

## ABSTRAKSI

Berdasarkan Rencana Induk Perkeretaapian Nasional (RIPNAS) Direktorat Jenderal Perkeretaapian Kementerian Perhubungan, April 2011, pada tahun 2030, peningkatan jumlah perjalanan orang menggunakan moda kereta api di Pulau Jawa yaitu sebesar 858,5 juta orang/tahun dan perjalanan barang di Pulau Jawa sebesar 534 juta ton/tahun. Oleh karena itu, pemerintah berencana untuk mengembangkan jaringan jalan rel di Jawa dengan program *Double Track* atau jalur ganda, antara lain pengembangan jalur tunggal menjadi jalur ganda lintas utara Jawa (Cirebon – Semarang – Bojonegoro – Surabaya) agar dicapai pelayanan yang optimal.

Dalam tugas akhir ini dilakukan perencanaan *double track* pada ruas antara Stasiun Semarang Tawang di Semarang dan Stasiun Gubug di Grobogan. Dimulai dari STA 2+600 hingga STA 30+936, trase jalur ganda direncanakan tetap mengacu pada trase eksisting dan dipertimbangkan pada kondisi tataguna lahan di kanan kiri jalur eksisting. Struktur atas (rel, penambat, bantalan, balas), struktur bawah (tubuh jalan rel) serta pematusan jalan rel direncanakan sesuai klasifikasi jalan rel berdasarkan Peraturan Dinas No. 10 tahun 1986 PJKA.

Dari hasil perencanaan didapat penempatan trase jalur ganda di sisi kanan trase eksisting dari arah Semarang ke Gubug dimana ketersediaan lahan terbuka lebih banyak dengan elevasi track baru setinggi elevasi track eksisting. Konstruksi jalan rel sesuai kelas jalan rel I dengan tipe rel R54, penambat elastis ganda Pandrol tipe e-clip dengan *rubber pad*, bantalan beton pratekan tipe N-67 produksi PT.WIKA Beton, ketebalan balas atas 30 cm, balas bawah setebal 15 cm. Tubuh jalan rel *double track* lebih banyak terletak pada posisi timbunan dengan tinggi antara 30 cm hingga 165 cm menggunakan perkuatan penahan tanah. Pematuasan permukaan berupa saluran samping dengan penampang persegi panjang dari beton bertulang.

**Kata Kunci: Double Track, Semarang - Gubug, Pemilihan Trase, Konstruksi Jalan Rel**

## **ABSTRACT**

*Based on National Railways Master Plan (RIPNAS) of Directorate General of Railways Ministry of Transportation, April 2011, in 2030, number of railway passengers in Java increased in the amount of 858.5 million people / year and freight in Java amounted to 534 million tons / year. Therefore, the government planned to develop the railway network in Java with Double Track program or multiple pathways, the development of a single track to double track across the north of Java (Cirebon - Semarang - Bojonegoro - Surabaya) in order to achieve optimal service were included.*

*This undergraduate thesis designed the railway double track between Semarang Tawang Station in Semarang until Gubug station in Grobogan. Started from STA 2+600 till STA 30 +936, double track alignment design is referred to the existed alignment and considered to the land use conditions on the right and left side of the existed alignment. Upper structure (rails, fastenings, sleepers, ballasts), sub structure (subgrade) and railway drainage is planned according to the railway classification based on Peraturan Dinas No.10 PJKA 1986.*

*From the design performed, the double track alignment will be placed on the right side of the existed alignment in direction from Semarang to Gubug where there are more open land availability, with the new lines elevation as high as the existed lines elevation. Railway constructed in accordance with the first class railway classification with R54 rails type, double elastic's fastening system using Pandrol e-clip type with rubber pad, PT.WIKA Beton prestressed concrete sleepers N-67 type , upper ballast thickness of 30 cm and 15 cm thick sub ballast. Double track railway's subgrade situated more on the fill positions between 30 cm to 165 cm height using retaining wall reinforcement. Side channel surface drainage with a rectangular cross section from reinforced concrete.*

***keywords: Double Track, Semarang - Gubug, Alignment, Railway Construction***