



Material Properties:

- Steel: Grid can be constructed using A709 Gr. 36/50/50W, A36, or A588 Steel
- Concrete: 145 pcf normal weight concrete with a compressive strength of 4000 psi

Steel Grid Components:

- Main Rails: 5-3/16" rolled section
- Bottom Rebar: #5 spaced 8" center-to-center
- Cross Bars: 1/4"x2" spaced 4" center-to-center
- Supplemental Bars: 5/16"x1" spaced one centered between Main Rails
- Top Rebar: None
- Trim Bars: 1/4"x2" or 1/4" x 5" (Optional)

Geometric Profile

- Total height of grid deck = 5-3/16" (flush-filled) or 7-3/16" (with 2-inch overfill)
- Concrete overfill above main rail = 0 inches (flush filled), 2 inches (overfilled)
- Total thickness of concrete = 5-3/16 inches (flush-filled) or 7-3/16 inches (with 2-inch overfill)

Component Code	Deck Parameters					Steel Only				Positive Moment Region				Negative Moment Region				
	Main Rail Spacing (in)	Total Concrete Overfill (in)	Num of Supp Bars	Num of #3 Rebar	Total Height (in)	Moment of Inertia (in ⁴ /ft)		Top of Steel	Bot of Steel	Section Modulus (in ³ /ft)		Moment of Inertia (in ⁴ /ft)		Section Modulus (in ³ /ft)		Moment of Inertia (in ⁴ /ft)		
						36 ksi	50 ksi			36 ksi	50 ksi	Top of Steel	Bot of Steel	Top of Steel	Bot of Steel	Top of Steel	Bot of Steel	
FDS5S-04	4	0	1	0	5 3/16	18.42	7.19	7.01	7.19	24.32	-96.98	7.65	23.95	7.44	7.44	23.95	7.44	-97.40
FDS5S-06	6	2	1	0	7 3/16	18.42	4.68	4.68	4.79	37.92	-105.92	9.92	23.95	5.05	5.05	17.08	5.05	-75.58
FDS5S-08	8	2	1	0	7 3/16	12.28	4.68	4.68	4.79	17.40	-75.54	5.20	17.08	3.85	3.85	13.47	3.85	-63.91
FDS5S-10	10	2	1	0	7 3/16	9.21	3.51	3.51	3.59	23.38	-78.53	5.43	13.47	3.12	3.12	11.22	3.12	-56.45
FDS5S-10	10	2	1	0	7 3/16	7.37	2.81	2.81	2.88	19.92	-71.85	4.46	11.22	3.12	3.12	11.22	3.12	-56.45

(c) Negative value indicates compression

HS 20 (MS '18) and HS 25 (MS 22) LOAD TABLE

Component Code	Main Rail Spacing (in)	Total Concrete Overfill (in)	HS 20 - Maximum Continuous Clear Span (ft)				HS 25 - Maximum Continuous Clear Span (ft)				Approximate Weight (psf)						
			Transverse to Traffic		Parallel to Traffic		Transverse to Traffic		Parallel to Traffic		Steel Only	Concrete Filled					
			36 ksi	50 ksi	36 ksi	50 ksi	36 ksi	50 ksi	36 ksi	50 ksi	L/1200	L/1200					
FDS5S-04	4	0	17.1	22.0	12.1	14.1	9.5	8.4	7.6	14.5	18.2	10.1	11.3	6.8	8.4	27.10	82.20
FDS5S-06	6	2	16.2	20.8	11.8	14.1	12.0	10.7	9.7	13.9	18.1	9.9	11.4	7.5	8.6	27.10	106.32
FDS5S-08	8	2	12.1	15.9	8.6	11.1	7.9	6.4	6.4	10.0	13.4	7.1	8.9	5.7	7.0	20.79	77.75
FDS5S-10	10	2	11.6	15.2	8.5	11.0	10.3	9.2	8.3	9.7	12.9	7.0	8.9	5.0	6.2	20.79	101.88
FDS5S-08	8	2	9.3	12.4	6.8	8.9	7.0	5.7	5.7	7.5	10.3	5.6	7.3	5.0	5.5	17.63	99.66
FDS5S-10	10	2	7.4	10.1	5.6	7.3	6.4	5.2	5.2	5.9	8.2	4.6	6.0	4.6	5.0	15.74	74.20
FDS5S-10	10	2	7.2	9.8	5.5	7.2	8.5	6.9	6.9	5.8	8.0	4.6	6.0	6.1	6.7	15.74	98.32

Design Notes:

1. Designs are in accordance with AASHTO (17 Edition - 2002) Allowable Stress Design Method.
2. Reference IDSI FDS5S Series Grid Deck Drawings for further geometric details.
3. Assumes at least a 7 inch wide flange width for the supporting beams.
4. Concrete overfill is the amount of concrete above the top of the decking main rail (1-1/2" integral & 1/2" sacrificial for 2-inch overfill designs).
5. Steel only weights include the weight of the form pans.
6. Designs valid for Maximum Continuous Clear Spans based upon the following criteria.
 - a) 36 or 50 ksi minimum yield steel.
 - b) Steel strength stress limit of 27 ksi for 50 ksi yield steel or 20 ksi for 36 ksi yield steel.
 - c) 4000 psi concrete limited to a maximum allowable concrete stress of 1.6 ksi.
 - d) Deflection span limits as shown above are independent of the main rail orientation for AASHTO ASD methods of analysis & the results shown are independent of the steel strength stress limits. (i.e. For this chart, it is possible that the grid system is overstressed for a given deflection criteria. Both stresses and deflection must be analyzed together by the user prior to final design decision.)
7. All punched holes or slots in steel members are deducted when computing section properties.
8. Fatigue not considered for above published span limits.