CHAPTER VI

CONCLUSION

From this study the following results are obtained:

1. The design of SMRF structure
   a. Beam design

      For primary beam 600x800 story 1-6, the longitudinal reinforcement at 0.425m and 7.575m is 9D25 for tension reinforcement and 5D25 for compression reinforcement and 4D25 at 4m for both tension and compression reinforcement. The shear reinforcement is 4P10-100 on the plastic hinge whereas the reinforcement outside plastic hinge is 4P10-120. For secondary beam 400x700 story 1-6, the longitudinal reinforcement at 0.425m is 4D22 for tension reinforcement and 2D22 for compression reinforcement, at 4m is 2D22 for compression reinforcement and 4D22 for tension reinforcement, at 7.575m is 5D22 for tension reinforcement and 3D22 for compression reinforcement. The shear reinforcement of the secondary beam is 3P10-320.

   b. Column design

      The longitudinal reinforcement is 24D25 and the shear reinforcement is 4D13-125 at λ_o and 4D13-150 outside the λ_o.

2. The result of the Nonlinear Static Pushover Analysis
   - The structure is safe for both lateral load pattern I and pattern II

- The target displacement or maximum displacement of the building is 0.08 m.
- The maximum base shear of the building due to EX is 6432.0498 kN at 0.0629 m. The maximum base shear of the building due to EY is 8252.8213 kN at 0.1874 m.

3. The performance is very close for uniform distribution lateral load and equivalent lateral force. The case may vary for irregular building or any other circumstances.

REFERENCES

Abhilash, Biju and Leslie.2009.*Effect of Lateral Load Patterns in Pushover Analysis.*10th National Conference on Technological Trends (NCTT09)

Anwar,Naveed.2010.*Pushover Analysis using ETABS and SAP 2000.*Asian Institute of Technology

ATC 40.1996.*Seismic Evaluation and Retrofit of Concrete Buildings Volume I* .Applied Technology Council. California

Badan Standarisasi Nasional.2002.*Tata Cara Perencanaan Ketahanan Gempa untuk Bangunan Gedung,SNI 03-1726-2002.Yayasan LPMB.Bandung*

Badan Standarisasi Nasional.2002.*Tata Cara Perencanaan Struktur Beton untuk Bangunan Gedung,SNI 03-2847-2002.Yayasan LPMB.Bandung*

FEMA 273.1997.*NEHRP Guidelines for the Seismic Rehabilitation of Buildings.*Washington,D.C.

FEMA 356.2000.*Prestandard and Commentary for the Seismic Rehabilitation of Building.*American Society of Civil Engineers. Virginia.

Imran and Hendrik.2010.*Perencanaan Struktur Gedung Beton Bertulang Tahan Gempa.ITB.Bandung*

Kalkan and Kunnath.2004.*Lateral Load Distribution in Nonlinear Static Procedures for Seismic Design.ASCE*

Sen, Tapan K.2008.*Fundamental of Seismic Loading on Structures*.John Wiley & Sons Ltd.London

Yang and Wang.2000.*A Study on Improvement of Pushover Analysis.12WCEE.*