8.0 CHAPTER 8 - PHOTOS OF TYPICAL CONCRETE GIRDER CRACKS AND DEFECTS

Concrete girders develop cracks for many reasons, e.g. shrinkage, improper curing, tensile bending stresses, corrosion of reinforcing steel, shear stresses, etc. The significance of these cracks and other defects and their effects on the condition and functionality of the girders is dependent on the type of girder, the type of crack or defect, and their location in the girder. For example, narrow to medium width shrinkage cracks are generally not significant. A concrete spall outside the anchorage zone is also not significant. However, a concrete spall inside the anchorage zone may be more serious.

Section 7.15 Concrete Girder Rating Guide of the Level 1 BIM Manual gives details on the significance of various types of cracks and other defects in concrete girders along with guidelines for girder ratings. The following photographs show some typical concrete girder cracks and other defects.

Figure 8-1 Type PG Girder – Spalling on girder leg

Figure 8-2 Type PE Girder – Spalling on leg of curb girder

Figure 8-3 Type HC Girder – Wide crack in anchorage zone

Figure 8-4 Type HC Girder – Deteriorated end diaphragm

Figure 8-5 Type PX Girder – Deck punchout

Figure 8-6 Type PE Girder – Crack along both webs and deck underside

Figure 8-7 Type PE Girder – Shear crack

Figure 8-8 Type PE Girder – Shear crack with corrosion staining

Figure 8-9 Type SM Girder – Corrosion stains from connector pockets

Figure 8-10 Type SM Girder – Typical corrosion spot with no significant effect on rating

Figure 8-11 Type SM Girder – Typical diagonal crack in girder bottom at pier

Figure 8-12 Type SM Girder – Typical vertical crack at girder end

Figure 8-13 Type FC Girder – Typical crack in deck underside/web chamfer at girder end

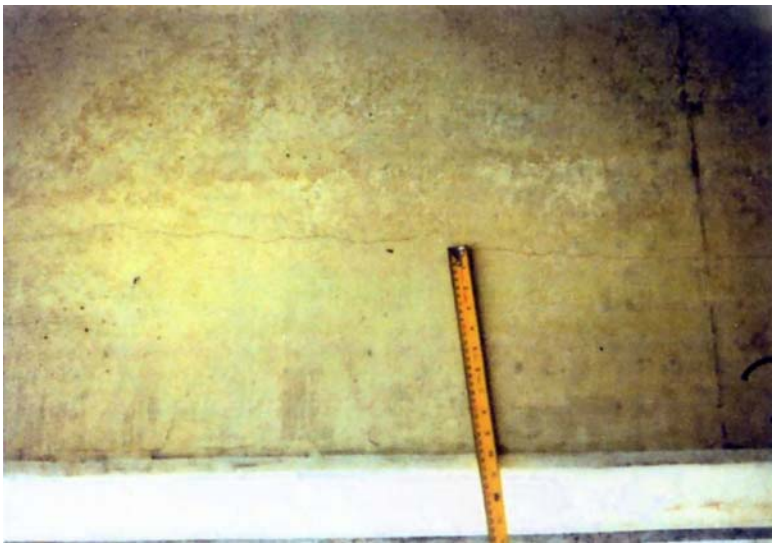

Figure 8-14 Type FM Girder – Typical longitudinal crack on inside web at abutment

Figure 8-15 Type FC Girder – Typical vertical crack with corrosion staining at girder end

Figure 8-16 Type FC Girder – Corrosion spots on underside of leg near bearing with no significant effect on rating

Figure 8-17 Type PM Girder – Wide crack with corrosion staining at girder bottom

Figure 8-18 Type PM Girder – Wide crack and spall with corrosion staining at girder bottom

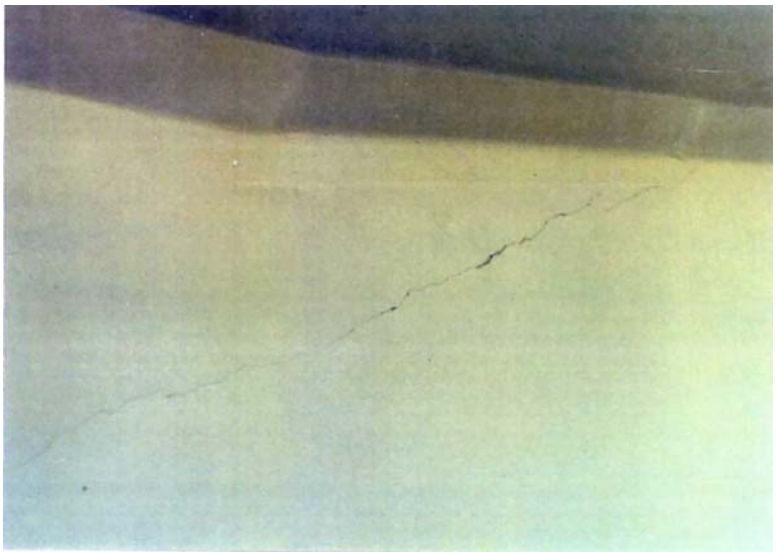

Figure 8-19 Type DBT Girder – Typical crack in girder end block at transition zone