PERANCANGAN STRUKTUR PORTAL RANGKA BAJA DENGAN METODE LRFD BERDASARKAN STANDAR NASIONAL INDONESIA (SNI), BRITISH STANDARD (BS), DAN AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

(STUDI KASUS GEDUNG PERAWATAN DAN PERBAIKAN POLINES)

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ABSTRAKSI

Pada perencanaan struktur portal rangka baja , yang digunakan yaitu berdasarkan tegangan kerja / *working strees design (Alloweble Strees Design/* ASD*)* dan perencanaan kondisi batas/ *limit states design (Load and Resistence Factor Design/* LRFD*).* Metode ASD sudah tidak digunakan lagi dan beralih menggunakan metode LRFD yang jauh lebih rasional dan stabil.

Dalam tugas akhir ini, direncanakan struktur portal rangka baja dengan metode LRFD menggunakan tiga standard yaitu SNI 03-1729-2002, BS 5950-1-2000 dan AISC 360-05. Perencanaan berdasarkan metode LRFD diperoleh dengan cara perhitungan manual dan menggunakan *software SAP 2000 versi 14* untuk menghasilkan momen maksimal, lintang maksimal, dan normal maksimal.

Dari hasil perbandingan perencanaan, didapatkan hasil dimensi kolom SNI HB 400 X 400, BS HB 400 X 400, AISC HB 400 X 400. Balok SNI IWF 500 X 200, BS IWF 350 X 350, AISC IWF 500 X 200.Jumlah baut SNI 14 baut, BS 10 baut, AISC 14 baut. Lendutan maksimal SNI 1,015 cm, BS 1,023 cm, AISC 1,015 cm. *Stress ratio kolom* SNI 0,105, BS 0,144, AISC 0,105. *Stress ratio balok* SNI 0,283, BS 0,398, AISC 0,283. Dan berat total keseluruhan dari portal pada SNI 130,08 ton, BS 156,95 ton, AISC 130,08 ton.

Kata kunci : Rangka Baja, LRFD, *Software*, *Stress Ratio,* SNI, BS, AISC

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DESIGN OF PORTAL FRAME STEEL STRUCTURE LRFD METHOD BASED ON INDONESIAN NATIONAL STANDARD (SNI), BRITISH STANDARD (BS), AND THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

(*CASE STUDY GEDUNG PERAWATAN DAN PERBAIKAN POLINES*)

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ABSTRACK

In the structural design of steel portal frame, which is used that is based on the working voltage / working strees design (Alloweble strees Design / ASD) and the planning boundary conditions / limit states design (Load and Resistance Factor Design / LRFD). ASD method is not used anymore and switched using LRFD method which is much more rational and stable.

In this thesis, the planned structural steel portal frame with LRFD method using three standard that is SNI 03-1729-2002, BS 5950-1-2000 and AISC 360-05). Planning is based on LRFD method is obtained by means of manual calculations and software SAP 2000 version 14 for get the maximum moment, maximum shear, and axial maximum.

From the comparison of the planning, the result column dimensions SNI HB 400 X 400, BS HB 400 X 400, AISC HB 400 X 400. Beam SNI IWF 500 X 200, BS IWF 350 X 350,AISC IWF 500 X 200. Sum of bolt SNI 14 bolts, BS 10 bolts, AISC 14 bolts. Maximum deflection SNI 1.015 cm, BS 1.023 cm, AISC 1.015 cm. Stress ratio of columns SNI 0,105, BS 0.144, AISC 0.105. Stress ratio of beams 0.283 SNI, BS 0.398, AISC 0.283. And a total weight of portal SNI 130.08 tons, BS 156.95 tons, AISC 130.08 tons.

Keywords: Steel Frame, LRFD, Software, SNI, BS, AISC

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