

**STUDI ALTERNATIF KERANGKA STRUKTUR SEGARA SWARGA  
MOSQUE BERNADY LAND MENGGUNAKAN KONSTRUKSI DINDING  
GESER PADA STRUKTUR GEDUNG BETON BERTULANG DENGAN  
KAPASITAS PONDASI EKSISTING**

**( Studi kasus Perumahan Bernady Land, Jl. Cendrawasih, Puring, Kel.  
Slawu, Kec. Patrang, Kab. Jember )**

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**ABSTRAK**

Pengembangan ilmu pengetahuan tentang infrastruktur gedung di Indonesia menciptakan variasi struktur, termasuk pembangunan baru dan pengalihan fungsi. Analisis kekuatan struktur penting untuk menghadapi perubahan pembebanan akibat alih fungsi. Penelitian ini berfokus pada analisis alternatif kerangka struktur Masjid Segara Swarga di Bernady Land dengan beton bertulang dan kapasitas pondasi eksisting. Metode analisis dinamik menggunakan aplikasi SAP2000, kinerja struktur dinilai sesuai SNI 2847-2019. Hasil analisis menunjukkan plat lantai 150 mm dengan tulangan Ø16 - 100 mm pada arah X dan Ø16 - 80 mm pada arah Y. Balok 20/50 memiliki tulangan geser Ø10 - 100 mm. Balok 15/30 dan 15/20 dengan variasi tulangan. Kolom 40/40 menggunakan tulangan 5D16 dan 3D16, kolom 25/25 menggunakan tulangan 3D12 dan 3D12. Dinding geser memerlukan tulangan minimum dengan syarat  $V_u > 0,083A_{cv} \sqrt{f'_{prime} c}$ , menggunakan dua lapis tulangan D16 - 300 untuk arah horizontal dan vertikal. Pondasi memenuhi daya dukung dan kuat geser 31% dan 36%. Penelitian ini bertujuan memberikan analisis alternatif terhadap kerangka struktur Masjid Segara Swarga di Bernady Land, meningkatkan keamanan struktur gedung yang tahan gempa.

**Kata Kunci:** Alih Fungsi Struktur, SAP2000, SNI 2847:2019.

**ALTERNATIVE STUDY OF SEGARA SWARGA MOSQUE BERNADY  
LAND STRUCTURAL FRAME USING SHEAR WALL CONSTRUCTION  
IN REINFORCED CONCRETE BUILDING STRUCTURE WITH  
EXISTING FOUNDATION CAPACITY**

**(Case Study: Bernady Land Housing, Jl. Cendrawasih, Puring, Slawu  
Village, Patrang District, Jember Regency)**

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**ABSTRACT**

The development of knowledge in building infrastructure in Indonesia has led to various building structure variations, including new constructions and repurposing of existing buildings. Analyzing the structural strength is crucial in facing changes in loadings due to functional transformations. This research focuses on an alternative analysis of the structural framework of Segara Swarga Mosque in Bernady Land, using reinforced concrete and considering the existing foundation capacity. The dynamic analysis method employs SAP2000 software, and the structural performance is evaluated following SNI 2847-2019. The analysis results show a 150 mm floor plate with Ø16 - 100 mm reinforcement in the X direction and Ø16 - 80 mm in the Y direction. The 20/50 size beam has Ø10 - 100 mm shear reinforcement. The 15/30 and 15/20 size beams have variations in reinforcement. The 40/40 size columns use 5D16 and 3D16 reinforcement, while the 25/25 size columns use 3D12 and 3D12 reinforcement. The shear wall requires a minimum amount of reinforcement with the condition  $V_u > 0,083A_{cv}\sqrt{f'_{pr}c}$ , using two layers of Ø16 - 300 reinforcement for horizontal and vertical directions. The foundation meets the required bearing capacity and shear strength of 31% and 36%, respectively. This research aims to provide an alternative analysis of the structural framework of Segara Swarga Mosque in Bernady Land, enhancing earthquake-resistant building safety in the area.

**Keywords:** *Structural Conversion, SAP2000, SNI 2847:2019.*