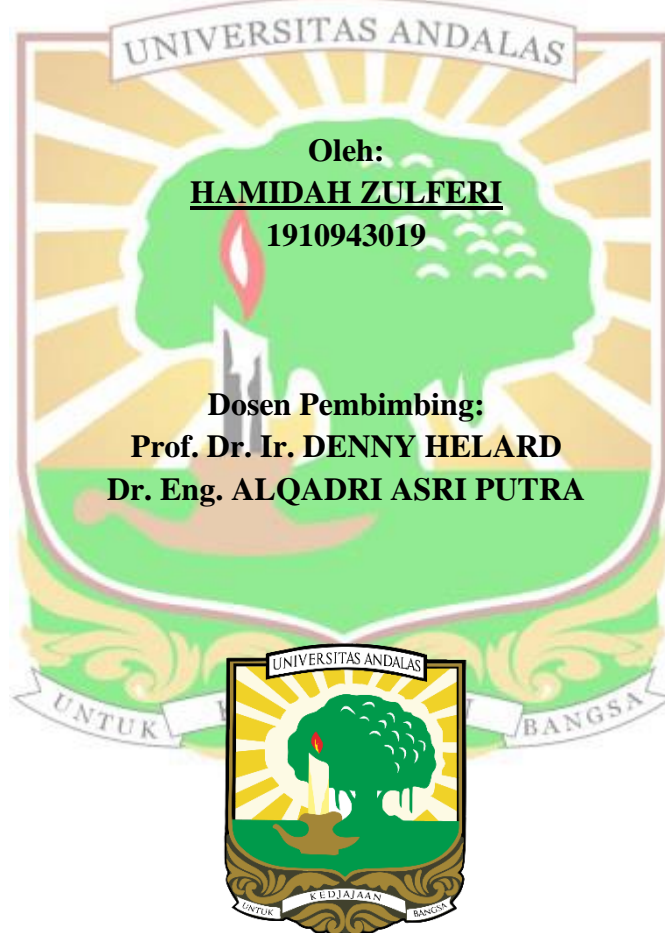


**PERANCANGAN SISTEM PLAMBING  
LABORATORIUM SENTRAL UNIVERSITAS ANDALAS**

**TUGAS AKHIR**

Sebagai salah satu syarat untuk menyelesaikan  
Program Strata-1 pada  
Departemen Teknik Lingkungan  
Fakultas Teknik Universitas Andalas



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## ABSTRAK

*Laboratorium Sentral Universitas Andalas merupakan fasilitas penunjang pembelajaran dan penelitian yang dibangun oleh Universitas Andalas untuk meningkatkan kualitas pendidikan. Laboratorium Sentral Universitas Andalas memiliki luas lahan 12.375,77 m<sup>2</sup> dan luas bangunan 3.206,16 m<sup>2</sup> yang terdiri dari 3 lantai dan 1 lantai atap. Laboratorium Sentral Universitas Andalas terdiri dari 3 jenis laboratorium, yaitu Laboratorium Fisika, Laboratorium Kimia, dan Laboratorium Biologi. Perancangan sistem plambing Laboratorium Sentral Universitas Andalas meliputi perancangan sistem penyediaan air minum, sistem penyaluran air buangan dan ven, sistem penyaluran air hujan, dan sistem pencegahan kebakaran. Perancangan sistem plambing Laboratorium Sentral Universitas Andalas ini mengacu pada SNI 03-8153-2015, SNI 03-1745-2000 dan SNI 03-3989-2000. Sumber air minum yang digunakan berasal dari Perusahaan Daerah Air Minum (PDAM) Universitas Andalas dan sumur dalam. Sistem penyediaan air minum dilakukan dengan sistem tangki atap dengan pengaliran ke bawah yang dilengkapi pompa booster. Tangki bawah memiliki kapasitas 67,4 m<sup>3</sup> dan tangki atas memiliki kapasitas 12,5 m<sup>3</sup> dengan setiap tangki terdiri dari dua unit. Pipa air minum berjenis GIP 3 ½ – 4 inci dan PVC 1 ¼ – 3 inci. Sistem penyaluran air buangan dilakukan secara terpisah. Unit pengolahan air buangan berupa Pre-Treatment Basin dengan kapasitas 28 m<sup>3</sup> dan Anaerobic Baffled Filter dengan kapasitas 121 m<sup>3</sup>. Pipa penyaluran air buangan berjenis PVC 1 ½ – 4 inci. Sistem ven yang digunakan berupa ven tunggal, ven loop, dan ven bersama. Pipa ven berjenis PVC 1 ½ – 4 inci. Sistem penyaluran air hujan disalurkan langsung ke riol kota melalui drainase gedung. Pipa penyaluran air hujan berjenis PVC 3 – 6 inci. Sistem pecegahan kebakaran berupa sistem hidran dan sprinkler dengan tipe pipa tegak basah otomatis dan Alat Pemadaman Api Ringan. Pipa pencegahan kebakaran berjenis Black Steel 1 ½ – 6 inci. Rencana anggaran biaya perancangan sistem plambing Laboratorium Sentral Universitas Andalas sebesar Rp 3.000.000.000,00.*

**Kata Kunci:** *Laboratorium Sentral Universitas Andalas, Pipa, Sistem Plambing, Tangki Air.*

## ABSTRACT

*The Central Laboratory of Andalas University was a supporting facility for learning and research built by Andalas University to enhance the quality of education. The Central Laboratory of Andalas University occupies a land area of 12,375.77 m<sup>2</sup> and a building area of 3,206.16 m<sup>2</sup>, consisting of three floors and a rooftop floor. The Central Laboratory of Andalas University consists of three types of laboratories: Physics Laboratory, Chemistry Laboratory, and Biology Laboratory. The plumbing system design of the Central Laboratory of Andalas University includes the design of the drinking water supply system, wastewater and vent disposal system, rainwater drainage system, and fire prevention system. The plumbing system design of the Central Laboratory of Andalas University refers to SNI 03-8153-2015, SNI 03-1745-2000, and SNI 03-3989-2000. The drinking water source used comes from the Regional Drinking Water Company of Andalas University and deep wells. The drinking water supply was carried out using a rooftop tank system with a downward flow and equipped with a booster pump. The lower tank has a capacity of 67.4 m<sup>3</sup>, and the upper tank has a capacity of 12.5 m<sup>3</sup>, with each tank consisting of two units. Pipes for drinking water supply are GIP type 3 ½ – 4 inches and PVC type 1 ¼ – 3 inches. The wastewater disposal system is separate. The wastewater treatment unit consists of a Pre-Treatment Basin (PTB) with a capacity of 28 m<sup>3</sup> and an Anaerobic Baffled Filter with a capacity of 121 m<sup>3</sup>. Pipes for wastewater distribution are PVC type 1 ½ – 4 inches. The vent system used includes single vents, loop vents, and shared vents. Pipes for the vent system are PVC type 1 ½ – 4 inches. The rainwater drainage system is directly channeled to the city sewer through the building's drainage system. Pipes for rainwater distribution are PVC pipe 3 – 6 inches. The fire prevention system consists of hydrant and sprinkler systems with automatic wet riser pipes and Light Fire Extinguishing Equipment. Pipes for fire prevention are Black Steel type 1 ½ – 6 inches. The budget plan for the Central Laboratory of Andalas University plumbing system design is IDR 3,000,000,000.00.*

**Keywords:** *Central Laboratory of Andalas University, Pipe, Plumbing System, Water Tank*