

DAFTAR ISI

| | |
|------------------------------------|-------|
| HALAMAN JUDUL..... | i |
| PERNYATAAN BEBAS PLAGIARISME..... | ii |
| HALAMAN PENGESAHAN..... | iii |
| HALAMAN TUGAS..... | iv |
| HALAMAN PERSEMBAHAN | v |
| HALAMAN MOTTO | vi |
| UCAPAN TERIMAKASIH..... | vii |
| KATA PENGANTAR | ix |
| DAFTAR ISI..... | xi |
| DAFTAR TABEL..... | xvi |
| DAFTAR GAMBAR | xviii |
| DAFTAR LAMBANG DAN SINGKATAN | xxi |
| INTISARI..... | xxiii |
| ABSTRACT..... | xxiv |
| BAB I PENDAHULUAN..... | 1 |
| I.1. Latar Belakang | 1 |
| I.2. Rumusan Masalah..... | 3 |
| I.3. Batasan Masalah | 3 |
| I.4. Tujuan Penelitian | 3 |
| I.5. Manfaat Penelitian | 4 |
| I.6. Sistematika Penulisan..... | 4 |
| BAB II STUDI PUSTAKA..... | 6 |

| | |
|--|-----------|
| II.1. Pengaruh Transmisi Bunyi Terhadap Bahan Dinding Partisi pada Ruang Kompartemen | 6 |
| II.2. Pengendalian Kebisingan Berdasarkan <i>Transmission Loss</i> dan <i>Flanking</i> | 7 |
| II.3. <i>Sound Transmission Class</i> (STC) Pengujian Lapangan dan Hasilnya Berdasarkan ASTM..... | 8 |
| II.4. Pengaruh Ruang Konsultasi Psikologi Terhadap Proses Terapi | 8 |
| II.5. Standar Insulasi Dinding Partisi Ruang Konsultasi | 9 |
| BAB III DASAR TEORI | 12 |
| III.1. Gelombang Bunyi | 12 |
| III.1.1. Frekuensi Bunyi | 14 |
| III.2. Akustik Ruang..... | 15 |
| III.2.1. Bunyi Pada Ruang Tertutup | 15 |
| III.2.2. <i>Sound Pressure Level</i> (SPL) | 18 |
| III.2.3. Waktu Dengung (<i>Reverberation Time</i>)..... | 19 |
| III.2.4. Privasi..... | 21 |
| III.3. <i>Acoustics of Small Room</i> | 22 |
| III.4. <i>Impulse Response</i> | 23 |
| III.5. <i>Background Noise</i> | 24 |
| III.6. Perambatan Bunyi..... | 26 |
| III.7. Insulasi Bunyi | 28 |
| III.7.1. <i>Transmission Loss</i> (TL)..... | 28 |
| III.7.2. <i>Noise Reduction</i> (NR)..... | 30 |
| III.7.3. <i>Sound Transmission Class</i> (STC)..... | 32 |
| III.8. Prinsip insulasi Bunyi..... | 34 |
| BAB IV PELAKSANAAN PENELITIAN | 36 |

| | |
|--|----|
| IV.1. Metode Penelitian..... | 36 |
| IV.2. Objek Penelitian | 36 |
| IV.3. Variabel Penelitian | 38 |
| IV.4. Alat dan Bahan Penelitian | 38 |
| IV.4.1. Alat dan Bahan Pengukuran Akustik..... | 38 |
| IV.4.2. Alat dan Bahan Simulasi..... | 39 |
| IV.5. Tata Laksana Penelitian..... | 40 |
| IV.5.1. Studi Pustaka dan Literatur | 40 |
| IV.5.2. Observasi Kondisi <i>Existing</i> | 41 |
| IV.5.3. Penentuan Langkah Pemodelan dan Simulasi | 41 |
| IV.5.4. Simulasi Material Insulasi | 42 |
| IV.5.5. Pengukuran Akustik | 43 |
| IV.5.6. Perhitungan <i>Transmission Loss</i> | 49 |
| IV.5.7. Analisis Hasil..... | 49 |
| IV.5.8. Eksperimen Skenario Optimisasi | 50 |
| IV.5.9. Kesimpulan..... | 51 |
| BAB V HASIL DAN PEMBAHASAN..... | 52 |
| V.1. Hasil Observasi Kondisi <i>Existing</i> | 52 |
| V.1.1. Hasil <i>Interview</i> | 52 |
| V.1.2. Hasil Peninjauan Langsung Ruangan..... | 52 |
| V.1.3. Hasil Pengamatan Akustik Subjektif..... | 56 |
| V.1.4. Hasil Pengukuran Geometri | 56 |
| V.2. Hasil Penentuan Langkah Pemodelan Simulasi | 57 |
| V.3. Hasil Simulasi Material Insulasi..... | 59 |
| V.4. Hasil Pengukuran Akustik..... | 61 |

| | |
|--|----|
| V.4.1. Hasil Pengukuran <i>Background Noise</i> | 61 |
| V.4.2. Hasil Pengukuran RIR (<i>Room Impulse Response</i>)..... | 64 |
| V.4.3. Hasil Pengukuran Insulasi Bunyi..... | 65 |
| V.5. Hasil Perhitungan TL (<i>Transmission Loss</i>) Dinding Partisi..... | 67 |
| V.6. Analisis Rating STC (<i>Sound Transmission Class</i>)..... | 69 |
| V.7. Hasil Eksperimen Skenario Optimalisasi..... | 73 |
| V.7.1. Skenario 1 Mengganti Konstruksi Dinding Partisi Pembatas..... | 73 |
| V.7.2. Skenario 2 <i>Treatment</i> Dinding Partisi Pembatas..... | 76 |
| V.7.3. Justifikasi Dinding Partisi Hasil Eksperimen Skenario Optimalisasi.. | 82 |
| BAB VI KESIMPULAN DAN SARAN | 88 |
| VI.1. Kesimpulan | 88 |
| VI.2. Saran..... | 88 |
| DAFTAR PUSTAKA | 89 |
| LAMPIRAN..... | 92 |
| LAMPIRAN A PERHITUNGAN <i>TRANSMISSION LOSS</i> | 93 |
| A.1 Hasil Pengukuran Dinding <i>Existing</i> Ruang D.204 (Ruang Sumber: D.205, Ruang Penerima: D.204)..... | 93 |
| A.2 <i>Yumen Acoustic Board 25 mm</i> Ruang D.205 (Ruang Sumber: D.204, Ruang Penerima: D.205)..... | 94 |
| A.3 <i>Acoustic Art Panel with Core Foam 1 inch</i> Ruang D.206 (Ruang Sumber: D.205, Ruang Penerima: D.206)..... | 95 |
| LAMPIRAN B RATING SOUND <i>TRANSMISSION CLASS</i> (STC)..... | 96 |
| B.1 Hasil Pengukuran Dinding <i>Existing</i> Ruang D.204 (Ruang Sumber: D.205, Ruang Penerima: D.204)..... | 96 |

| | |
|---|-----|
| B.2 Desain 2 Skenario 2 Ruang D.205 (Rating STC <i>yumen acostic board</i>)..... | 97 |
| B.3 Desain 3 Skenario 2 Ruang D.206 (Rating STC <i>acoustic art panels, core foam 1 inch</i>)..... | 98 |
| LAMPIRAN C HASIL SIMULASI MENGGUNAKAN INSUL 8.0 | 99 |
| C.1 Simulasi Desain Dinding Partisi Skenario 1 | 99 |
| C.1.1 Simulasi Desain 1 | 99 |
| C.1.2 Simulasi Desain 2 | 100 |
| C.1.3 Simulasi Desain 3 | 101 |
| C.2 Material Properties pada Simulasi Desain Menggunakan INSUL 8.0..... | 102 |
| LAMPIRAN D PERHITUNGAN <i>SOUND TRANSMISSION CLASS</i> SKENARIO 2..... | 103 |
| D.1 Desain 1 (<i>Insulated Panel</i>) | 103 |
| D.2 Desain 2 (<i>Yumen Acoustic Board 25 mm</i>)..... | 104 |
| D.3 Desain 3 (<i>Acoustic Art Panel Foam 1 inch</i>) | 106 |
| LAMPIRAN E TABEL PERHITUNGAN DESAIN <i>TRANSMISSION LOSS</i> | 108 |
| E.1 Data Tingkat Kebisingan..... | 108 |
| E.2 Data <i>Noise Criteria</i> | 108 |