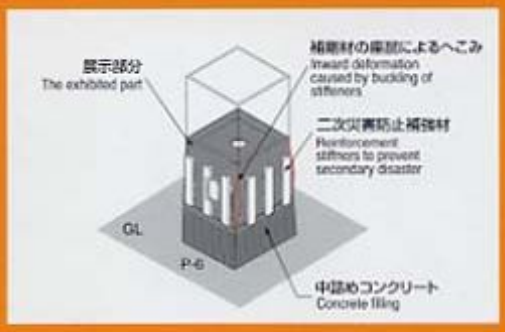
C-5 縦補剛材の座屈

Buckling of stiffeners in steel pier

神下 P-6 の被災状況
Damages on P-6



■損傷内容／大部分の上部工荷重を支える海側橋脚柱において、中詰めコンクリートと直上の横補剛材間に縦補剛材全体に座屈が生じた。海側山側2面がはらみ出し、大阪側神戸側2面がへこんだ状態になった。大阪側に設置したマンホールが弱点になったと考えられる

■位置／3号神戸線 神P-6（西宮市今津水波町）

■構造形式／1層1径間の矩形鋼製ラーメン橋脚2.6m×2.6～3.4m

■竣工時期／昭和44年度

■適用基準／鋼道路橋設計示方書（昭和39年）ほか

■復旧方法／上部工・橋脚梁部を仮受けした後、柱の最下段のブロック切断・撤去し、新しい部材（板厚40mm、材質SM520C）と取り替えた。また、橋脚内部の中詰めコンクリートの設置範囲を梁部下まで高くした

■展示物紹介／撤去した損傷部分（取り付けられている補強材は復旧までの二次災害を防止するためのもの）

■展示物諸元

鋼製橋脚 2.6m×2.6～3.3m
板厚 40mm（SM50B）

■Damage descriptions／ Buckling of the entire stiffeners occurred between the filling concrete portion and the lateral diaphragm just above it in the column of the south pier which was carrying most loads of the superstructure. The column deformed outward in the north and south faces and inward in both the east (Kobe side) and west (Osaka side) faces. A manhole provided in the Osaka side was considered to have served as a weakness in this incident.

■Location／ P-6 on the Kobe Route #3 (Imazumizunami-cho, Nishinomiya City)

■Structural configuration／ Single-story, 1-span steel rigid frame rectangular pier with cross sections of 2.6 m × 2.6 ~ 3.4 m

■Completion／ 1969

■Major standards applied／ Design Specifications for Highway Steel Bridges (1964)

■Restoration／ After underpinning the superstructure and pier beam members, the damaged column was cut at its bottom block and removed out, and subsequently a new member (thickness: 40 mm; material: SM520C) was installed. The level of the concrete filling the pier was raised to the bottom of the beam.

■Descriptions of the exhibits／ Damaged and removed portion (The attached stiffeners were of temporary retrofit against secondary disasters until the complete restoration.)

■Specifications of the exhibits

Steel pier: 2.6 m × 2.6 ~ 3.3 m
Thickness: 40 mm (SM50B)