

ABSTRAK

PT Kaltim Amonium Nitrat (KAN) dibentuk oleh PT DAHANA dan PT Pupuk Kalimantan Timur pada tahun 2019. PT KAN bertujuan menambah produksi amonium nitrat di Indonesia dan meningkatkan kemandirian terhadap impor amonium nitrat. Berdasarkan hasil tender, proses pembangunan pabrik amonium nitrat dilaksanakan konsorsium PT WIKA dan SEDIN Engineering Co., Ltd. dimulai sejak 2019 dan direncanakan selesai dibangun dan beroperasi pada akhir tahun 2022. Gudang Amonium Nitrat ditinjau dan dilakukan perancangan ulang terhadap struktur baja Gable Frame, fondasi dalam tiang pancang, dan saluran drainase.

Perancang ulang struktur baja menggunakan perangkat lunak SAP2000 V22 dan meninjau elemen kolom, rafter, balok ikat, dan bracing perancangan asli (Model 1) dan perancangan ulang (Model 2). Pembebanan ditinjau terhadap beban mati, beban hidup atap, beban hujan, beban angin, dan beban gempa serta pengecekan kinerja struktur dilakukan untuk kombinasi beban gempa dan layan.

Berdasarkan hasil analisis didapatkan perancangan ulang dengan berat struktur lebih ringan 24,9% memiliki fleksibilitas lebih besar namun masih memenuhi persyaratan kinerja struktur. Perancangan ulang tiang pancang dengan jumlah tiang beton prategang kelas A3 diameter 500 mm sebanyak 72 buah x 14 m pada konfigurasi kelompok 2 tiang dirancang kolom pedestal serta pile cap fondasi tiang pancang. Perancangan ulang drainase dengan analisis distribusi frekuensi hujan didapatkan penampang saluran drainase terbesar ukuran 0,8 x 0,95 m, beton F_c 31 MPa baja tulangan transversal BJTS420B D10-250 dan baja tulangan longitudinal BJTP280 Ø8-250.

Kata kunci: Perancangan Ulang, Gable Frame, Metode Analisis Langsung, Tiang Pancang, Drainase

ABSTRACT

PT Kaltim Amonium Nitrat (KAN) was formed by PT DAHANA and PT Pupuk Kalimantan Timur in 2019 with the objective of increasing ammonium nitrate production in Indonesia and increasing independence from foreign imports. As tendered, construction of ammonium nitrate plant is consortium PT WIKA and SEDIN Engineering Co., Ltd.'s responsibility started from 2019 and to be finished by the end of 2022. An observation at Ammonium Nitrate Warehouse was done and redesigning of Gable Frame steel structure, spun pile deep foundation, and drainage channel was conducted.

Steel structure redesigns using SAP2000 V22 software and reviewing original design (Model 1) and redesign (Model 2) of column, rafter, tie beam, and bracing. Loads such as dead load, roof live load, rain load, wind load, and earthquake load are added and structural performance evaluated according to earthquake and service condition.

By analysis, the modelled redesign of structure has 24,9% lighter weight of structure with increasing flexibility, but still satisfies structural performance requirements. Redesign of spun pile deep foundation of prestressed concrete spun pile class A3 500 mm in a total of 72 pieces x 14 m and in the group pile configuration of 2 piles, pedestal column and foundation's pile cap is designed. Redesign of drainage using rain frequency distribution analysis results in the largest section of 0,8 x 0,85 m, F_c 31 MPa concrete, transversal rebar BJTS 420B D10-300, and longitudinal rebar BJTP280 Ø8-250.

Keywords: Redesign, Gable Frame, Direct Analysis Method, Spun Pile, Drainage