

BAB VI

KESIMPULAN DAN SARAN

6.1 Kesimpulan

Akibat *reduced beam section* (perencanaan letak sendi plastis) deformasi struktur menjadi lebih besar 35% daripada deformasi struktur yang tidak diberi perencanaan letak sendi plastis.

Perencanaan letak sendi plastis dengan menggunakan *reduced beam section* sangat efektif untuk mendisipasi energi gempa. Hal ini terbukti bahwa *reduced beam section* pada struktur rencana mengalami keruntuhan terlebih dahulu sehingga elemen kolom masih dapat berdiri saat terjadi gempa yang besar. Perencanaan *pushover* berdasarkan ATC-40 (*performance based design*) menghasilkan performa *reduced beam section* yang masih dalam keadaan plastis (*post-elastic*), dengan perpindahan atap struktur (Δ) sebesar 0,239 m dan gaya geser dasar yang diterima struktur sebesar 30.482,2 kN.

6.2 Saran

Perlu dilakukan analisis kembali terhadap perencanaan sendi plastis (*reduced beam section*) berdasarkan peraturan-perturan yang lain seperti FEMA 356 dan FEMA 440.

Masih perlu dilakukan pengembangan perencanaan struktur bangunan seperti dengan penggunaan *bracing* eksentris, sehingga bisa dibandingkan

perilaku *reduced beam section* dengan sendi plastis pada *link beam* (balok sambungan *bracing*).



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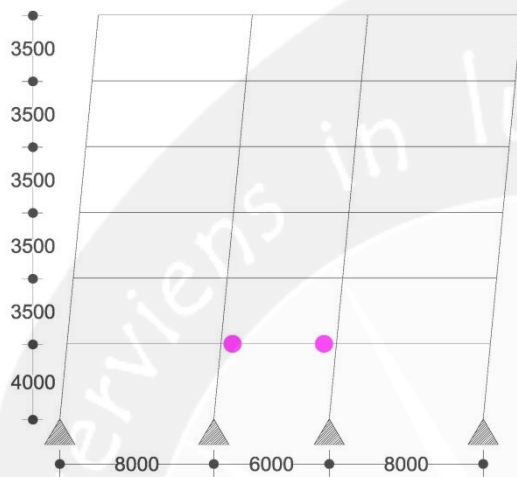
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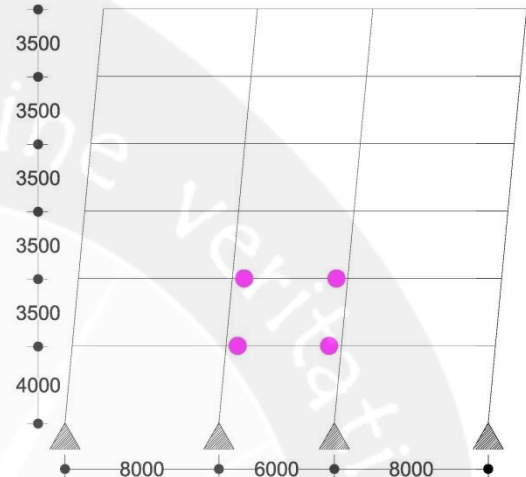
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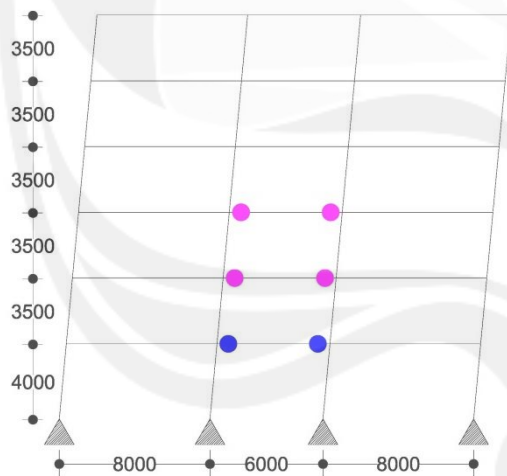
Dibawah ini adalah gambar-gambar mekanisme keruntuhan sendi plastis pada setiap *pushover-step* pada portal E. Dimulai dari step ke-3 karena pada step ke-1 dan step ke-2, belum terjadi mekanisme sendi plastis.



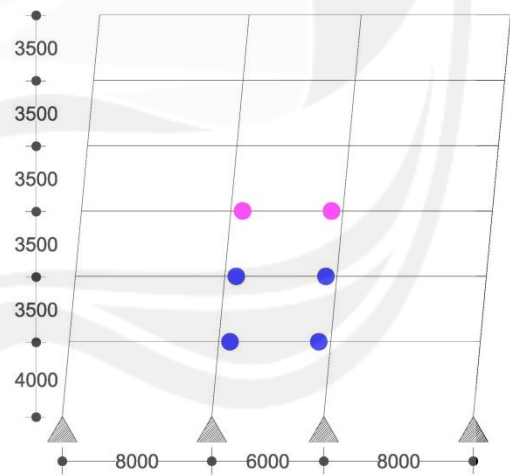
Pushover-step 3. $\Delta = 0,183$ m
 $V = 26.483,94$ kN



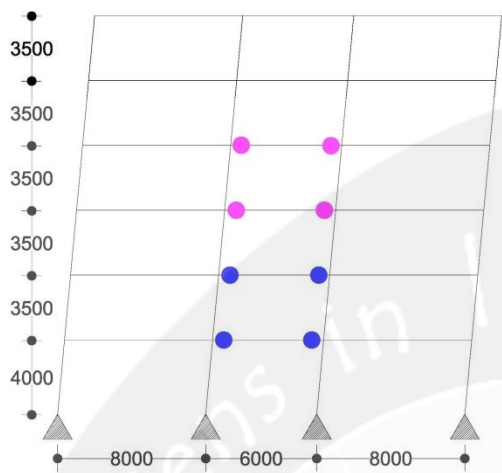
Pushover-step 4. $\Delta = 0,241$ m
 $V = 31.407,7$ kN



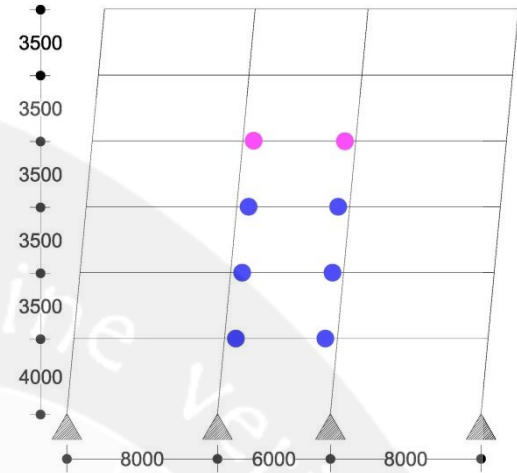
Pushover-step 5. $\Delta = 0,317$ m
 $V = 35.222,85$ kN



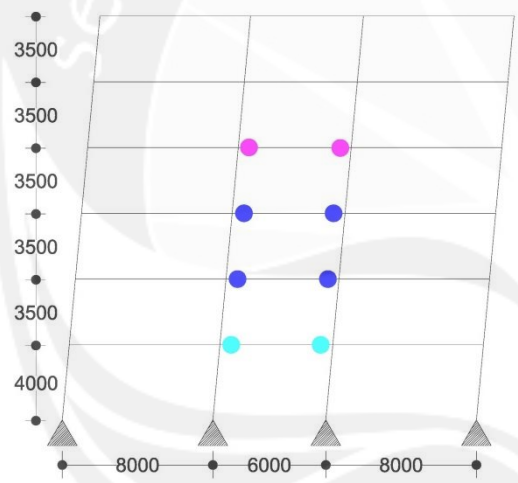
Pushover-step 6. $\Delta = 0,403$ m
 $V = 37.962$ kN



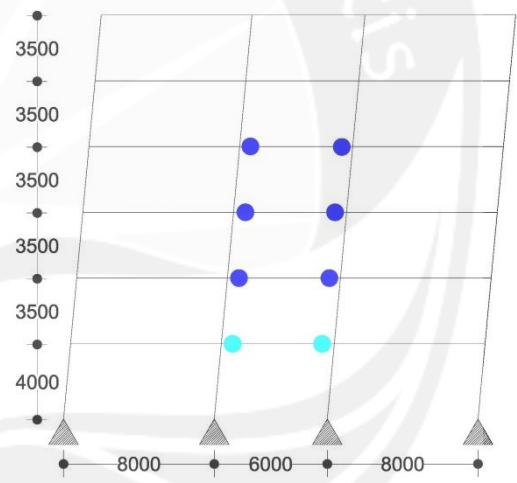
Pushover-step 7. $\Delta = 0,443$ m
 $V = 39.223,71$ kN



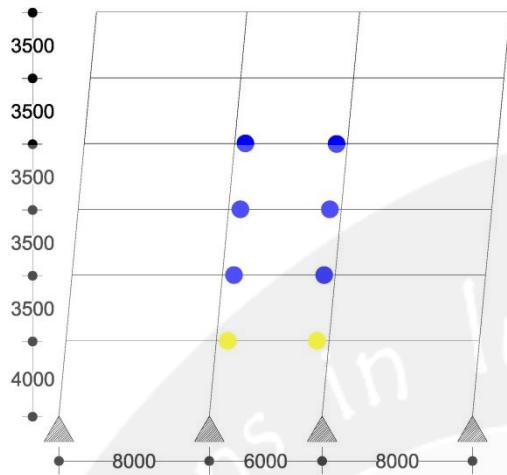
Pushover-step 8. $\Delta = 0,529$ m
 $V = 40.853,7$ kN



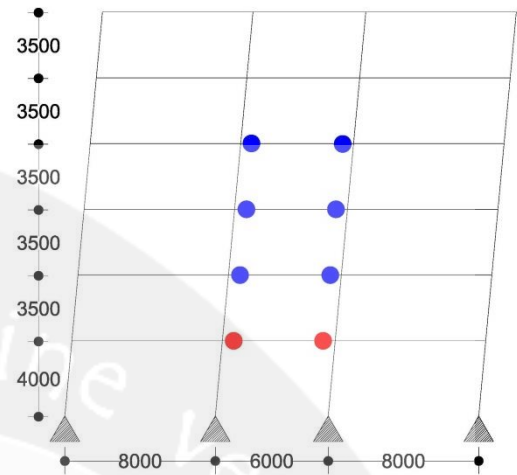
Pushover-step 9. $\Delta = 0,615$ m
 $V = 42.483,69$ kN



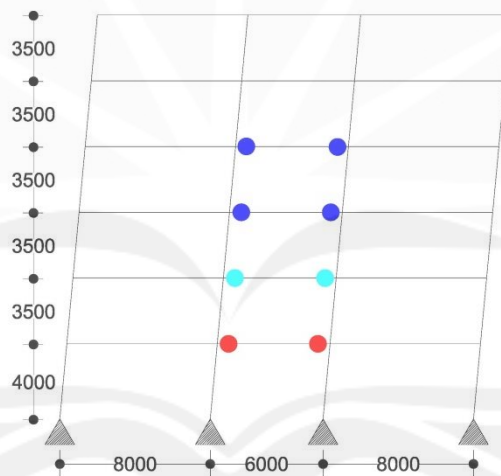
Pushover-step 10. $\Delta = 0,701$ m
 $V = 44.113$ kN



Pushover-step 11. $\Delta = 0,712 \text{ m}$
 $V = 44.317,71 \text{ kN}$



Pushover-step 12. $\Delta = 0,712 \text{ m}$
 $V = 30.033 \text{ kN}$



Pushover-step 13. $\Delta = 0,765 \text{ m}$
 $V = 32.397,03 \text{ kN}$

Tabel Rekapitulasi Mekanisme Sendi Plastis Pada Struktur Akibat Gaya *Pushover*
Arah Y

Langkah	Perpindahan Atap Δ_i (m)	Gaya Geser Dasar V_i (kN)	Mekanisme Sendi Plastis							
			A - B	B - IO	IO - LS	LS - CP	CP - C	C - D	D - E	> E
0	0	0	0	0	0	0	0	0	0	0
1	0,0859	12406,1	0	0	0	0	0	0	0	0
2	0,17196	24812,4	0	0	0	0	0	0	0	0
3	0,18354	26483,9	0	18	0	0	0	0	0	0
4	0,24123	31407,8	0	36	0	0	0	0	0	0
5	0,31787	35222,9	0	36	18	0	0	0	0	0
6	0,40381	37962	0	18	36	0	0	0	0	0
7	0,44339	39223,7	0	36	36	0	0	0	0	0
8	0,52932	40853,8	0	18	54	0	0	0	0	0
9	0,61525	42483,7	0	18	36	18	0	0	0	0
10	0,70118	44113,9	0	0	54	18	0	0	0	0
11	0,7124	44317,7	0	0	54	0	0	18	0	0
12	0,71236	30033,8	0	0	54	0	0	0	0	18
13	0,76528	32397	0	0	36	18	0	0	0	18
14	0,81801	33848,8	0	0	36	18	0	0	0	18
15	0,85942	34495	0	0	36	18	0	0	0	18