SECTION 200
DESIGN LOADS

201 LOAD TYPES

201.01 GENERAL

Loads shall be as specified in Section 3 of AASHTO except as clarified or modified in this manual.

201.02 DEAD LOADS (AASHTO 3.3.1)

Utility loads shall be included as applicable.

201.03 FUTURE WEARING SURFACE (AASHTO 3.3.3)

All new structures shall be designed to carry an additional dead load of 120 kg/m^2 from curb to curb of roadway to allow for a future wearing surface. This load is in addition to any wearing surface which may be applied at the time of construction. The weight of the future wearing surface shall be excluded from the dead load for deflection calculations.

201.04 WEARING SURFACE (AASHTO 3.3.5)

The top 15 millimeters of the deck shall be considered as a wearing surface. The weight of the wearing surface shall be included in the dead load but the 15 millimeter shall not be included in the depth of the structural section for all strength calculations including the deck, superstructure and the pier cap, where appropriate.

201.05 HIGHWAY LOADS (AASHTO 3.7.1.1)

P Loads (permit design live loads) are special vehicular loads that will be applied only to specific structures, such as interchange ramps, and at the direction of the Abu Dhabi Roads Section.

201.06 STRUCTURE LOADINGS

1. Highway Bridge Live Load: AASHTO 20-44 increased by 25 percent.
2. Wind Velocity: 160 kilometers per hour.
3. Humidity Range: 25 percent to 100 percent.
4. Earth Pressure: For specific project recommendations, refer to Soils Report
5. Future Utilities: 75 kg/m² of Bridge Deck.
6. Earth Weight: 1920 kg/m^3
7. Earthquake Loading: Only to be considered if directed by the Road Section Project Manager.

201.07 FRICTION FORCES (AASHTO 3.9.2)

Friction forces due to elastomeric bearing pads or TFE surfaces shall be based on the Manufacturer's data for the bearing used.

201.08 THERMAL FORCES (AASHTO 3.16)

1. Temperature Range: 70ºC.
2. Temperature Fall: 30ºC to 0ºC = 30ºC.
3. Temperature Rise: 30ºC to 70ºC = 40ºC.
4. The temperature gradient between the top slab and bottom slab of concrete box girder bridges is 20ºC.

201.09 STREAM FORCES (AASHTO 3.18.1)

A Drainage Report shall be produced by Bridge Drainage Section or a consultant, when appropriate, for all stream and/or channel crossings. The designer should review the Drainage Report for a full understanding of waterway considerations. The report should contain as a minimum, the following information for both the critical flow and superflood conditions:

- High water elevation
- Mean Velocity
- Scour Elevations (General and Local)
- Angle of attack
- Required bank protection
- Special drainage considerations
- Horizontal and Vertical Clearances