CHAPTER 2 – LADOTD DECK DESIGN TABLES

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2.1—LADOTD DECK DESIGN TABLES, GIRDER TOP FLANGE ≥ 48 INCHES

The tables in this section are developed for concrete cast-in-place deck supported by concrete I-girders with flange width ≥ 48 inches.

These tables may be used in lieu of detailed analysis. The following assumptions and limitations are used in developing this table and must be considered when using the listed values.

- The equivalent strip method is used and all limit states are satisfied assuming rectangular deck layouts. However, the design tables are also applicable to skewed deck layouts with skew angle up to 60 degrees. The girder spacing shall be measured perpendicular to the supporting girder lines. Special design and/or detailing may be required at the corner of skewed deck. For more details, refer to *DC4.6.2.1.1*, *D9.7.1.3*, and *AASHTO LRFD Bridge Design Specifications* (hereinafter referred to as "LRFD" in this chapter) *Section 4.6.2.1.1*. For bridges with flared girders, the designer can use the maximum girder spacing for deck design, or divide the deck longitudinally into several sections and use different reinforcement ratio in each section.
- Reinforcements shown are for interior regions of the deck only and cannot be applied to deck overhang and its adjacent regions of the deck that need to be designed for vehicle collision provisions in accordance with *LRFD Section 13*, in addition to the wheel load.
- This table is applicable to decks supported on at least four girders. The maximum total overhang length from the center of exterior girder to the edge of deck shall equal to the smaller of 0.625 times the girder spacing and 6’-0”. The minimum overhang length shall equal to half of the girder top flange width plus 6.0 inches.
- Maximum live load moment from *LRFD Appendix A4 Table A4-1* is used. Design section for the negative moment is determined in accordance with *LRFD Section 4.6.2.1.6* assuming a 48 inch top flange width for the girder.
- Flexural moments due to dead load effects are assumed to be $M=c*w*L^2$, where w is the uniformly distributed load in kip/ft and L is the girder spacing. For positive flexural moment c=0.08; for negative flexural moment c=0.10.
- The compressive strength of concrete, f'_c=4000 psi. The yield strength of the reinforcing bars, f_y=60 ksi.
- The deck thickness shown includes ½” sacrificial thickness that was not included in the structural calculation, but considered in the dead load calculations.
- For overall deck thickness ≥ 8 inches, the clear concrete cover at top and bottom of the slab equals to 2 ½ inches (including ½” sacrificial thickness) and 1 ½ inches, respectively. For overall deck thickness of 7 and 7 ½ inch, the clear concrete cover equals to 2 inches (including 1/2" sacrificial thickness) and 1 ½ inches, respectively. Overall deck thickness less than 8 inches can only be used for movable bridge spans.
- The weight of the railing equals to 520.5 lb/ft (TL-5). The bottom width of the railing from the edge of the deck to the gutter line equals to 1’-8”. The weight of railing is evenly distributed along the deck in transverse direction (perpendicular to traffic).
- Concrete density is 150 pcf.
- Future wearing surface of 25 psf is included.

- The girder spacing is the distance between the centers of the girders.
- Minimum and maximum bar spacings are limited to 5 inches and 7 inches, respectively, with increments of 0.5 inch. This limitation applies to both transverse and longitudinal directions.
- Reinforcing bars are limited to #4, #5, and #6.
- Exposure factor for crack control calculations is assumed to be 1.0.
- Effective span length "S" for the distribution reinforcement calculation is in accordance with *LRFD Section 9.7.2.3,* assuming 48 inch top flange width and 7 inch web thickness for the girder.
- All tables in this chapter were developed using singly reinforced section, i.e., neglecting compression reinforcement contribution.
- The deck thicknesses in shaded cells shall only be used when required by design and approved by the Bridge Design Engineer Administrator. Refer to Part II Volume 1 Section 9.7.1.1 for more information.

2.1.1─LADOTD Deck Design Table, Overall Deck Thickness = 7.0 in. (for movable bridge span only)

Girder Spacing (ft)	Transverse Reinforcement		Longitudinal Reinforcement	
	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)
5’-0”	#4@5.5”	#4@7”	#4@7”	#4@7”
5’-3”	#4@5.5”	#4@7”	#4@7”	#4@7”
5’-6”	#4@5”	#4@7”	#4@7”	#4@7”
5’-9”	#4@5”	#4@7”	#4@7”	#4@7”
6’-0”	#4@5”	#4@7”	#4@7”	#4@7”
6’-3”	#4@5”	#4@7”	#4@7”	#4@7”
6’-6”	#5@7”	#4@7”	#4@6.5”	#4@7”
6’-9”	#5@7”	#4@7”	#4@6.5”	#4@7”
7’-0”	#5@7”	#4@7”	#4@6.5”	#4@7”
7’-3”	#5@7”	#4@7”	#4@6.5”	#4@7”
7’-6”	#5@6.5”	#4@7”	#4@6”	#4@7”
7’-9”	#5@6.5”	#4@7”	#4@6”	#4@7”
8’-0”	#5@6”	#4@7”	#4@5.5”	#4@7”
8’-3”	#5@6”	#4@7”	#4@5.5”	#4@7”
8’-6”	#5@6”	#4@6.5”	#4@5.5”	#4@7”
8’-9”	#5@5.5”	#4@6”	#4@5”	#4@7”
9’-0”	#5@5.5”	#4@6”	#4@5”	#4@7”
9’-3”	#5@5.5”	#4@5.5”	#4@5”	#4@7”
9’-6”	#5@5”	#4@5.5”	#5@7”	#4@7”
9’-9”	#5@5”	#4@5”	#5@7”	#4@7”
10’-0”	#5@5”	#5@7”	#5@7”	#4@6.5”
10’-3”	#6@6.5”	#5@7”	#5@6.5”	#4@6.5”
10’-6”	#6@6.5”	#5@6.5”	#5@6.5”	#4@6”
10’-9”	#6@6.5”	#5@6”	#5@6.5”	#4@5.5”
11’-0”	#6@6”	#5@6”	#5@6”	#4@5.5”
11’-3”	#6@6”	#5@5.5”	#5@6”	#4@5”
11’-6”	#6@6”	#5@5.5”	#5@6”	#4@5”
11’-9”	#6@5.5”	#5@5”	#5@5.5”	#5@7”
12’-0”	#6@5.5”	#5@5”	#5@5.5”	#5@7”
12’-3”	#6@5.5”	#6@6.5”	#5@6”	#5@7”

2.1.2─LADOTD Deck Design Table, Overall Deck Thickness = 7.5 in. (for movable bridge span only)

Girder Spacing (ft)	Transverse Reinforcement		Longitudinal Reinforcement	
	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)
5’-0”	#4@6”	#4@7”	#4@7”	#4@7”
5’-3”	#4@6”	#4@7”	#4@7”	#4@7”
5’-6”	#4@6”	#4@7”	#4@7”	#4@7”
5’-9”	#4@5.5”	#4@7”	#4@7”	#4@7”
6’-0”	#4@5.5”	#4@7”	#4@7”	#4@7”
6’-3”	#4@5.5”	#4@7”	#4@7”	#4@7”
6’-6”	#4@5.5”	#4@7”	#4@7”	#4@7”
6’-9”	#4@5”	#4@7”	#4@7”	#4@7”
7’-0”	#4@5”	#4@7”	#4@7”	#4@7”
7’-3”	#4@5”	#4@7”	#4@7”	#4@7”
7’-6”	#4@5”	#4@7”	#4@7”	#4@7”
7’-9”	#5@7”	#4@7”	#4@6.5”	#4@7”
8’-0”	#5@7”	#4@7”	#4@6.5”	#4@7”
8’-3”	#5@7”	#4@7”	#4@6.5”	#4@7”
8’-6”	#5@6.5”	#4@7”	#4@6”	#4@7”
8’-9”	#5@6.5”	#4@7”	#4@6”	#4@7”
9’-0”	#5@6”	#4@6.5”	#4@5.5”	#4@7”
9’-3”	#5@6”	#4@6.5”	#4@5.5”	#4@7”
9’-6”	#5@6”	#4@6”	#4@5.5”	#4@7”
9’-9”	#5@5.5”	#4@5.5”	#4@5”	#4@7”
10’-0”	#5@5.5”	#4@5.5”	#4@5”	#4@7”
10’-3”	#5@5.5”	#4@5”	#4@5”	#4@7”
10’-6”	#5@5”	#5@7”	#5@7”	#4@6.5”
10’-9”	#5@5”	#5@7”	#5@7”	#4@6.5”
11’-0”	#5@5”	#5@6.5”	#5@7”	#4@6”
11’-3”	#5@5”	#5@6.5”	#5@7”	#4@6”
11’-6”	#6@6.5”	#5@6”	#5@6.5”	#4@5.5”
11’-9”	#6@6.5”	#5@6”	#5@6.5”	#4@5.5”
12’-0”	#6@6.5”	#5@5.5”	#5@7”	#4@5”
12’-3”	#6@6”	#5@5.5”	#5@6.5”	#5@7”
12’-6”	#6@6”	#5@5”	#5@6.5”	#5@7”
12’-9”	#6@6”	#5@5”	#5@6.5”	#5@7”
13’-0”	#6@6”	#6@6.5”	#5@6.5”	#5@7”
13’-3”	#6@5.5”	#6@6.5”	#5@6”	#5@7”
13’-6”	#6@5.5”	#6@6”	#5@6”	#5@6.5”
13’-9”	#6@5.5”	#6@6”	#5@6”	#5@6.5”
14’-0”	#6@5.5”	#6@6”	#5@6”	#5@7”
14’-3”	#6@5”	#6@5.5”	#5@5.5”	#5@6.5”
14’-6”	#6@5”	#6@5.5”	#5@5.5”	#5@6.5”
14’-9”	#6@5”	#6@5”	#5@6”	#5@6”
15’-0”	#6@5”	#6@5”	#5@6”	#5@6”

2.1.3─LADOTD Deck Design Table, Overall Deck Thickness = 8.0 in.

Girder Spacing (ft)	Transverse Reinforcement		Longitudinal Reinforcement	
	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)
6’-0”	#4@6”	#4@7”	#4@7”	#4@7”
6’-3”	#4@6”	#4@7”	#4@7”	#4@7”
6’-6”	#4@6”	#4@7”	#4@7”	#4@7”
6’-9”	#4@6”	#4@7”	#4@7”	#4@7”
7’-0”	#4@5.5”	#4@7”	#4@7”	#4@7”
7’-3”	#4@5.5”	#4@7”	#4@7”	#4@7”
7’-6”	#4@5.5”	#4@7”	#4@7”	#4@7”
7’-9”	#4@5”	#4@7”	#4@7”	#4@7”
8’-0”	#4@5”	#4@7”	#4@7”	#4@7”
8’-3”	#4@5”	#4@7”	#4@7”	#4@7”
8’-6”	#5@7”	#4@7”	#4@6.5”	#4@7”
8’-9”	#5@7”	#4@7”	#4@6.5”	#4@7”
9’-0”	#5@7”	#4@6.5”	#4@6.5”	#4@7”
9’-3”	#5@6.5”	#4@6.5”	#4@6”	#4@7”
9’-6”	#5@6.5”	#4@6”	#4@6”	#4@7”
9’-9”	#5@6.5”	#4@5.5”	#4@6”	#4@7”
10’-0”	#5@6”	#4@5.5”	#4@5.5”	#4@7”
10’-3”	#5@6”	#4@5”	#4@5.5”	#4@7”
10’-6”	#5@6”	#5@7”	#4@5.5”	#4@6.5”
10’-9”	#5@5.5”	#5@7”	#4@5”	#4@6.5”
11’-0”	#5@5.5”	#5@6.5”	#4@5”	#4@6”
11’-3”	#5@5.5”	#5@6.5”	#4@5”	#4@6”
11’-6”	#5@5.5”	#5@6”	#5@7”	#4@5.5”
11’-9”	#5@5”	#5@5.5”	#5@7”	#4@5”
12’-0”	#5@5”	#5@5.5”	#5@7”	#4@5”
12’-3”	#5@5”	#5@5.5”	#5@7”	#5@7”
12’-6”	#5@5”	#5@5”	#5@7”	#5@7”
12’-9”	#6@6.5”	#5@5”	#5@7”	#5@7”
13’-0”	#6@6.5”	#6@6.5”	#5@7”	#5@7”
13’-3”	#6@6.5”	#6@6.5”	#5@7”	#5@7”
13’-6”	#6@6.5”	#6@6”	#5@7”	#5@6.5”
13’-9”	#6@6”	#6@6”	#5@6.5”	#5@6.5”
14’-0”	#6@6”	#6@5.5”	#5@7”	#5@6”
14’-3”	#6@6”	#6@5.5”	#5@7”	#5@6.5”
14’-6”	#6@6”	#6@5.5”	#5@7”	#5@6.5”
14’-9”	#6@5.5”	#6@5”	#5@6.5”	#5@6”
15’-0”	#6@5.5”	#6@5”	#5@6.5”	#5@6”

2.1.4─LADOTD Deck Design Table, Overall Deck Thickness = 8.5 in.

Girder Spacing (ft)	Transverse Reinforcement		Longitudinal Reinforcement	
	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)
6’-0”	#4@7”	#4@7”	#4@7”	#4@7”
6’-3”	#4@6.5”	#4@7”	#4@7”	#4@7”
6’-6”	#4@6.5”	#4@7”	#4@7”	#4@7”
6’-9”	#4@6.5”	#4@7”	#4@7”	#4@7”
7’-0”	#4@6”	#4@7”	#4@7”	#4@7”
7’-3”	#4@6”	#4@7”	#4@7”	#4@7”
7’-6”	#4@6”	#4@7”	#4@7”	#4@7”
7’-9”	#4@5.5”	#4@7”	#4@7”	#4@7”
8’-0”	#4@5.5”	#4@7”	#4@7”	#4@7”
8’-3”	#4@5.5”	#4@7”	#4@7”	#4@7”
8’-6”	#4@5”	#4@7”	#4@7”	#4@7”
8’-9”	#4@5”	#4@7”	#4@7”	#4@7”
9’-0”	#4@5”	#4@7”	#4@7”	#4@7”
9’-3”	#5@7”	#4@7”	#4@6.5”	#4@7”
9’-6”	#5@7”	#4@6.5”	#4@6.5”	#4@7”
9’-9”	#5@7”	#4@6”	#4@6.5”	#4@7”
10’-0”	#5@7”	#4@6”	#4@6.5”	#4@7”
10’-3”	#5@6.5”	#4@5.5”	#4@6”	#4@7”
10’-6”	#5@6.5”	#4@5”	#4@6”	#4@7”
10’-9”	#5@6.5”	#4@5”	#4@6”	#4@7”
11’-0”	#5@6”	#5@7”	#4@5.5”	#4@6.5”
11’-3”	#5@6”	#5@7”	#4@5.5”	#4@6.5”
11’-6”	#5@6”	#5@6.5”	#4@5.5”	#4@6”
11’-9”	#5@5.5”	#5@6.5”	#4@5”	#4@6”
12’-0”	#5@5.5”	#5@6”	#4@5”	#4@5.5”
12’-3”	#5@5.5”	#5@6”	#4@5.5”	#4@6”
12’-6”	#5@5.5”	#5@5.5”	#4@5.5”	#4@5.5”
12’-9”	#5@5”	#5@5.5”	#5@7”	#4@5.5”
13’-0”	#5@5”	#5@5”	#5@7”	#5@7”
13’-3”	#5@5”	#5@5”	#5@7”	#5@7”
13’-6”	#5@5”	#6@7”	#5@7”	#5@7”
13’-9”	#6@7”	#6@6.5”	#5@7”	#5@7”
14’-0”	#6@6.5”	#6@6.5”	#5@7”	#5@7”
14’-3”	#6@6.5”	#6@6”	#5@7”	#5@7”
14’-6”	#6@6.5”	#6@6”	#5@7”	#5@7”
14’-9”	#6@6.5”	#6@6”	#5@7”	#5@7”
15’-0”	#6@6”	#6@5.5”	#5@7”	#5@6.5”

2.1.5─LADOTD Deck Design Table, Overall Deck Thickness = 9.0 in.

Girder Spacing (ft)	Transverse Reinforcement		Longitudinal Reinforcement	
	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)
6’-0”	#4@7”	#4@7”	#4@7”	#4@7”
6’-3”	#4@7”	#4@7”	#4@7”	#4@7”
6’-6”	#4@7”	#4@7”	#4@7”	#4@7”
6’-9”	#4@7”	#4@7”	#4@7”	#4@7”
7’-0”	#4@6.5”	#4@7”	#4@7”	#4@7”
7’-3”	#4@6.5”	#4@7”	#4@7”	#4@7”
7’-6”	#4@6.5”	#4@7”	#4@7”	#4@7”
7’-9”	#4@6”	#4@7”	#4@7”	#4@7”
8’-0”	#4@6”	#4@7”	#4@7”	#4@7”
8’-3”	#4@6”	#4@7”	#4@7”	#4@7”
8’-6”	#4@5.5”	#4@7”	#4@7”	#4@7”
8’-9”	#4@5.5”	#4@7”	#4@7”	#4@7”
9’-0”	#4@5.5”	#4@7”	#4@7”	#4@7”
9’-3”	#4@5”	#4@7”	#4@7”	#4@7”
9’-6”	#4@5”	#4@7”	#4@7”	#4@7”
9’-9”	#4@5”	#4@7”	#4@7”	#4@7”
10’-0”	#5@7”	#4@6.5”	#4@6.5”	#4@7”
10’-3”	#5@7”	#4@6”	#4@6.5”	#4@7”
10’-6”	#5@7”	#4@5.5”	#4@6.5”	#4@7”
10’-9”	#5@7”	#4@5.5”	#4@6.5”	#4@7”
11’-0”	#5@6.5”	#4@5”	#4@6”	#4@7”
11’-3”	#5@6.5”	#4@5”	#4@6”	#4@7”
11’-6”	#5@6.5”	#5@7”	#4@6”	#4@6.5”
11’-9”	#5@6”	#5@7”	#4@5.5”	#4@6.5”
12’-0”	#5@6”	#5@6.5”	#4@5.5”	#4@6”
12’-3”	#5@6”	#5@6.5”	#4@6”	#4@6.5”
12’-6”	#5@6”	#5@6”	#4@6”	#4@6”
12’-9”	#5@5.5”	#5@6”	#4@5”	#4@6”
13’-0”	#5@5.5”	#5@5.5”	#4@5.5”	#4@5.5”
13’-3”	#5@5.5”	#5@5.5”	#4@5.5”	#4@5.5”
13’-6”	#5@5.5”	#5@5.5”	#4@5.5”	#5@7”
13’-9”	#5@5.5”	#5@5”	#5@7”	#5@7”
14’-0”	#5@5”	#5@5”	#5@7”	#5@7”
14’-3”	#5@5”	#6@7”	#5@7”	#5@7”
14’-6”	#5@5”	#6@6.5”	#5@7”	#5@7”
14’-9”	#5@5”	#6@6.5”	#5@7”	#5@7”
15’-0”	#6@7”	#6@6.5”	#5@7”	#5@7”

2.1.6─LADOTD Deck Design Table, Overall Deck Thickness = 9.5 in.

Girder Spacing (ft)	Transverse Reinforcement		Longitudinal Reinforcement	
	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)
6’-0”	#4@7”	#4@7”	#4@7”	#4@7”
6’-3”	#4@7”	#4@7”	#4@7”	#4@7”
6’-6”	#4@7”	#4@7”	#4@7”	#4@7”
6’-9”	#4@7”	#4@7”	#4@7”	#4@7”
7’-0”	#4@7”	#4@7”	#4@7”	#4@7”
7’-3”	#4@7”	#4@7”	#4@7”	#4@7”
7’-6”	#4@7”	#4@7”	#4@7”	#4@7”
7’-9”	#4@6.5”	#4@7”	#4@7”	#4@7”
8’-0”	#4@6.5”	#4@7”	#4@7”	#4@7”
8’-3”	#4@6.5”	#4@7”	#4@7”	#4@7”
8’-6”	#4@6”	#4@7”	#4@7”	#4@7”
8’-9”	#4@6”	#4@7”	#4@7”	#4@7”
9’-0”	#4@5.5”	#4@7”	#4@7”	#4@7”
9’-3”	#4@5.5”	#4@7”	#4@7”	#4@7”
9’-6”	#4@5.5”	#4@7”	#4@7”	#4@7”
9’-9”	#4@5.5”	#4@7”	#4@7”	#4@7”
10’-0”	#4@5”	#4@7”	#4@7”	#4@7”
10’-3”	#4@5”	#4@6.5”	#4@7”	#4@7”
10’-6”	#4@5”	#4@6”	#4@7”	#4@7”
10’-9”	#5@7”	#4@6”	#4@6.5”	#4@7”
11’-0”	#5@7”	#4@5.5”	#4@6.5”	#4@7”
11’-3”	#5@7”	#4@5.5”	#4@6.5”	#4@7”
11’-6”	#5@7”	#4@5”	#4@6.5”	#4@7”
11’-9”	#5@6.5”	#4@5”	#4@6”	#4@7”
12’-0”	#5@6.5”	#5@7”	#4@6”	#4@6.5”
12’-3”	#5@6.5”	#5@7”	#4@6.5”	#4@7”
12’-6”	#5@6.5”	#5@6.5”	#4@6.5”	#4@6.5”
12’-9”	#5@6”	#5@6.5”	#4@6”	#4@6.5”
13’-0”	#5@6”	#5@6”	#4@6”	#4@6”
13’-3”	#5@6”	#5@6”	#4@6”	#4@6”
13’-6”	#5@6”	#5@6”	#4@6”	#4@6”
13’-9”	#5@5.5”	#5@5.5”	#4@5.5”	#4@5.5”
14’-0”	#5@5.5”	#5@5.5”	#4@5.5”	#4@5.5”
14’-3”	#5@5.5”	#5@5.5”	#4@5.5”	#4@5.5”
14’-6”	#5@5.5”	#5@5”	#4@6”	#4@5”
14’-9”	#5@5.5”	#5@5”	#4@6”	#4@5.5”
15’-0”	#5@5”	#6@7”	#4@5.5”	#5@7”

2.2—LADOTD DECK DESIGN TABLES, GIRDER TOP FLANGE < 48 INCHES

The tables in this section are developed for concrete cast-in-place deck supported by concrete or steel I-girders with flange width < 48 inches.

These tables may be used in lieu of detailed analysis. Refer to Section 2.1 for assumptions and limitations used. In addition, the following assumptions were used as exceptions to those cases listed in Section 2.1 in order to develop these tables and must be considered when using the listed values.

- Maximum live load moment from *LRFD Appendix A4 Table A4-1* is used. Design section for the negative moment is determined in accordance with *LRFD Section 4.6.2.1*.6, assuming a 12 inch top flange width for the girder.
- Effective span length "S" for the distribution reinforcement calculation is in accordance with *LRFD Section 9.7.2.3*, assuming a 12’’ top flange and 5/8’’ web for the girder.

2.2.1─LADOTD Deck Design Table, Overall Deck Thickness = 7.0 in. (for movable bridge span only)

Girder Spacing (ft)	Transverse Reinforcement		Longitudinal Reinforcement	
	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)
5’-0”	#4@5.5”	#4@7”	#4@7”	#4@7”
5’-3”	#4@5.5”	#4@7”	#4@7”	#4@7”
5’-6”	#4@5”	#4@6.5”	#4@7”	#4@7”
5’-9”	#4@5”	#4@6”	#4@7”	#4@7”
6’-0”	#4@5”	#4@5.5”	#4@7”	#4@7”
6’-3”	#4@5”	#4@5.5”	#4@7”	#4@7”
6’-6”	#4@5”	#4@5”	#4@7”	#4@7”
6’-9”	#5@7”	#4@5”	#4@6.5”	#4@7”
7’-0”	#5@7”	#5@7”	#4@6.5”	#4@6.5”
7’-3”	#5@7”	#5@6.5”	#4@6.5”	#4@6”
7’-6”	#5@6.5”	#5@6.5”	#4@6”	#4@6”
7’-9”	#5@6.5”	#5@6.5”	#4@6”	#4@6”
8’-0”	#5@6”	#5@6”	#4@5.5”	#4@5.5”
8’-3”	#5@6”	#5@6”	#4@5.5”	#4@5.5”
8’-6”	#5@6”	#5@6”	#4@5.5”	#4@5.5”
8’-9”	#5@5.5”	#5@5.5”	#4@5”	#4@5”
9’-0”	#5@5.5”	#5@5.5”	#4@5”	#4@5”
9’-3”	#5@5.5”	#5@5.5”	#4@5”	#4@5”
9’-6”	#5@5”	#5@5”	#5@7”	#5@7”
9’-9”	#5@5”	#5@5”	#5@7”	#5@7”
10’-0”	#5@5”	#6@6.5”	#5@7”	#5@6.5”
10’-3”	#6@6.5”	#6@6”	#5@6.5”	#5@6”
10’-6”	#6@6.5”	#6@6”	#5@6.5”	#5@6”
10’-9”	#6@6.5”	#6@5.5”	#5@6.5”	#5@5.5”

2.2.2─LADOTD Deck Design Table, Overall Deck Thickness = 7.5 in. (for movable bridge span only)

Girder Spacing (ft)	Transverse Reinforcement		Longitudinal Reinforcement	
	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)
5’-0”	#4@6”	#4@7”	#4@7”	#4@7”
5’-3”	#4@6”	#4@7”	#4@7”	#4@7”
5’-6”	#4@6”	#4@7”	#4@7”	#4@7”
5’-9”	#4@5.5”	#4@7”	#4@7”	#4@7”
6’-0”	#4@5.5”	#4@6.5”	#4@7”	#4@7”
6’-3”	#4@5.5”	#4@6”	#4@7”	#4@7”
6’-6”	#4@5.5”	#4@5.5”	#4@7”	#4@7”
6’-9”	#4@5”	#4@5.5”	#4@7”	#4@7”
7’-0”	#4@5”	#4@5”	#4@7”	#4@7”
7’-3”	#4@5”	#4@5”	#4@7”	#4@7”
7’-6”	#4@5”	#5@7”	#4@7”	#4@6.5”
7’-9”	#5@7”	#5@7”	#4@6.5”	#4@6.5”
8’-0”	#5@7”	#5@7”	#4@6.5”	#4@6.5”
8’-3”	#5@7”	#5@6.5”	#4@6.5”	#4@6”
8’-6”	#5@6.5”	#5@6.5”	#4@6”	#4@6”
8’-9”	#5@6.5”	#5@6.5”	#4@6”	#4@6”
9’-0”	#5@6”	#5@6.5”	#4@5.5”	#4@6”
9’-3”	#5@6”	#5@6”	#4@5.5”	#4@5.5”
9’-6”	#5@6”	#5@6”	#4@5.5”	#4@5.5”
9’-9”	#5@5.5”	#5@5.5”	#4@5”	#4@5”
10’-0”	#5@5.5”	#5@5.5”	#4@5”	#4@5”
10’-3”	#5@5.5”	#5@5”	#4@5”	#5@7”
10’-6”	#5@5”	#6@6.5”	#5@7”	#5@6.5”
10’-9”	#5@5”	#6@6.5”	#5@7”	#5@6.5”
11’-0”	#5@5”	#6@6”	#5@7”	#5@6”
11’-3”	#5@5”	#6@6”	#5@7”	#5@6”
11’-6”	#6@6.5”	#6@5.5”	#5@6.5”	#5@5.5”
11’-9”	#6@6.5”	#6@5.5”	#5@6.5”	#5@5.5”
12’-0”	#6@6.5”	#6@5”	#5@6.5”	#5@5”
12’-3”	#6@6”	#6@5”	#5@6.5”	#5@5”
12’-6”	#6@6”	#6@5”	#5@6.5”	#5@5”

2.2.3─LADOTD Deck Design Table, Overall Deck Thickness = 8.0 in.

Girder Spacing (ft)	Transverse Reinforcement		Longitudinal Reinforcement	
	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)
6’-0”	#4@6”	#4@6.5”	#4@7”	#4@7”
6’-3”	#4@6”	#4@6”	#4@7”	#4@7”
6’-6”	#4@6”	#4@5.5”	#4@7”	#4@7”
6’-9”	#4@6”	#4@5.5”	#4@7”	#4@7”
7’-0”	#4@5.5”	#4@5”	#4@7”	#4@7”
7’-3”	#4@5.5”	#4@5”	#4@7”	#4@7”
7’-6”	#4@5.5”	#5@7”	#4@7”	#4@6.5”
7’-9”	#4@5”	#5@7”	#4@7”	#4@6.5”
8’-0”	#4@5”	#5@7”	#4@7”	#4@6.5”
8’-3”	#4@5”	#5@6.5”	#4@7”	#4@6”
8’-6”	#5@7”	#5@6.5”	#4@6.5”	#4@6”
8’-9”	#5@7”	#5@6.5”	#4@6.5”	#4@6”
9’-0”	#5@7”	#5@6.5”	#4@6.5”	#4@6”
9’-3”	#5@6.5”	#5@6”	#4@6”	#4@5.5”
9’-6”	#5@6.5”	#5@6”	#4@6”	#4@5.5”
9’-9”	#5@6.5”	#5@5.5”	#4@6”	#4@5”
10’-0”	#5@6”	#5@5”	#4@5.5”	#5@7”
10’-3”	#5@6”	#5@5”	#4@5.5”	#5@7”
10’-6”	#5@6”	#6@6.5”	#4@5.5”	#5@6.5”
10’-9”	#5@5.5”	#6@6.5”	#4@5”	#5@6.5”
11’-0”	#5@5.5”	#6@6”	#4@5”	#5@6”
11’-3”	#5@5.5”	#6@6”	#4@5”	#5@6”
11’-6”	#5@5.5”	#6@5.5”	#4@5”	#5@5.5”
11’-9”	#5@5”	#6@5.5”	#5@7”	#5@5.5”
12’-0”	#5@5”	#6@5”	#5@7”	#5@5.5”
12’-3”	#5@5”	#6@5”	#5@7”	#5@5.5”

2.2.4─LADOTD Deck Design Table, Overall Deck Thickness = 8.5 in.

Girder Spacing (ft)	Transverse Reinforcement		Longitudinal Reinforcement	
	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)
6’-0”	#4@7”	#4@7”	#4@7”	#4@7”
6’-3”	#4@6.5”	#4@6.5”	#4@7”	#4@7”
6’-6”	#4@6.5”	#4@6.5”	#4@7”	#4@7”
6’-9”	#4@6.5”	#4@6”	#4@7”	#4@7”
7’-0”	#4@6”	#4@5.5”	#4@7”	#4@7”
7’-3”	#4@6”	#4@5.5”	#4@7”	#4@7”
7’-6”	#4@6”	#4@5”	#4@7”	#4@7”
7’-9”	#4@5.5”	#4@5”	#4@7”	#4@7”
8’-0”	#4@5.5”	#4@5”	#4@7”	#4@7”
8’-3”	#4@5.5”	#4@5”	#4@7”	#4@7”
8’-6”	#4@5”	#5@7”	#4@7”	#4@6.5”
8’-9”	#4@5”	#5@7”	#4@7”	#4@6.5”
9’-0”	#4@5”	#5@7”	#4@7”	#4@6.5”
9’-3”	#5@7”	#5@7”	#4@6.5”	#4@6.5”
9’-6”	#5@7”	#5@6.5”	#4@6.5”	#4@6”
9’-9”	#5@7”	#5@6”	#4@6.5”	#4@5.5”
10’-0”	#5@7”	#5@6”	#4@6.5”	#4@5.5”
10’-3”	#5@6.5”	#5@5.5”	#4@6”	#4@5”
10’-6”	#5@6.5”	#5@5.5”	#4@6”	#4@5”
10’-9”	#5@6.5”	#5@5”	#4@6”	#5@7”
11’-0”	#5@6”	#5@5”	#4@5.5”	#5@7”
11’-3”	#5@6”	#6@6.5”	#4@5.5”	#5@6.5”
11’-6”	#5@6”	#6@6.5”	#4@5.5”	#5@6.5”
11’-9”	#5@5.5”	#6@6”	#4@5.5”	#5@6”
12’-0”	#5@5.5”	#6@6”	#4@5”	#5@6”
12’-3”	#5@5.5”	#6@5.5”	#4@5”	#5@6”
12’-6”	#5@5.5”	#6@5.5”	#4@5”	#5@6”
12’-9”	#5@5”	#6@5.5”	#4@5”	#5@5.5”
13’-0”	#5@5”	#6@5”	#4@5”	#5@5.5”
13’-3”	#5@5”	#6@5”	#4@5”	#5@5.5”

2.2.5─LADOTD Deck Design Table, Overall Deck Thickness = 9.0 in.

Girder Spacing (ft)	Transverse Reinforcement		Longitudinal Reinforcement	
	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)
6’-0”	#4@7”	#4@7”	#4@7”	#4@7”
6’-3”	#4@7”	#4@7”	#4@7”	#4@7”
6’-6”	#4@7”	#4@7”	#4@7”	#4@7”
6’-9”	#4@7”	#4@6.5”	#4@7”	#4@7”
7’-0”	#4@6.5”	#4@6”	#4@7”	#4@7”
7’-3”	#4@6.5”	#4@6”	#4@7”	#4@7”
7’-6”	#4@6.5”	#4@5.5”	#4@7”	#4@7”
7’-9”	#4@6”	#4@5.5”	#4@7”	#4@7”
8’-0”	#4@6”	#4@5.5”	#4@7”	#4@7”
8’-3”	#4@6”	#4@5.5”	#4@7”	#4@7”
8’-6”	#4@5.5”	#4@5”	#4@7”	#4@7”
8’-9”	#4@5.5”	#4@5”	#4@7”	#4@7”
9’-0”	#4@5.5”	#4@5”	#4@7”	#4@7”
9’-3”	#4@5”	#4@5”	#4@7”	#4@7”
9’-6”	#4@5”	#5@7”	#4@7”	#4@6.5”
9’-9”	#4@5”	#5@7”	#4@7”	#4@6.5”
10’-0”	#5@7”	#5@6.5”	#4@6.5”	#4@6”
10’-3”	#5@7”	#5@6”	#4@6.5”	#4@5.5”
10’-6”	#5@7”	#5@6”	#4@6.5”	#4@5.5”
10’-9”	#5@7”	#5@5.5”	#4@6.5”	#4@5”
11’-0”	#5@6.5”	#5@5.5”	#4@6”	#4@5”
11’-3”	#5@6.5”	#5@5”	#4@6”	#5@7”
11’-6”	#5@6.5”	#5@5”	#4@6”	#5@7”
11’-9”	#5@6”	#6@6.5”	#4@5.5”	#5@6.5”
12’-0”	#5@6”	#6@6.5”	#4@5.5”	#5@6.5”
12’-3”	#5@6”	#6@6.5”	#4@6”	#5@7”
12’-6”	#5@6”	#6@6”	#4@5.5”	#5@6.5”
12’-9”	#5@5.5”	#6@6”	#4@5.5”	#5@6.5”
13’-0”	#5@5.5”	#6@5.5”	#4@5.5”	#5@6”
13’-3”	#5@5.5”	#6@5.5”	#4@5.5”	#5@6”
13’-6”	#5@5.5”	#6@5.5”	#4@5.5”	#5@6”
13’-9”	#5@5.5”	#6@5”	#4@5.5”	#5@5.5”
14’-0”	#5@5”	#6@5”	#4@5”	#5@5.5”
14’-3”	#5@5”	#6@5”	#4@5.5”	#5@5.5”

2.2.6─LADOTD Deck Design Table, Overall Deck Thickness = 9.5 in.

Girder Spacing (ft)	Transverse Reinforcement		Longitudinal Reinforcement	
	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)	Bottom (Bar No. @ Spacing)	Top (Bar No. @ Spacing)
6’-0”	#4@7”	#4@7”	#4@7”	#4@7”
6’-3”	#4@7”	#4@7”	#4@7”	#4@7”
6’-6”	#4@7”	#4@7”	#4@7”	#4@7”
6’-9”	#4@7”	#4@7”	#4@7”	#4@7”
7’-0”	#4@7”	#4@6.5”	#4@7”	#4@7”
7’-3”	#4@7”	#4@6.5”	#4@7”	#4@7”
7’-6”	#4@7”	#4@6”	#4@7”	#4@7”
7’-9”	#4@6.5”	#4@6”	#4@7”	#4@7”
8’-0”	#4@6.5”	#4@6”	#4@7”	#4@7”
8’-3”	#4@6.5”	#4@5.5”	#4@7”	#4@7”
8’-6”	#4@6”	#4@5.5”	#4@7”	#4@7”
8’-9”	#4@6”	#4@5.5”	#4@7”	#4@7”
9’-0”	#4@5.5”	#4@5.5”	#4@7”	#4@7”
9’-3”	#4@5.5”	#4@5.5”	#4@7”	#4@7”
9’-6”	#4@5.5”	#4@5”	#4@7”	#4@7”
9’-9”	#4@5.5”	#5@7”	#4@7”	#4@6.5”
10’-0”	#4@5”	#5@7”	#4@7”	#4@6.5”
10’-3”	#4@5”	#5@6.5”	#4@7”	#4@6”
10’-6”	#4@5”	#5@6.5”	#4@7”	#4@6”
10’-9”	#5@7”	#5@6”	#4@6.5”	#4@5.5”
11’-0”	#5@7”	#5@6”	#4@6.5”	#4@5.5”
11’-3”	#5@7”	#5@5.5”	#4@6.5”	#4@5”
11’-6”	#5@7”	#5@5.5”	#4@6.5”	#4@5”
11’-9”	#5@6.5”	#5@5”	#4@6”	#5@7”
12’-0”	#5@6.5”	#5@5”	#4@6”	#5@7”
12’-3”	#5@6.5”	#5@5”	#4@6”	#5@7”
12’-6”	#5@6.5”	#6@6.5”	#4@6.5”	#5@7”
12’-9”	#5@6”	#6@6.5”	#4@6”	#5@7”
13’-0”	#5@6”	#6@6”	#4@6”	#5@6.5”
13’-3”	#5@6”	#6@6”	#4@6”	#5@6.5”
13’-6”	#5@6”	#6@6”	#4@6”	#5@6.5”
13’-9”	#5@5.5”	#6@5.5”	#4@5.5”	#5@6.5”
14’-0”	#5@5.5”	#6@5.5”	#4@5.5”	#5@6.5”
14’-3”	#5@5.5”	#6@5.5”	#4@5.5”	#5@6.5”
14’-6”	#5@5.5”	#6@5.5”	#4@5.5”	#5@6.5”
14’-9”	#5@5.5”	#6@5”	#4@6”	#5@6”
15’-0”	#5@5”	#6@5”	#4@5.5”	#5@6”

2.3—DECK DESIGN EXAMPLE (GIRDER TOP FLANGE = 48", OVERALL DECK THICKNESS = 8.5", GIRDER SPACING = 10'-6")

This example is to demonstrate the development of deck design tables in the previous sections. The design is in accordance with the *AASHTO LRFD Bridge Design Specifications (7th Edition), BDEM,* and assumptions and limitations listed in 2.1 and 2.2.

1. Design Information:

f'_c =	4,000	psi	*Concrete compressive strength, β_1 = 0.85*
f_y =	60,000	psi	*Steel yield strength*
w_c=	0.15	kcf	*Weight of concrete*
S =	10.50	ft	*Beam spacing*
t_{slab}=	8.50	in	*Total thickness of deck*
$t_{Structural}$=	8.00	in	*Structural thickness of deck*
Top clear cover=	2.0	in	*Does not include the 0.5" sacrificial surface*
Bottom clear cover=	1.5	in	
Min. bridge width =	36.50	ft	*3×girder spacing + min. overhangs*
Barrier unit weight, w_b=	0.029	klf	*2×0.520 k/ft /Min. bridge width*
Slab unit weight, $w_s=w_c t_{slab}$=	0.106	klf	*Per unit width*
Wearing surface unit weight, w_{ws}=	0.025	klf	*Per unit width*

2. Design Moment

	(Positive)		(Negative)		
$M_{DC}=c(w_s+w_b)S^2$	1.19	k-ft/ft	-1.49	k-ft/ft	*c = 0.08 for positive moment and 1.0 for negative moment*
$M_{DW}=c(w_{ws})S^2$	0.22	k-ft/ft	-0.28	k-ft/ft	
M_{LL}=	7.17	k-ft/ft	-4.75	k-ft/ft	*LRFD Appendix A4 Table A4-1. Distance from center of girder to design section for negative moment is 15 in*
M_u=	14.36	k-ft/ft	-10.58	k-ft/ft	*$1.25M_{DC}+1.5M_{DW}+1.75M_{LL}$*

3. Select Deck Reinforcement

	Bottom	Top	
Transverse reinforcement	#5@6.5in	#4@5in	
$A_{s,\ provided}$ (transverse)=	0.572 in^2/ft	0.480 in^2/ft	
Longitudinal reinforcement	#4@6in	#4@7in	*Both the top and bottom longitudinal reinforcements are taken as a percentage of the primary reinforcement. See D9.7.3.2 for details.*
$A_{s,\ provided}$ (longitudinal)=	0.400 in^2/ft	0.343 in^2/ft	

4. Check Transverse Reinforcement

	Positive Moment (Bottom Reinf.)		Negative Moment (Top Reinf.)		
$A_{s\_provided}$=	0.572	in^2/ft	0.480	in^2/ft	*Area of provided reinforcement per ft*
b=	12.00	in	12.00	in	*Analysis is based on a one-foot strip*
a=	0.84	in	0.71	in	$a=A_sf_y/(0.85f'_cb)$
d=	6.19	in	5.75	in	*Deck structural thickness minus cover to centerline of rebar*
ε_s=	0.016		0.018		$\varepsilon_s=0.003(d-a/0.85)/(a/0.85)$
ϕ =	0.9		0.9		$\phi=0.9$ *if* $\varepsilon_s>0.005$
M_n=	16.50	k-ft/ft	12.95	k-ft/ft	$M_n=A_sf_y(d-a/2)$
$\phi\ M_n$=	14.85	k-ft/ft	11.66	k-ft/ft	*Check for positive moment:* $\phi M_n=14.85$ *k-ft* $>M_u=14.36$ *k-ft, OK* *Check for negative moment:* $\phi M_n=11.66$ *k-ft* $>M_u=10.58$ *k-ft, OK*

5. Check Longitudinal (Distribution) Reinforcement (*LRFD Section 9.7.3.2* and *D9.7.3.2)*

$S_{effective}$=	9.92	ft	*Girder spacing - Girder web thickness 7"*
220/sqrt.($S_{effective}$)=	69.86	%	
Percentage=	67.00	%	*Lesser of* $220/\sqrt{S}$ *or 67%*
$A_{s,dist.}$ (bottom)=	0.38	in^2/ft	*Percentage× transverse bottom reinforcement* $<A_{s,\ provided}=0.400\ in^2/ft$ *at bottom, OK*
$A_{s,dist.}$ (top)=	0.32	in^2/ft	*Percentage× transverse top reinforcement* $<A_{s,\ provided}=0.343\ in^2/ft$ *at top, OK*

6. Check Crack Control (*LRFD Section 5.7.3.4*)

	Positive Moment (Bottom Reinf.)		Negative Moment (Top Reinf.)		
b=	12.00	in	12.00	in	*Analysis is based on a one-foot strip*
ρ=	0.008		0.007		*Reinforcement ratio=$A_s/(bd)$*
n=	8		8		E_s/E_c
k=	0.29		0.28		$k=-\rho n+\sqrt{(\rho n)^2+2\rho n}$
j=	0.90		0.91		*j=1-k/3*
$M_{service}$=	8.58	k-ft/ft	-6.51	k-ft/ft	$1.0M_{DC}+1.0M_{DW}+1.0M_{LL}$
f_s=	32.24	ksi	31.25	ksi	$f_s=M_s/A_s(jd)$
β_s=	1.42		1.56		*LRFD Eq. 5.7.3.4-1*
γ_e=	1.00		1.00		*LRFD Eq. 5.7.3.4-1*
s_{max}=	11.68	in	9.87	in	*Check for positive moment:* s_{max} *=11.68 in.>6.5 in., OK* *Check for negative moment:* s_{max} *=9.87 in.>5.0 in., OK*

7. Check for Temperature and Shrinkage (*LRFD Section 5.10.8*)

$A_s\geq$	0.052	in^2/ft	*LRFD Eq. 5.10.8-1*
$A_s\geq$	0.11	in^2/ft	*LRFD Eq. 5.10.8-2*
$A_s\leq$	0.60	in^2/ft	*LRFD Eq. 5.10.8-2*
Controlling A_s=	0.11	in^2/ft	*Less than provided reinforcement at each direction and each face, OK*