

**REDESIGN STRUCTURAL BUILDING STUDENT CENTER
POLITEKNIK NEGERI INDRAMAYU**

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ABSTRACT

Indramayu State Polytechnic is located in Indramayu Regency, West Java. Indramayu State Polytechnic plans to build a new building as a student activity center to meet the needs of classrooms, learning facilities, and academic services. The upper structure of the planned building consists of steel roof trusses, floor slabs, beams, columns, shear walls, and the lower structure consisting of basement floors, sloofs, basement walls, bored pile foundations and pile cap. The structural analysis is assisted by program to analyze the internal forces in the building structure. The guidelines used are SNI 2847: 2019, SNI 1726: 2019 and SNI 1727: 2020. The loads analyzed include dead loads, live loads, wind loads, and earthquake loads. A 8-story building is planned with a concrete quality of $f'c = 25$ Mpa, $f'c = 20$ Mpa for bored piles, main reinforcing steel quality $f_y = 420$ MPa, and stirrup and plate reinforcement $f_{yt} = 280$ MPa. Based on the results of the structural analysis carried out, a truss design with profiles 2L.60.60.6 and 2L.50.50.6 was obtained. The thickness of the main slab is 120 mm with D10 - 150 reinforcement. Beams use D25 bending reinforcement and $\varnothing 12$ stirrups. Columns use D25 flexural reinforcement and D10 stirrups. The shear wall is 300 mm thick with vertical reinforcement D25 - 200 mm and horizontal reinforcement D25 - 100. The bored pile foundation is 80 cm in diameter and 24 m deep.

Keywords: Reinforced Concrete Structure, Steel Roof, Bored Pile Foundation.

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REDESAIN STRUKTUR GEDUNG STUDENT CENTER POLITEKNIK NEGERI INDRAMAYU

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ABSTRAK

Politeknik Negeri Indramayu berlokasi di Kabupaten Indramayu, Jawa Barat. Politeknik Negeri Indramayu berencana membangun gedung baru sebagai pusat kegiatan mahasiswa untuk memenuhi kebutuhan ruang kelas, fasilitas pembelajaran, dan layanan akademik. Struktur atas bangunan yang direncanakan terdiri dari rangka atap baja, pelat lantai, balok, kolom, dinding geser, dan struktur bawah yang terdiri dari lantai basemen, *sloof*, dinding basemen, fondasi *bored pile* dan *pile cap*. Analisis struktur dibantu program untuk menganalisis gaya dalam pada struktur gedung. Pedoman yang digunakan SNI 2847:2019, SNI 1726:2019 dan SNI 1727:2020. Beban yang dianalisis diantaranya beban mati, beban hidup, beban angin, dan beban gempa. Direncanakan gedung 8 lantai dengan mutu beton $f'c = 25$ Mpa, $f'c = 20$ Mpa untuk *bored pile*, mutu baja tulangan pokok $f_y = 420$ MPa, serta tulangan sengkang dan pelat $f_{yt} = 280$ MPa. Berdasarkan hasil analisis struktur yang dilakukan, diperoleh desain kuda – kuda rangka batang dengan profil 2L.60.60.6 dan 2L.50.50.6. Tebal pelat lantai utama sebesar 120 mm dengan penulangan D10 – 150. Balok menggunakan tulangan lentur D25 dan sengkang Ø12. Kolom menggunakan tulangan lentur D25 dan sengkang D10. Tebal dinding geser 250 mm dengan tulangan vertikal D25 – 100 mm dan tulangan horizontal D25 – 100. Fondasi *bored pile* diperoleh diameter 80 cm kedalaman 24 m.

Kata Kunci: Struktur Beton Bertulang, Atap Baja, Fondasi Bored Pile.

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