CHAPTER VI
CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

In this research, investigations on tensile, compressive and cyclic behaviors of threaded mechanical splices are carried out. Different parameters in terms of coupler thicknesses and gap lengths are considered. Finally, the section analyses of RC and precast columns using the mechanical splices are carried out. It can be concluded as follows:

1. The strength of the mechanical splice is based on the coupler thickness while its ductility is evaluated using the coupler gap lengths. In monotonic tension the plain bar is more ductile than the mechanical splice. The ductility of bars is about 5 times the ductility of splices.

2. The splices exhibit higher strength in compression after buckling. The maximum load capacity of the splice with the largest coupler gap length is greater than the plain bar by 11.78%. As the load dropped by 20% from the peak load, the energy dissipation of the splice for different coupler gap lengths is about 2.4-4.9 times the energy dissipation of the plain bar. It is obvious that the buckling behavior of the bar could be improved by using the mechanical splice.

3. The energy dissipation of the mechanical splice with variation of coupler gap lengths in the cyclic test increases as the gap length increases.

4. The ductility as well as the energy dissipation of the precast columns with mechanical splices is greater than those of the RC column. For the column with a volumetric ratio of lateral reinforcement of 0.77%, the curvature ductility of the precast columns with mechanical splices for coupler gap lengths of 30-102 mm, is approximately 2.0-2.5 times the curvature ductility