOTE: Total estimated mass of structural steel = 92.43 kg/m² of deck area.

Figure 3: Elevation of Interior Girder



			Stee	I (W/PG) !	Section								
		YPE: 04	1012 Standard	Sections	Plate (Girders		Cover Plates	& Plate Gird	er			
	Yo.	ID	Mominal Depth (in or mm)	Height (Lb/Ft or Kg/m)	Heb Depth (in or mm)	Heb Thickness (in or mm)	Top Plate Width (in or mm)	Top Plate Thick (in or mm)	Bottom Plate Width (in or mm)	Bottom Plate Thick (in or mm)		2 uniques sections ar	
.Ø	1	PG			36.	0.4375	12.	0.75	16.	0.875			
	2	PG			36.	0.5	16.	1.	16.	1.5			
	3												
	4												
	5												
	6												
	7												
	8												
	9												
	10												
	11												
	12												
	13												
	14												
	15						73						
	16						1000				 -		
	17						1000000				1.00		



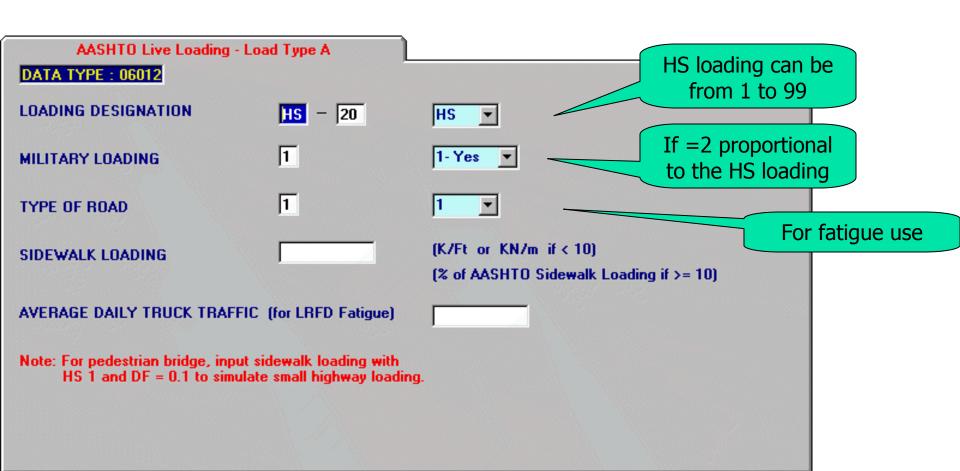
Members are defined from left to right in an ascending order

			_
Defini	tion of	i Mem	bers
vetini	tion o	r mem	Ders

DA	DATA TYPE: 05012										
Member Sections Parameters							Yield	or MPa)	•		
	No.	Num. Left	Num. Right	Length (Ft or m)	Туре	So	S1	Web	Top Flange	Bottom Flange	
.Ø	_	1	1	63.							
	2	2	2	54.						//	
	3	1	1	63.							
	4										
	5										
	6										
	7					These 3	entries	l In	ese 3 enti	ries	
	8					are for	non-	l ai	re for hyb	rid	
	9										
	10					prisma	atic		members		
	11					memb	ers				
	12					11101115					
	13										
	14										
	15										
	16										▼

Note: For homogeneous sections, it is user's choice to use this screen or Data Type 13012 (Yield Stress and Lateral Bracing Data) for yield strength input.





If not a staging case, slab loads have to be defined span by span or total span length.

For a staging case, slab distances can be arbitrary.

Slab Loads											
DA	TA TYP	E : 1001	2								
		Load I	D		S	lab Data				Load Dat	a
	Load No	Pouring No	Description	Init. Depth in or mm	Final Depth in or mm	Pouring Day	Module Ratio N1	Module Ratio N2	Intensity (K/Ft or KN/m)	Dist. From (Ft. or m)	Dist. To (Ft. or m)
Ĵ	1	1	DECK SLAB	8.0	8.0	0	24.0	8.0	1.063	0.0	180.
	2										
	3										
	5										
	6										
	7			_							
	8				<u></u>						
	9				Pourin						
	10				Day are	used	for				
	11										
	12 13				Sta	ging				1	
	14										
	14									1	

Yield Stress and Lateral Bracing Data

DA	TA TYPE: 130	12			
	Locat	ion	Fy I	Lateral 🔺	
	Distance From (Ft or m)	Distance To (Ft or m)	Yield Strength Fy (Ksi or Mpa)	Yield Strength Fy (Web) (Ksi or Mpa)	Actual Spacing (Ft or m)
.0	0.0	74.	50.		37.
	74.	90.0	50.		16.
	90.	106.	50.		16.
	106.	180.	50.		37.
				r hybrid	
			sec	tions	./485
					-

For the proper calculation of moment capacity, distance has to be equally divided by the lateral bracing spacing

Note: For hybrid sections, use Data Type 05012 Definition of Member. Use this screen for homogeneous sections only.

MERLIN-DASH Execution Utility



