|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Design Element | | | | **Manual**  **Section** | **Rural** | **Urban** |
| Design  **Controls** | Design Forecast Year | | | 9.6.2 | 20 Years | 20 Years |
| \*Design Speed | Minimum | | 9.5.2 | 70 mph **(1)** | 50 mph |
| Access Control | | | 9.8 | Full Control | Full Control |
| Level of Service | Desirable | | 9.6.4 | B | C |
| Minimum | | C | D |
| Cross Section  **Elements** | \*Travel Lane Width | | | 13.2.3 | 12′ | 12′ |
| \*Shoulder Width | Right | Total Width | 13.2.4 | 12′ | 12′ |
| Paved | 10′ **(2)** | 10′ **(2)** |
| Left | Total Width | 10′ | 10′ |
| Paved | 4′ **(3)** | 4′ **(3)** |
| Auxiliary Lanes | Lane Width | | 13.2.5 | 12′ | 12′ |
| Shoulder  Width | Total Width | 12′ | 12′ |
| Paved | 10′ | 10′ |
| Cross Slope | \*Travel Lane | | 13.2.3.3 | 2.08% **(4)** | 2.08% **(4)** |
| Auxiliary Lane | | 13.2.5 | 2.08% **(5)** | 2.08% **(5)** |
| \*Shoulder | Paved | 13.2.4.3 | 4.17% | 4.17% |
| Unpaved | 8.33% | 8.33% |
| Median Width | Depressed | | 13.4.2.3 | Min.: 48′ | 48′ **(6)** |
| Flush (CMB) | | 13.4.2.1 | Min.: 22.5′ | Min.: 22.5′ **(7)** |
| **Roadway**  **Slopes** | Side Slopes | Cut Section | Foreslope | 13.3.1 | 6H:1V | 6H:1V |
| Ditch Type TTTypWidth | V-Ditch | V-Ditch |
| Back Slope | 6H:1V to 2H:1V | 6H:1V to 2H:1V |
| Rock Cut | 0.25H:1V **(8)** | 0.25H:1V **(8)** |
| Fill Section | | 0′ – 5′: 6H:1V; 5′ – 10′: 4H:1V; > 10′: 2H:1V | |
| Median Slopes | | | 13.4.2 | 6H:1V | 6H:1V |
| Clear Zone | | | 14.3 | **(9)** | **(9)** |
| **Bridges** | New and Reconstructed Bridges | \*Structural Capacity | |  | HL-93 | HL-93 |
| \*Clear Roadway Width | | 13.5.1.1 | **(10)** | **(10)** |
| Existing Bridges to Remain in Place | \*Structural Capacity | |  | HS-20 | HS-20 |
| \*Clear Roadway Width | | 13.5.1.1 | **(11)** | **(11)** |
| \*Vertical Clearance (Freeway Under) **(12a)** | New/Replaced Overpassing  Bridges **(12b)** | | 12.6 | 17′-0″ | 17′-0″ |
| Existing Overpassing Bridges | | 16′-0″ | 16′-0″ |
| Pedestrian Bridges | | 18′-0″ | 18′-0″ |
| Overhead Signs | | 17′-6″ | 17′-6″ |
| Clearance (Freeway Over) | \*Railroads | | 12.6 | 23′-0″ | 23′-0″ |
| Underpass Width | | 13.5.2 | Traveled Way plus Clear Zone | Traveled Way plus Clear Zone |

\*Controlling design criteria (see Section 9.2).

Design Criteria for Freeways (New Construction/Reconstruction)

Figure 19.3A (SCHDM 2003)