PERENCANAAN GEOMETRI JALAN REL REAKTIVASI RUAS BANJARNEGARA – WONOSOBO

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ABSTRAK

Sarana dan prasarana transportasi darat, terutama jalan kereta api, memiliki peran penting dalam mendistribusikan barang dan jasa. Pemerintah Indonesia, melalui Kementerian Perhubungan, berfokus pada pengembangan infrastruktur transportasi massal, termasuk pengembangan dan moda transportasi kereta api. Jalur kereta api ruas Purwokerto-Wonosobo memiliki sejarah panjang dan awalnya dibangun untuk mengangkut barang dari pabrik gula dan perkebunan tembakau di sekitar Banyumas Raya. Namun, saat ini jalur tersebut tidak aktif. Dalam Rencana Induk Perkeretaapian Nasional (RIPNas) tahun 2030, jumlah penumpang kereta api diperkirakan mencapai 858,5 juta orang. Oleh karena itu, Kementerian Perhubungan berencana mereaktivasi jalur kereta api tersebut, sejalan dengan Rencana Tata Ruang dan Wilayah (RTRW) Kabupaten Banjarnegara dan Wonosobo. Penelitian ini bertujuan untuk merencanakan geometri jalan rel ruas Banjarnegara-Wonosobo, termasuk pengumpulan data primer dan sekunder, penentuan rute terbaik, perencanaan geometri jalan rel, dan perencanaan konstruksi jalan rel.

Dalam penelitian ini, terdapat beberapa rumusan masalah yang diteliti, antara lain kondisi prasarana trase eksisting jalur kereta api Banjarnegara-Wonosobo, trase jalan rel yang tepat berdasarkan kondisi trase dan topografi, perencanaan geometri jalan rel, dan perencanaan konstruksi jalan rel. Tujuan penelitian ini adalah untuk mengamati kondisi prasarana trase eksisting, menentukan trase jalan rel yang tepat, merencanakan geometri jalan rel, dan merencanakan konstruksi jalan rel. Penelitian ini memiliki manfaat dalam memberikan pertimbangan dan usulan untuk reaktivasi jalur kereta api Banjarnegara-Wonosobo, serta memberikan akses transportasi publik yang lebih baik bagi masyarakat dan mengurangi kepadatan kendaraan di jalan raya antara Banjarnegara dan Wonosobo.

Dari hasil analisis dan pembahasan penelitian, diperoleh kesimpulan sebagai berikut. Evaluasi kondisi prasarana jalan rel eksisting menunjukkan sebagian besar tertutup lahan dan rusak. Trase jalan rel terpilih mempertimbangkan panjang jalur pada trase 2 yaitu 27,7 km, pembebasan lahan, dan 1 persilangan jalan raya. Alinyemen horisontal dan vertikal dirancang sesuai standar dengan radius dan kelandaian tertentu. Komponen konstruksi yang direkomendasikan adalah rel tipe 42, penambat jenis KA Clip, bantalan beton tipe N-67, tebal lapisan balas 25 cm, dan tebal lapisan subbalas 35 cm. Penelitian ini diharapkan dapat memberikan masukan dan pembanding bagi instansi terkait dalam melaksanakan reaktivasi jalur kereta api Banjarnegara-Wonosobo, serta memberikan manfaat bagi masyarakat dalam mengakses transportasi publik di daerah tersebut.

Kata kunci: *Arcgis, Civil 3d, Cut And Fill*, Geometri, Jalan Rel, Kereta Api, Reaktivasi, Ripnas, Topografi.

RAIL ROAD GEOMETRY PLANNING

REACTIVATION OF BANJARNEGARA – WONOSOBO SECTION

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ABSTRACT

Land transportation facilities and infrastructure, especially railroads, have an important role in distributing goods and services. The Indonesian government, through the Ministry of Transportation, is focusing on developing mass transportation infrastructure, including the development and modes of rail transportation. The Purwokerto-Wonosobo railway line has a long history and was originally built to transport goods from sugar factories and tobacco plantations around Banyumas Raya. However, currently the line is inactive. In the 2030 National Railway Master Plan (RIPNas), the number of train passengers is estimated to reach 858.5 million people. Therefore, the Ministry of Transportation plans to reactivate the railroad line, in line with the Spatial and Regional Layout Plan (RTRW) for Banjarnegara and Wonosobo Regencies. This study aims to plan the geometry of the Banjarnegara-Wonosobo railroad section, including collecting primary and secondary data, determining the best route, planning railroad geometry, and planning railroad construction.

In this study, there are several formulations of the problem studied, including the condition of the infrastructure of the existing alignment of the Banjarnegara-Wonosobo railway line, the proper alignment of the railroad based on the condition of the alignment and topography, planning of railroad geometry, and planning of railroad construction. The purpose of this study was to observe the condition of the existing track infrastructure, determine the appropriate track alignment, plan the geometry of the track, and plan the construction of the track. This research has benefits in providing considerations and suggestions for reactivation of the Banjarnegara-Wonosobo railway line, as well as providing better public transportation access for the community and reducing vehicle density on the highway between Banjarnegara and Wonosobo.

From the results of the analysis and discussion of the research, the following conclusions are obtained. Evaluation of the condition of the existing rail road infrastructure shows that most of it is covered with land and damaged. The selected railroad alignment takes into account the track length on line 2, which is 27.7 km, land acquisition, and 1 highway crossing. Horizontal and vertical alignments are designed according to standards with a certain radius and slope. Recommended construction components are rail type 42, KA Clip type bollards, concrete sleepers type N-67, ballast layer thickness of 25 cm, and subballast layer thickness of 35 cm. This research is expected to provide input and comparison for relevant agencies in implementing the reactivation of the Banjarnegara-Wonosobo railway line, as well as providing benefits for the community in accessing public transportation in the area.

Keywords: Arcgis, Civil 3d, Cut And Fill, Geometry, Railroads, Railways, Reactivation, Ripnas, Topography.