

## Appendix A

**Table A1** Main vehicle parameters

| Parameter                                                                                 | Value |
|-------------------------------------------------------------------------------------------|-------|
| Car body mass, $M_c/t$                                                                    | 41.8  |
| Mass moment of inertia of car body roll, $I_{cx}/t$                                       | 155   |
| Mass moment of inertia of car body pitch, $I_{cy}/(t \cdot m^2)$                          | 1959  |
| Mass moment of inertia of car body yaw, $I_{cz}/(t \cdot m^2)$                            | 1875  |
| Mass of bogie, $m_b/t$                                                                    | 7.36  |
| Mass moment of inertia of bogie roll, $I_{bx}/(t \cdot m^2)$                              | 5.07  |
| Mass moment of inertia of bogie pitch, $I_{by}/(t \cdot m^2)$                             | 1.47  |
| Mass moment of inertia of bogie yaw, $I_{bz}/(t \cdot m^2)$                               | 3.43  |
| Mass of wheelset, $m_w/t$                                                                 | 1.78  |
| Mass moment of inertia of wheelset roll, $I_{wx}/(t \cdot m^2)$                           | 0.92  |
| Mass moment of inertia of wheelset pitch, $I_{wy}/(t \cdot m^2)$                          | 0.30  |
| Mass moment of inertia of wheelset yaw, $I_{wz}/(t \cdot m^2)$                            | 0.92  |
| Longitudinal stiffness of secondary suspension system, $K_{sx}/(kN \cdot m^{-1})$         | 194   |
| Lateral stiffness of secondary suspension system, $K_{sy}/(kN \cdot m^{-1})$              | 194   |
| Vertical stiffness of secondary suspension system, $K_{sz}/(kN \cdot m^{-1})$             | 200   |
| Longitudinal damping of secondary suspension system, $C_{sx}/(kN \cdot (s \cdot m^{-1}))$ | 50    |
| Lateral damping of secondary suspension system, $C_{sy}/(kN \cdot (s \cdot m^{-1}))$      | 50    |
| Vertical damping of secondary suspension system, $C_{sz}/(kN \cdot (s \cdot m^{-1}))$     | 80    |
| Longitudinal stiffness of primary suspension system, $K_{px}/(kN \cdot m^{-1})$           | 332   |
| Lateral stiffness of primary suspension system, $K_{py}/(kN \cdot m^{-1})$                | 332   |
| Vertical stiffness of primary suspension system, $K_{pz}/(kN \cdot m^{-1})$               | 900   |
| Longitudinal damping of secondary suspension system, $C_{px}/(kN \cdot (s \cdot m^{-1}))$ | 2     |
| Lateral damping of primary suspension system, $C_{py}/(kN \cdot (s \cdot m^{-1}))$        | 2     |
| Vertical damping of primary suspension system, $C_{pz}/(kN \cdot (s \cdot m^{-1}))$       | 5     |

**Table A2** Main parameters of flexible track structure

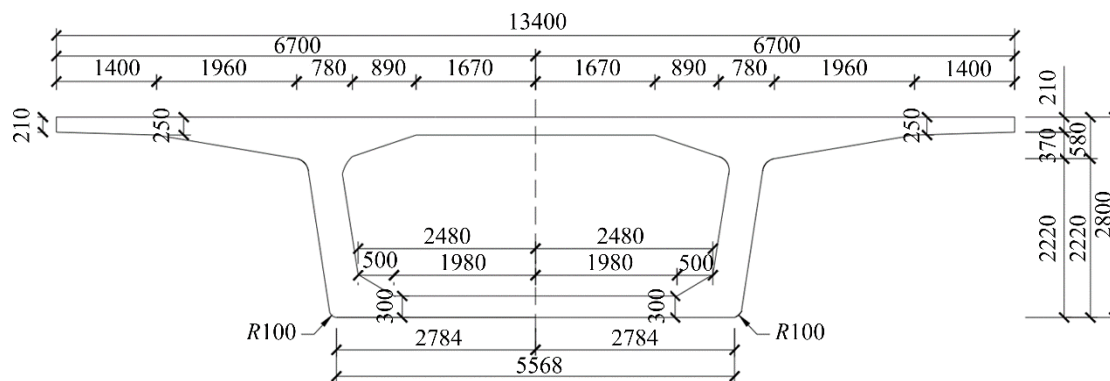
| Component      | Parameter                                                           | Value       |
|----------------|---------------------------------------------------------------------|-------------|
| Rail type CN60 | Elastic modulus/GPa                                                 | 206         |
|                | Density/( $kg \cdot m^{-3}$ )                                       | 60.64       |
|                | Poisson ratio                                                       | 0.3         |
| Fasteners      | Vertical stiffness/( $kN \cdot mm^{-1}$ )                           | 40          |
|                | Vertical damping/( $kN \cdot (s \cdot m^{-1})$ )                    | 9.898       |
|                | Transverse and longitudinal stiffness/( $kN \cdot mm^{-1}$ )        | 8.79        |
|                | Transverse and longitudinal damping/( $kN \cdot (s \cdot m^{-1})$ ) | 9.898       |
| Floating slab  | Length×width×height/( $m \times m \times m$ )                       | 5.3×2.8×0.5 |
|                | Elastic modulus/GPa                                                 | 34.5        |
|                | Density/( $kg \cdot m^{-3}$ )                                       | 2500        |
|                | Poisson ratio                                                       | 0.2         |

To be continued

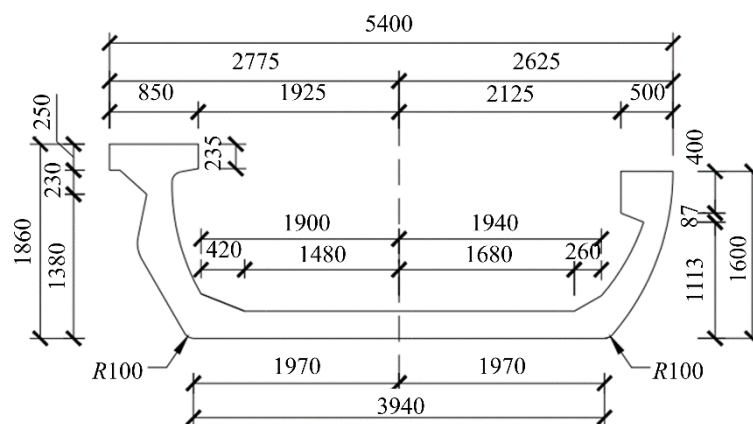
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| Component            | Parameter                                                     | Value               |
|----------------------|---------------------------------------------------------------|---------------------|
| Steel spring         | Vertical stiffness/(N·m <sup>-1</sup> )                       | 6.6×10 <sup>6</sup> |
|                      | Vertical damping/(kN·(s·m <sup>-1</sup> ))                    | 16.7                |
|                      | Transverse and longitudinal stiffness/(N·m <sup>-1</sup> )    | 8×10 <sup>6</sup>   |
|                      | Transverse and longitudinal damping/(kN·(s·m <sup>-1</sup> )) | 10                  |
| Shear hinge          | Shear stiffness/(N·m <sup>-1</sup> )                          | 5×10 <sup>9</sup>   |
| NOPD-PCVI            | Vertical stiffness/(kN·m <sup>-1</sup> )                      | 6.6×10 <sup>6</sup> |
|                      | Vertical damping/(kN·(s·m <sup>-1</sup> ))                    | 16.7                |
|                      | Transverse and longitudinal stiffness/(kN·m <sup>-1</sup> )   | 8×10 <sup>6</sup>   |
|                      | Transverse and longitudinal damping/(kN·(s·m <sup>-1</sup> )) | 10                  |
| U-/box girder bridge | Span length/m                                                 | 32 or 24            |
|                      | Elastic modulus/GPa                                           | 34.5                |
|                      | Density/(kg·m <sup>-3</sup> )                                 | 2,500               |
|                      | Poisson ratio                                                 | 0.2                 |
|                      | Bridge bearing vertical stiffness/(N·m <sup>-1</sup> )        | 1×10 <sup>8</sup>   |
|                      | Bridge bearing vertical damping/(N·(s·m <sup>-1</sup> ))      | 1×10 <sup>6</sup>   |

## Appendix B



**Figure B1** Cross section of box-girder bridge (Unit: mm)



**Figure B2** Cross section of U-girder bridge (Unit: mm)