# BAB VI

# KESIMPULAN DAN SARAN

## 6.1.Kesimpulan

Berdasarkan hasil analisis dan pembahasan diambil kesimpulan:

1. Kinerja simpang untuk kondisi simpang tak bersinyal menghasilkan nilai derajat kejenuhan, peluang antrian yang diterima dan tundaan simpang (*delay*) adalah pada periode Senin, 12 maret 2012 nilai Ds = 0,996 ; QP = 39,917 - 78,98% ; D = 18,88 detik/smp, Selasa, 13 maret 2012 Ds = 1,004 ; QP = 40,53 – 80,24%, D = 19,18 detik/smp, dan periode Kamis, 15 maret 2012 nilai Ds = 0,996 ; QP = 33,348 – 80,24% ; D = 16,28 detik/smp. Tingginya faktor hambatan samping maka berdampak pada resiko tehadap tejadinya peluang antrian yang sangat tinggi. Oleh sebab itu maka tingkat pelayanan arus lalu lintas di sepanjang ruas jalan Seturan Raya dimasukan dalam kelas klasifikasi E, F, dan E karena kapasitas arus sering berubah - ubah dengan melihat beberapa alternatif ini pemberian sinyal lampu merupakan alternatif paling tepat karena bisa mengurangi resiko kecelakaan 20% – 50%, kemacetan, antrian dan terkendalinya instrument untuk distribusi kendaraan dilokasi simpang.
2. Sistem pengembangan persimpangan berkelanjutan terbaik adalah dengan tidak mengubah geometrik persimpangan tetapi dengan memperbaiki pelaksanaan peraturan dan disiplin, dengan tujuan mempertahankan kondisi goemetrik yang

ada. serta peraturan dan disiplin berkendaraan di persimpangan dengan baik dan lebih layak.

## 7.2 Saran

Saran yang disampaikann oleh penulis adalah:

1. Perencanaan pemasangan lampu lalu lintas sesuai sesuai keperluan.
2. Kajian studi khusus mengenai transportasi lanjutan sangat penting dalam menganalisis persoalan studi suatu wilayah guna mengurangi dampak masalah baru di daerah konflik lalu lintas seperti ini.

# Daftar Pustaka


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10. Undang – Undang Republik Indonesia no 22 tahun 2009,Tentang Lalu lintas dan Angkutan Jalan, Pasal 1, No 12, hal 3.

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Tabel 5.26.1. Data Masukan Volume Waktu 5 & 15 Menit

| | | |
|---|---|---|
| SIMPANG TAK BERSINYAL<br>ANALISA<br>USIG II | *Tanggal : 12 Maret 2012*<br>*Kota : D.I.Y.*<br>*Jalan utama : jalan Seturan Raya*<br>*Jalan minor : jalan Selokan Mataram* | *Ukuran kota : > 3 juta penduduk*<br>*Lingkungan jalan : komersial*<br>*Hambatan samping : tinggi*<br>*Periode : Pagi, siang, sore* |

**DATA VOLUME PERIODE WAKTU 5 MENIT DAN 15 MENIT**
**SIMPANG JALAN SETURAN RAYA – JALAN SELOKAN MATARAM**

| No | Periode waktu 5 menit | | | Σ UNIT | | | Σ Smp / jam | | |
|---|---|---|---|---|---|---|---|---|---|
| | A / P1 / 12 /3 / 2012 | B / S1 / 12 /3 / 2012 | C / S1 / 12 /3 / 2012 | A | B | C | A | B | C |
| 1 | 06.30 - 06.35 | 12.00 - 12.05 | 16.00 - 16.05 | 42 | 53 | 152 | 28,5 | 38,7 | 117 |
| 2 | 06.35 - 06.40 | 12.05 - 12.10 | 16.05 - 16.10 | 28 | 33 | 126 | 17 | 28,7 | 85,7 |
| 3 | 06.40 - 06.45 | 12.10 - 12.15 | 16.10 - 16.15 | 64 | 20 | 115 | 57 | 14,7 | 68 |
| 4 | 06.45 - 06.50 | 12.15 - 12.20 | 16.15 - 16.20 | 19 | 45 | 119 | 12 | 33,7 | 77,7 |
| 5 | 06.50 - 06.55 | 12.20 -12.25 | 16.20 - 16.25 | 39 | 23 | 118 | 27,5 | 18,2 | 82,2 |
| 6 | 06.55 - 07.00 | 12.25 - 12.30 | 16.25 - 16.30 | 37 | 35 | 128 | 28,5 | 26,7 | 85,1 |
| 7 | 07.00 - 07.05 | 12.30 - 12.35 | 16.30 - 16.35 | 35 | 25 | 229 | 24,6 | 17 | 137,7 |
| 8 | 07.05 - 07.10 | 12.35 - 12.40 | 16.35 - 16.40 | 64 | 55 | 260 | 49,7 | 41,2 | 176,6 |
| 9 | 07.10 - 07.15 | 12.40 - 12.45 | 16.40 - 16.45 | 58 | 52 | 142 | 47,7 | 32,9 | 88,5 |
| 10 | 07.15 - 07.20 | 12.45 - 12.50 | 16.45 - 16.50 | 33 | 35 | 218 | 22,6 | 23,7 | 163,6 |
| 11 | 07.20 - 07.25 | 12.50 - 12.55 | 16.50 - 16.55 | 29 | 69 | 233 | 24,6 | 52,2 | 165,4 |
| 12 | 07.25 - 07.30 | 12.55 - 13.00 | 16.55 - 17.00 | 34 | 11 | 238 | 28,1 | 11,3 | 159,2 |
| 13 | 07.30 - 07.35 | 13.00 - 13.05 | 17.00 - 17.05 | 76 | 74 | 140 | 59,6 | 52,3 | 84,3 |
| 14 | 07.35 - 07.40 | 13.05 - 13.10 | 17.05 - 17.10 | 29 | 33 | 125 | 16.5 | 19,6 | 67,6 |
| 15 | 07.40 - 07.45 | 13.10 - 13.15 | 17.10 - 17.15 | 51 | 22 | 161 | 40 | 18,6 | 120,1 |
| 16 | 07.45 - 07.50 | 13.15 - 13.30 | 17.15 - 17.30 | 16 | 49 | 153 | 8 | 38,5 | 94,1 |
| 17 | 07.50 - 07.55 | 13.20 - 13.25 | 17.20 - 17.25 | 49 | 33 | 102 | 38,5 | 21,5 | 60,1 |
| 18 | 07.55 - 08.00 | 13.25 - 13.30 | 17.25 - 17.30 | 30 | 23 | 191 | 19 | 15,1 | 108,8 |
| 19 | 08.00 - 08.05 | 13.30 - 13.35 | 17.30 - 17.35 | 26 | 27 | 260 | 19 | 22,1 | 172,2 |
| 20 | 08.05 - 08.10 | 13.35 - 13.40 | 17.35 - 17.40 | 31 | 67 | 227 | 17.5 | 49,9 | 162,7 |
| 21 | 08.10 - 08.15 | 13.40 - 13.45 | 17.40 - 17.45 | 76 | 45 | 206 | 63,9 | 32,8 | 169,1 |
| 22 | 08.15 - 08.20 | 13.45 - 13.50 | 17.45 - 17.50 | 53 | 40 | 319 | 42,4 | 25 | 240,6 |
| 23 | 08.20 - 08.25 | 13.50 - 13.55 | 17.50 - 17.55 | 64 | 15 | 307 | 48,5 | 12,5 | 228 |
| 24 | 08.25 - 08.30 | 13.55 - 14.00 | 17.55 - 18.00 | 69 | 30 | 475 | 51,4 | 26 | 328,1 |
| | | | jumlah | 1052 | 914 | 4744 | 792,1 | 672,9 | 3242 |

| No | Periode waktu 5 menit | | | Σ UNIT | | | Σ Smp / jam | | |
|---|---|---|---|---|---|---|---|---|---|
| | A / P1 / 12 /3 / 2012 | B / S1 / 12 /3 / 2012 | C / S1 / 12 /3 / 2012 | A | B | C | A | B | C |
| 1 | 06.30 - 06.45 | 12.00 - 12.15 | 16.00 - 16.15 | 134 | 106 | 393 | 102,5 | 82,1 | 270,7 |
| 2 | 06.45 - 07.00 | 12.15 - 12.30 | 16.15 - 16.30 | 95 | 98 | 360 | 86 | 77,1 | 231,4 |
| 3 | 07.00 - 07.15 | 12.30 - 12.45 | 16.30 - 16.45 | 157 | 88 | 352 | 96,5 | 66,6 | 227,9 |
| 4 | 07.15 - 07.30 | 12.45 - 13.00 | 16.45 - 17.00 | 96 | 103 | 365 | 68 | 78,6 | 245 |
| 5 | 07.30 - 07.45 | 13.00 - 13.15 | 17.00 - 17.15 | 156 | 83 | 475 | 80,6 | 61,9 | 305 |
| 6 | 07.45 - 08.00 | 13.15 - 13.30 | 17.15 - 17.30 | 95 | 115 | 617 | 102,8 | 84,9 | 399,4 |
| 7 | 08.00 - 08.15 | 13.30 - 13.45 | 17.30 - 17.45 | 133 | 132 | 631 | 122 | 91,1 | 402,8 |
| 8 | 08.15 - 08.30 | 13.45 - 14.00 | 17.45 - 18.00 | 186 | 142 | 620 | 120 | 97,8 | 428,7 |
| | | | jumlah | 1052 | 867 | 3813 | 778,4 | 640,1 | 2511 |

Sumber : Hasil Survei, Maret 2012

Tabel 5.26.2. Data Masukan Volume Waktu 5 & 15 Menit

| | | |
|---|---|---|
| SIMPANG TAK BERSINYAL<br>ANALISA<br>USIG II | Tanggal : 13 Maret 2012 | Ukuran kota : > 3 juta penduduk |
| | Kota : D.I.Y. | Lingkungan jalan : komersial |
| | Jalan utama : jalan Seturan Raya | Hambatan samping : tinggi |
| | Jalan minor : jalan Selokan Mataram | Periode : Pagi, siang, sore |

**DATA VOLUME PERIODE WAKTU 5 MENIT DAN 15 MENIT**
**SIMPANG JALAN SETURAN RAYA – JALAN SELOKAN MATARAM**

| No | Periode waktu 5 menit | | | Σ UNIT | | | Σ Smp / jam | | |
|---|---|---|---|---|---|---|---|---|---|
| | A / P1 / 12 /3 / 2012 | B / S1 / 12 /3 / 2012 | C / S1 / 12 /3 / 2012 | A | B | C | A | B | C |
| 1 | 06.30 - 06.35 | 12.00 - 12.05 | 16.00 - 16.05 | 63 | 63 | 39 | 32,5 | 66 | 82,9 |
| 2 | 06.35 - 06.40 | 12.05 - 12.10 | 16.05 - 16.10 | 53 | 79 | 53 | 24,5 | 69 | 76,5 |
| 3 | 06.40 - 06.45 | 12.10 - 12.15 | 16.10 - 16.15 | 67 | 36 | 63 | 15,5 | 80 | 83,9 |
| 4 | 06.45 - 06.50 | 12.15 - 12.20 | 16.15 - 16.20 | 76 | 76 | 79 | 15 | 61,1 | 57,5 |
| 5 | 06.50 - 06.55 | 12.20 -12.25 | 16.20 - 16.25 | 59 | 48 | 36 | 34,5 | 77 | 54 |
| 6 | 06.55 - 07.00 | 12.25 - 12.30 | 16.25 - 16.30 | 54 | 36 | 76 | 17,5 | 55 | 72,4 |
| 7 | 07.00 - 07.05 | 12.30 - 12.35 | 16.30 - 16.35 | 61 | 60 | 48 | 38,9 | 33 | 181,7 |
| 8 | 07.05 - 07.10 | 12.35 - 12.40 | 16.35 - 16.40 | 53 | 45 | 36 | 38,9 | 136,2 | 186,6 |
| 9 | 07.10 - 07.15 | 12.40 - 12.45 | 16.40 - 16.45 | 37 | 56 | 60 | 22,1 | 107,6 | 147,5 |
| 10 | 07.15 - 07.20 | 12.45 - 12.50 | 16.45 - 16.50 | 30 | 33 | 45 | 17,6 | 115,9 | 163,6 |
| 11 | 07.20 - 07.25 | 12.50 - 12.55 | 16.50 - 16.55 | 40 | 22 | 56 | 9,6 | 117,6 | 213,4 |
| 12 | 07.25 - 07.30 | 12.55 - 13.00 | 16.55 - 17.00 | 32 | 11 | 76 | 13,1 | 184,6 | 224,2 |
| 13 | 07.30 - 07.35 | 13.00 - 13.05 | 17.00 - 17.05 | 52 | 14 | 48 | 37,5 | 172,8 | 220,1 |
| 14 | 07.35 - 07.40 | 13.05 - 13.10 | 17.05 - 17.10 | 23 | 45 | 36 | 16,6 | 40,8 | 60,6 |
| 15 | 07.40 - 07.45 | 13.10 - 13.15 | 17.10 - 17.15 | 64 | 52 | 65 | 29,5 | 17,5 | 54,5 |
| 16 | 07.45 - 07.50 | 13.15 - 13.30 | 17.15 - 17.30 | 49 | 45 | 45 | 25,5 | 7,5 | 53,1 |
| 17 | 07.50 - 07.55 | 13.20 - 13.25 | 17.20 - 17.25 | 35 | 35 | 69 | 24 | 9,1 | 53 |
| 18 | 07.55 - 08.00 | 13.25 - 13.30 | 17.25 - 17.30 | 34 | 69 | 48 | 23,5 | 15,5 | 51,4 |
| 19 | 08.00 - 08.05 | 13.30 - 13.35 | 17.30 - 17.35 | 69 | 21 | 39 | 16,5 | 25,6 | 172,2 |
| 20 | 08.05 - 08.10 | 13.35 - 13.40 | 17.35 - 17.40 | 76 | 13 | 62 | 22,5 | 21,6 | 162,7 |
| 21 | 08.10 - 08.15 | 13.40 - 13.45 | 17.40 - 17.45 | 37 | 23 | 47 | 39,2 | 130 | 163,1 |
| 22 | 08.15 - 08.20 | 13.45 - 13.50 | 17.45 - 17.50 | 62 | 40 | 78 | 24 | 120,4 | 247,6 |
| 23 | 08.20 - 08.25 | 13.50 - 13.55 | 17.50 - 17.55 | 39 | 45 | 45 | 30,9 | 26,8 | 232 |
| 24 | 08.25 - 08.30 | 13.55 - 14.00 | 17.55 - 18.00 | 53 | 30 | 36 | 43 | 90,4 | 352,1 |
| | | | jumlah | 1218 | 997 | 1285 | 612,4 | 1781 | 3367 |

| No | Periode waktu 5 menit | | | Σ UNIT | | | Σ Smp / jam | | |
|---|---|---|---|---|---|---|---|---|---|
| | A / P1 / 12 /3 / 2012 | B / S1 / 12 /3 / 2012 | C / S1 / 12 /3 / 2012 | A | B | C | A | B | C |
| 1 | 06.30 - 06.45 | 12.00 - 12.15 | 16.00 - 16.15 | 134 | 106 | 393 | 102,5 | 82,1 | 270,7 |
| 2 | 06.45 - 07.00 | 12.15 - 12.30 | 16.15 - 16.30 | 95 | 98 | 360 | 86 | 77,1 | 231,4 |
| 3 | 07.00 - 07.15 | 12.30 - 12.45 | 16.30 - 16.45 | 157 | 88 | 352 | 96,5 | 66,6 | 227,9 |
| 4 | 07.15 - 07.30 | 12.45 - 13.00 | 16.45 - 17.00 | 96 | 103 | 365 | 68 | 78,6 | 245 |
| 5 | 07.30 - 07.45 | 13.00 - 13.15 | 17.00 - 17.15 | 156 | 83 | 475 | 80,6 | 61,9 | 305 |
| 6 | 07.45 - 08.00 | 13.15 - 13.30 | 17.15 - 17.30 | 95 | 115 | 617 | 102,8 | 84,9 | 399,4 |
| 7 | 08.00 - 08.15 | 13.30 - 13.45 | 17.30 - 17.45 | 133 | 132 | 631 | 122 | 91,1 | 402,8 |
| 8 | 08.15 - 08.30 | 13.45 - 14.00 | 17.45 - 18.00 | 186 | 142 | 620 | 120 | 97,8 | 428,7 |
| | | | jumlah | 1218 | 997 | 1285 | 612,4 | 1781 | 3367 |

Sumber : Hasil Survei, Maret 2012

Tabel 5.26.3. Data Masukan Volume Waktu 5 & 15 Menit

| | | |
|---|---|---|
| SIMPANG TAK BERSINYAL<br>- ***ANALISA***<br>- **USIG II** | ***Tanggal : 15 Maret 2012***<br>***Kota : D.I.Y.***<br>***Jalan utama : jalan Seturan Raya***<br>***Jalan minor : jalan Selokan Mataram*** | ***Ukuran kota : > 3 juta penduduk***<br>***Lingkungan jalan : komersial***<br>***Hambatan samping : tinggi***<br>***Periode : Pagi, siang, sore*** |

**DATA VOLUME PERIODE WAKTU 5 MENIT DAN 15 MENIT**
**SIMPANG JALAN SETURAN RAYA – JALAN SELOKAN MATARAM**

| No | Periode waktu 5 menit | | | Σ UNIT | | | Σ Smp / jam | | |
|---|---|---|---|---|---|---|---|---|---|
| | A / P1 / 12 /3 / 2012 | B / S1 / 12 /3 / 2012 | C / S1 / 12 /3 / 2012 | A | B | C | A | B | C |
| 1 | 06.30 - 06.35 | 12.00 - 12.05 | 16.00 - 16.05 | 92 | 110 | 122 | 49,5 | 82,5 | 75,4 |
| 2 | 06.35 - 06.40 | 12.05 - 12.10 | 16.05 - 16.10 | 131 | 104 | 123 | 79,1 | 80,9 | 84,1 |
| 3 | 06.40 - 06.45 | 12.10 - 12.15 | 16.10 - 16.15 | 49 | 143 | 92 | 27 | 109,1 | 65,5 |
| 4 | 06.45 - 06.50 | 12.15 - 12.20 | 16.15 - 16.20 | 56 | 116 | 130 | 31 | 90,5 | 89 |
| 5 | 06.50 - 06.55 | 12.20 -12.25 | 16.20 - 16.25 | 92 | 153 | 143 | 50 | 102,9 | 93,8 |
| 6 | 06.55 - 07.00 | 12.25 - 12.30 | 16.25 - 16.30 | 131 | 116 | 93 | 86,4 | 80 | 52 |
| 7 | 07.00 - 07.05 | 12.30 - 12.35 | 16.30 - 16.35 | 273 | 49 | 276 | 18,7 | 34,8 | 197,8 |
| 8 | 07.05 - 07.10 | 12.35 - 12.40 | 16.35 - 16.40 | 342 | 162 | 242 | 222,6 | 111,8 | 193,9 |
| 9 | 07.10 - 07.15 | 12.40 - 12.45 | 16.40 - 16.45 | 233 | 176 | 129 | 171,5 | 146,7 | 88,1 |
| 10 | 07.15 - 07.20 | 12.45 - 12.50 | 16.45 - 16.50 | 217 | 139 | 133 | 157,6 | 118,4 | 76,5 |
| 11 | 07.20 - 07.25 | 12.50 - 12.55 | 16.50 - 16.55 | 316 | 137 | 215 | 230,9 | 101,8 | 150 |
| 12 | 07.25 - 07.30 | 12.55 - 13.00 | 16.55 - 17.00 | 293 | 134 | 278 | 219,2 | 101,3 | 193,1 |
| 13 | 07.30 - 07.35 | 13.00 - 13.05 | 17.00 - 17.05 | 61 | 176 | 325 | 40 | 124,1 | 219 |
| 14 | 07.35 - 07.40 | 13.05 - 13.10 | 17.05 - 17.10 | 75 | 57 | 152 | 47,5 | 47,1 | 111,3 |
| 15 | 07.40 - 07.45 | 13.10 - 13.15 | 17.10 - 17.15 | 69 | 61 | 153 | 48,6 | 47,1 | 104,9 |
| 16 | 07.45 - 07.50 | 13.15 - 13.30 | 17.15 - 17.30 | 64 | 66 | 172 | 40,5 | 61,6 | 122,4 |
| 17 | 07.50 - 07.55 | 13.20 - 13.25 | 17.20 - 17.25 | 94 | 49 | 124 | 67,9 | 38,5 | 64,5 |
| 18 | 07.55 - 08.00 | 13.25 - 13.30 | 17.25 - 17.30 | 56 | 78 | 136 | 44,2 | 67 | 78 |
| 19 | 08.00 - 08.05 | 13.30 - 13.35 | 17.30 - 17.35 | 260 | 62 | 173 | 172,2 | 50,9 | 105,3 |
| 20 | 08.05 - 08.10 | 13.35 - 13.40 | 17.35 - 17.40 | 248 | 86 | 186 | 171,7 | 72,5 | 112,1 |
| 21 | 08.10 - 08.15 | 13.40 - 13.45 | 17.40 - 17.45 | 232 | 220 | 196 | 179,1 | 161,5 | 122,2 |
| 22 | 08.15 - 08.20 | 13.45 - 13.50 | 17.45 - 17.50 | 330 | 450 | 112 | 247,6 | 325,6 | 65,3 |
| 23 | 08.20 - 08.25 | 13.50 - 13.55 | 17.50 - 17.55 | 344 | 200 | 124 | 257,3 | 155,5 | 64 |
| 24 | 08.25 - 08.30 | 13.55 - 14.00 | 17.55 - 18.00 | 501 | 329 | 229 | 352,1 | 269 | 158,6 |
| | | | jumlah | 1218 | 997 | 1285 | 612,4 | 1781 | 3367 |

| No | Periode waktu 5 menit | | | Σ UNIT | | | Σ Smp / jam | | |
|---|---|---|---|---|---|---|---|---|---|
| | A / P1 / 12 /3 / 2012 | B / S1 / 12 /3 / 2012 | C / S1 / 12 /3 / 2012 | A | B | C | A | B | C |
| 1 | 06.30 - 06.45 | 12.00 - 12.15 | 16.00 - 16.15 | 272 | 357 | 337 | 155,6 | 272,5 | 225 |
| 2 | 06.45 - 07.00 | 12.15 - 12.30 | 16.15 - 16.30 | 236 | 363 | 345 | 137,1 | 280,5 | 238,6 |
| 3 | 07.00 - 07.15 | 12.30 - 12.45 | 16.30 - 16.45 | 197 | 412 | 365 | 108 | 302,5 | 248,3 |
| 4 | 07.15 - 07.30 | 12.45 - 13.00 | 16.45 - 17.00 | 279 | 385 | 366 | 167,4 | 273,4 | 234,8 |
| 5 | 07.30 - 07.45 | 13.00 - 13.15 | 17.00 - 17.15 | 496 | 318 | 512 | 318,1 | 217,7 | 343,6 |
| 6 | 07.45 - 08.00 | 13.15 - 13.30 | 17.15 - 17.30 | 746 | 327 | 611 | 490,7 | 226,6 | 443,7 |
| 7 | 08.00 - 08.15 | 13.30 - 13.45 | 17.30 - 17.45 | 848 | 387 | 647 | 575,8 | 293,3 | 479,8 |
| 8 | 08.15 - 08.30 | 13.45 - 14.00 | 17.45 - 18.00 | 792 | 477 | 504 | 551,7 | 376,9 | 358,5 |
| | | | jumlah | 3866 | 3026 | 3687 | 2504 | 2243 | 2572 |

Sumber : Hasil Survei, Maret 2012

Tabel 5.26.4. Data Masukan Volume Waktu 5 & 15 Menit

| | | |
|---|---|---|
| SIMPANG TAK BERSINYAL<br>- ***ANALISA***<br>- **USIG II** | ***Tanggal : 19 maret 2012***<br>***Kota : D.I.Y.***<br>***Jalan utama : jalan Seturan Raya***<br>***Jalan minor : jalan Selokan Mataram*** | ***Ukuran kota : > 3 juta penduduk***<br>***Lingkungan jalan : komersial***<br>***Hambatan samping : tinggi***<br>***Periode : S1, S2, dan P1*** |

**DATA VOLUME PERIODE WAKTU 5 MENIT DAN 15 MENIT**
**SIMPANG JALAN SETURAN RAYA – JALAN SELOKAN MATARAM**

| No | Periode waktu 5 menit | | | Σ UNIT | | | Σ Smp / jam | | |
|---|---|---|---|---|---|---|---|---|---|
| | A / P1 / 12 /3 / 2012 | B / S1 / 12 /3 / 2012 | C / S1 / 12 /3 / 2012 | A | B | C | A | B | C |
| 1 | 06.30 - 06.35 | | | 51 | | | 26 | | |
| 2 | 06.35 - 06.40 | | | 32 | | | 45,5 | | |
| 3 | 06.40 - 06.45 | | | 140 | | | 106,5 | | |
| 4 | 06.45 - 06.50 | | | 161 | | | 63,9 | | |
| 5 | 06.50 - 06.55 | | | 39 | | | 20 | | |
| 6 | 06.55 - 07.00 | | | 28 | | | 11 | | |
| 7 | 07.00 - 07.05 | | | 65 | | | 57,8 | | |
| 8 | 07.05 - 07.10 | | | 148 | | | 99,9 | | |
| 9 | 07.10 - 07.15 | | | 83 | | | 65,9 | | |
| 10 | 07.15 - 07.20 | | | 70 | | | 21 | | |
| 11 | 07.20 - 07.25 | | | 52 | | | 49,5 | | |
| 12 | 07.25 - 07.30 | | | 111 | | | 56,5 | | |
| 13 | 07.30 - 07.35 | | | 36 | | | 12 | | |
| 14 | 07.35 - 07.40 | | | 82 | | | 70,1 | | |
| 15 | 07.40 - 07.45 | | | 180 | | | 92,3 | | |
| 16 | 07.45 - 07.50 | | | 62 | | | 44,5 | | |
| 17 | 07.50 - 07.55 | | | 47 | | | 13 | | |
| 18 | 07.55 - 08.00 | | | 57 | | | 61,5 | | |
| 19 | 08.00 - 08.05 | | | 195 | | | 85,1 | | |
| 20 | 08.05 - 08.10 | | | 50 | | | 46,8 | | |
| 21 | 08.10 - 08.15 | | | 67 | | | 31,5 | | |
| 22 | 08.15 - 08.20 | | | 24 | | | 29,5 | | |
| 23 | 08.20 - 08.25 | | | 81 | | | 37 | | |
| 24 | 08.25 - 08.30 | | | 20 | | | 143,5 | | |
| | | | jumlah | 1881 | | | 1290,3 | | |

| No | Periode waktu 5 menit | | | Σ UNIT | | | Σ Smp / jam | | |
|---|---|---|---|---|---|---|---|---|---|
| | A / P1 / 12 /3 / 2012 | B / S1 / 12 /3 / 2012 | C / S1 / 12 /3 / 2012 | A | B | C | A | B | C |
| 1 | 06.30 - 06.45 | | | 223 | | | 178 | | |
| 2 | 06.45 - 07.00 | | | 333 | | | 215,9 | | |
| 3 | 07.00 - 07.15 | | | 340 | | | 190,4 | | |
| 4 | 07.15 - 07.30 | | | 228 | | | 94,9 | | |
| 5 | 07.30 - 07.45 | | | 132 | | | 88,8 | | |
| 6 | 07.45 - 08.00 | | | 241 | | | 168,7 | | |
| 7 | 08.00 - 08.15 | | | 296 | | | 223,6 | | |
| 8 | 08.15 - 08.30 | | | 301 | | | 186,8 | | |
| | | | jumlah | 1881 | | | 1290,3 | | |

Sumber : Hasil Survei, Maret 2012

Tabel 5.27. Hasil Analisa

| | | |
|---|---|---|
| SIMPANG TAK BERSINYAL<br>- **ANALISA**<br>- | **Tanggal : 12, 13, 14,dan 19 Maret 2012** | **Hari ; senin, selasa, dan rabu** |
| | **Kota : D.I.Y.** | **Ukuran kota : 1 – 3 juta penduduk** |
| | **Jalan utama : Seturan Raya** | **Lingkungan jalan** |
| | **Jalan minor : Selokan Mataram** | **Periode : pagi, siang, dan sore** |

**1.Lebar pendekat dan type simpang lam**

| Type simpang | Lebar pendekat (meter) | | | | | | wi | Σ lajur | | Kapasitas dasar Co (smp / jam ) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Jalan minor / wc | | | Jalan mayor | | | | Jalan mayor | Jalan minor | |
| | WA | WC | WAC | WB | WD | WBD | | | | |
| 422 | 5 | 5 | 5 | 5 | 7.5 | 6.25 | 2.8125 | 2 | 2 | 2900 |

**2.Kapasitas**

| kapasitas dasar Co smp/jam | lebar pendekat rata-rata (FW) | median jalan utama (FM) | ukuran kota (FCS) | Hambatan samping (FRSU) | belok kiri (FLT) | belok kanan (FRT) | Rasio FM/FMA (FMI) | Kapasitas (C ) (smp/jam ) |
|---|---|---|---|---|---|---|---|---|
| *2900* | *0,94375* | *1,00* | *1,00* | *0,93* | *1,506* | *1,00* | *0,9164* | *3523,190* |
| *2900* | *0,94375* | *1,00* | *1,00* | *0,93* | *1,473* | *1,00* | *0,9844* | *3664,692* |
| *2900* | *0,94375* | *1,00* | *1,00* | *0,93* | *1,374* | *1,00* | *0,8936* | *3075,213* |
| *2900* | *0,94375* | *1,00* | *1,00* | *0,93* | *1,025* | *1,00* | *1,2968* | *3295,641* |
| *2900* | *0,94375* | *1,00* | *1,00* | *0,93* | *1,508* | *1,00* | *0,9050* | *3526,470* |
| *2900* | *0,94375* | *1,00* | *1,00* | *0,93* | *1,378* | *1,00* | *0,9244* | *3230,137* |
| *2900* | *0,94375* | *1,00* | *1,00* | *0,93* | *0,966* | *1,00* | *0,9264* | *3149,158* |
| *2900* | *0,94375* | *1,00* | *1,00* | *0,93* | *1,516* | *1,00* | *0,9073* | *3490,308* |
| *2900* | *0,94375* | *1,00* | *1,00* | *0,93* | *1,329* | *1,00* | *0,9215* | *3081,869* |
| *2900* | *0,94375* | *1,00* | *1,00* | *0,93* | *1,547* | *1,00* | *0,9505* | *3745,102* |

**3.Perilaku lalu lintas**

| Arus lalu lintas (Q) Smp/ jam | Derajat kejenuhan (DS) | Tundaan lalu lintas simpang (DTI) | Tundaan lalu lintas Jl.utama (DTMA) | Tundaan Lalu lintas Jl.minor (DTMI) | Tundaan gometrik simpang (DG) | Tundaan simpang (D) | Peluang antrean | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | QP% (BA) | QP% (BB) |
| *772,6* | *0,219* | *3,017* | *2,19* | *2,243* | *9,103* | *12,120* | *3,08* | *9,87* |
| *624,7* | *0,170* | *2,72* | *1,96* | *3,507* | *9,29* | *12,02* | *2,18* | *7,69* |
| *3065,7* | *0,997* | *14,86* | *10,41* | *9,12* | *4,018* | *18,88* | *39,9* | *78,82* |
| *410* | *0,124* | *2,471* | *1,75* | *2,28* | *8,37* | *10,84* | *1,462* | *5,66* |
| *1749,8* | *0,496* | *5,068* | *3,78* | *12,76* | *7,32* | *12,38* | *10,84* | *24,49* |
| *3244,4* | *1,004* | *15,21* | *10,62* | *45,23* | *3,97* | *19,18* | *40,53* | *80,24* |
| *2871,2* | *0,9117* | *11,75* | *8,470* | *35,49* | *4,53* | *16,28* | *33,34* | *65,78* |
| *2043,1* | *0,585* | *5,962* | *4,453* | *9,73* | *6,709* | *12,67* | *14,46* | *30,79* |
| *2180,9* | *0,707* | *7,514* | *5,58* | *11,43* | *5,737* | *13,251* | *20,44* | *41,41* |
| *1163,2* | *0,310* | *3,604* | *9,186* | *4183,83* | *4655,9* | *12,79* | *5,108* | *14,12* |

Sumber : data simpang Seturan Raya – jalan Selokan Mataram

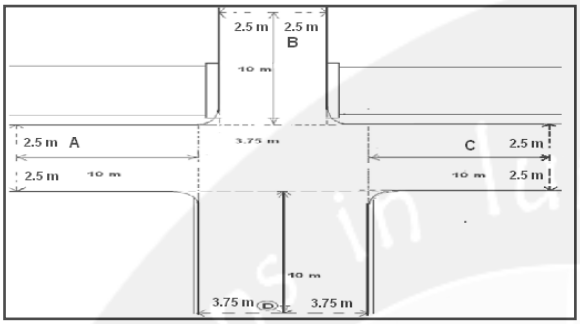
serviens in lumine veritatis

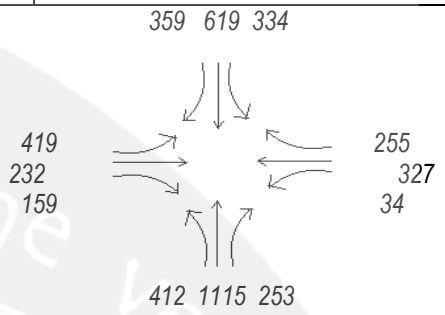
serviens in lumine veritatis

serviens in lumine veritatis

Tabel 28.1. Arus Lalu Lintas Jalan Seturan Raya

| | | |
|---|---|---|
| ***SIMPANG TAK BERSINYAL*** | ***Tanggal 12 Maret 2012*** | ***Hari : senin*** |
| ***GEOMETRI*** | ***Kota*** | ***Propinsi : D.I.Y.*** |
| ***ARUS LALU LINTAS*** | ***Jalan utama : Seturan Raya*** | ***Jalan minor : Selokan Mataram*** |
| ***USIG I*** | ***DS > 0.85*** | ***Periode : Sore / 16.00 – 18.00*** |



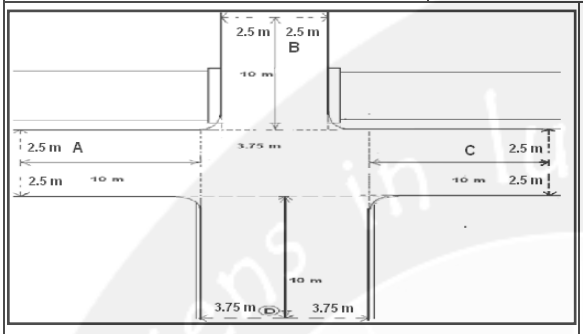



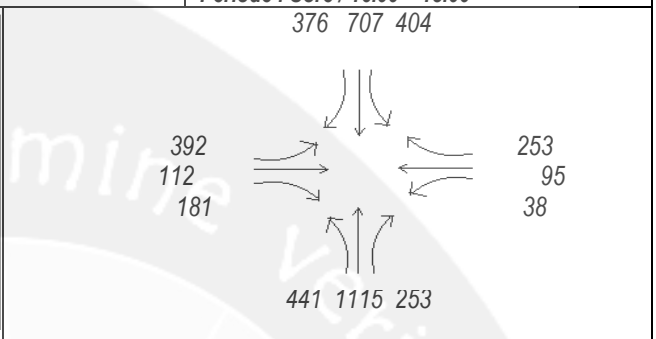

| 1 | KOMPOSISI LALU LINTAS | | LV % | | HV % | | MC % | | Faktor-smp | | Faktor- k | Kendaraan tak bermotor UM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | Arus lalu lintas | | Kendaraan ringan LV | | Kendaraan berat HV | | Sepeda motor MC | | Kendaraan bermotor total MV | | | (kend/jam) |
| 3 | Pendekat | | Kend /jam | Emp= 1.0 smp/jam | Kend /jam | Emp= 1.3 smp/jam | Kend /jam | Emp= 0.5 smp/jam | Kend / jam | Smp/jam | Rasio belok | |
| | ( 1 ) | (2 ) | ( 3) | ( 4) | (5 ) | (6 ) | (7 ) | (8 ) | ( 9) | (10 ) | ( 11) | ( 12) |
| 4 | Jl.Minor A | LT | 64 | 64 | 48 | 62,4 | 307 | 153,5 | 419 | 279,9 | 0,5119 | 3 |
| 5 | | ST | 24 | 24 | 48 | 62,4 | 160 | 80 | 232 | 166,4 | | 5 |
| 6 | | RT | 21 | 21 | 13 | 16,9 | 125 | 62,5 | 159 | 100,4 | 0,183 | 5 |
| 7 | | tot | 109 | 109 | 109 | 141,7 | 592 | 296 | 810 | 546,7 | | 13 |
| 8 | Jl.Minor C | LT | 10 | 10 | 0 | 0 | 245 | 122,5 | 255 | 132,5 | 0,423 | 0 |
| 9 | | ST | 0 | 0 | 0 | 0 | 327 | 163,5 | 327 | 163,5 | | 0 |
| 10 | | RT | 0 | 0 | 0 | 0 | 34 | 17 | 34 | 17 | 0,054 | 0 |
| 11 | | tot | 10 | 10 | 0 | 0 | 606 | 303 | 616 | 313 | | 0 |
| | Jl.Minor A + C | | 119 | 119 | 109 | 141,7 | 1198 | 599 | 1426 | 859,7 | | 13 |
| 12 | Jl.Mayor B | LT | 328 | 328 | 11 | 14,3 | 20 | 10 | 359 | 352,3 | 0,389 | 0 |
| 13 | | ST | 62 | 62 | 37 | 48,1 | 520 | 260 | 619 | 370,1 | | 3 |
| 14 | | RT | 11 | 11 | 13 | 16,9 | 310 | 155 | 334 | 182,9 | 0,202 | 5 |
| 15 | | tot | 401 | 401 | 61 | 79,3 | 850 | 425 | 1312 | 905,3 | | 8 |
| 16 | Jl.Mayor D | LT | 268 | 268 | 0 | 0 | 144 | 72 | 412 | 340 | 0,261 | 0 |
| 17 | | ST | 430 | 430 | 27 | 35,1 | 658 | 329 | 1115 | 794,1 | | 12 |
| 18 | | RT | 69 | 69 | 7 | 9,1 | 177 | 88,5 | 253 | 166,6 | 0,128 | 2 |
| 19 | | tot | 767 | 767 | 34 | 44,2 | 979 | 489,5 | 1780 | 1300,7 | | 14 |
| 20 | Jl.Mayor B + D | | 1168 | 1168 | 95 | 123,5 | 1829 | 914,5 | 3092 | 2206 | | 22 |
| 21 | JL.Utama + minor | LT | | | | | | | | | | |
| 22 | | ST | 670 | 670 | 59 | 76,7 | 716 | 358 | 1445 | 1104,7 | 0,360 | 3 |
| 23 | | RT | 516 | 516 | 112 | 145,6 | 1665 | 832,5 | 2293 | 1494,1 | | 20 |
| 24 | | tot | 101 | 101 | 33 | 42,9 | 646 | 323 | 780 | 466,9 | 0,152 | 12 |
| 25 | Utama+ minor total | | 1287 | 1287 | 204 | 265,2 | 3027 | 1513,5 | 4518 | 3065,7 | 0,513 | 35 |
| 26 | | | | | | | | | | | UM/MV | |

Sumber : Hasil Survei, Maret 2012

Tabel 28.2. Arus Lalu Lintas Jalan Seturan Raya

| | | |
|---|---|---|
| ***SIMPANG TAK BERSINYAL*** | ***Tanggal 13 Maret 2012*** | ***Hari : selasa*** |
| ***GEOMETRI*** | ***Kota*** | ***Propinsi : D.I.Y.*** |
| ***ARUS LALU LINTAS*** | ***Jalan utama : Seturan Raya*** | ***Jalan minor : Selokan Mataram*** |
| ***USIG I*** | ***DS > 0.85*** | ***Periode : Sore / 16.00 – 18.00*** |



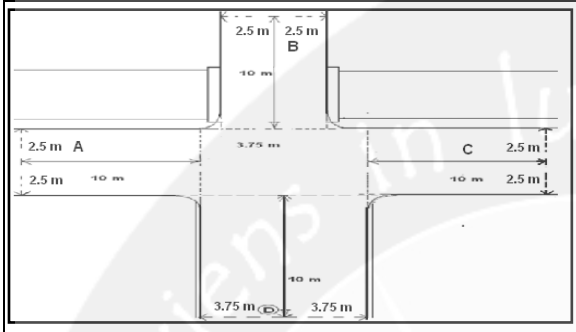



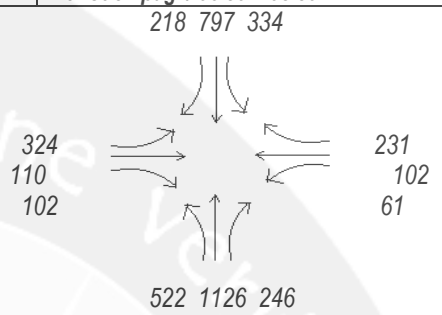

| 1 | KOMPOSISI LALU LINTAS | | LV % | | HV % | | MC % | | Faktor-smp | | Faktor- k | Kendaraan tak bermotor UM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | Arus lalu lintas | | Kendaraan ringan LV | | Kendaraan berat HV | | Sepeda motor MC | | Kendaraan bermotor total MV | | | |
| 3 | Pendekat | | Kend /jam | Emp= 1.0 smp/jam | Kend /jam | Emp= 1.3 smp/jam | Kend /jam | Emp= 0.5 smp/jam | Kend / jam | Smp/jam | Rasio belok | (kend/jam) |
| | ( 1 ) | (2 ) | ( 3) | ( 4) | (5 ) | (6 ) | (7 ) | (8 ) | ( 9) | (10 ) | ( 11) | ( 12) |
| 4 | Jl.Minor A | LT | 64 | 64 | 0 | 0 | 328 | 164 | 392 | 228 | 0,538 | 3 |
| 5 | | ST | 56 | 56 | 6 | 7,8 | 50 | 25 | 112 | 88,8 | | 5 |
| 6 | | RT | 32 | 32 | 0 | 0 | 149 | 74,5 | 181 | 106,5 | 0,251 | 2 |
| 7 | | tot | 152 | 152 | 6 | 7,8 | 527 | 263,5 | 685 | 423,3 | | 10 |
| 8 | Jl.Minor C | LT | 83 | 83 | 0 | 0 | 170 | 85 | 253 | 168 | 0,616 | 0 |
| 9 | | ST | 32 | 32 | 12 | 15,6 | 51 | 25,5 | 95 | 73,1 | | 10 |
| 10 | | RT | 25 | 25 | 0 | 0 | 13 | 6,5 | 38 | 31,5 | 0,115 | 0 |
| 11 | | tot | 140 | 140 | 12 | 15,6 | 234 | 117 | 386 | 272,6 | | 10 |
| | Jl.Minor A + C | | 292 | 292 | 18 | 23,4 | 761 | 380,5 | 1071 | 695,9 | | 20 |
| 12 | Jl.Mayor B | LT | 11 | 11 | 0 | 0 | 365 | 182,5 | 376 | 193,5 | 0,158 | 5 |
| 13 | | ST | 342 | 342 | 342 | 444,6 | 23 | 11,5 | 707 | 798,1 | | 3 |
| 14 | | RT | 20 | 20 | 19 | 24,7 | 365 | 182,5 | 404 | 227,2 | 0,186 | 5 |
| 15 | | tot | 373 | 373 | 361 | 469,3 | 753 | 376,5 | 1487 | 1218,8 | | 13 |
| 16 | Jl.Mayor D | LT | 297 | 297 | 0 | 0 | 144 | 72 | 441 | 369 | 0,277 | 0 |
| 17 | | ST | 430 | 430 | 27 | 35,1 | 658 | 329 | 1115 | 794,1 | | 12 |
| 18 | | RT | 69 | 69 | 7 | 9,1 | 177 | 88,5 | 253 | 166,6 | 0,125 | 2 |
| 19 | | tot | 796 | 796 | 34 | 44,2 | 979 | 489,5 | 1809 | 1329,7 | | 14 |
| 20 | Jl.Mayor B + D | | 1169 | 1169 | 395 | 513,5 | 1732 | 866 | 3296 | 2548,5 | | 27 |
| 21 | JL.Utama + minor | LT | | | | | | | | | | |
| 22 | | ST | 455 | 455 | 0 | 0 | 1007 | 503,5 | 1462 | 958,5 | 0,295 | 8 |
| 23 | | RT | 860 | 860 | 387 | 503,1 | 782 | 391 | 2029 | 1754,1 | | 30 |
| 24 | | tot | 146 | 146 | 26 | 33,8 | 704 | 352 | 876 | 531,8 | 0,163 | 9 |
| 25 | Utama+ minor total | | 1461 | 1461 | 413 | 536,9 | 2493 | 1246,5 | 4367 | 3244,4 | 0,459 | 47 |
| 26 | | | | | | | | | | | UM/MV | |

Sumber : Hasil Survei, Maret 2012

Tabel 28.3. Arus Lalu Lintas Jalan Seturan Raya

| | | |
|---|---|---|
| **SIMPANG TAK BERSINYAL** | **Tanggal 15 Maret 2012** | **Hari : kamis** |
| **GEOMETRI** | **Kota** | **Propinsi : D.I.Y.** |
| **ARUS LALU LINTAS** | **Jalan utama : Seturan Raya** | **Jalan minor : Selokan Mataram** |
| **USIG I** | **DS > 0.85** | **Periode : pagi / 06.30 – 08.30** |




| 1 | KOMPOSISI LALU LINTAS | | LV % | | HV % | | MC % | | Faktor-smp | | Faktor- k | Kendaraan tak bermotor UM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | Arus lalu lintas | | Kendaraan ringan LV | | Kendaraan berat HV | | Sepeda motor MC | | Kendaraan bermotor total MV | | | |
| 3 | Pendekat | | Kend /jam | Emp= 1.0 smp/jam | Kend /jam | Emp= 1.3 smp/jam | Kend /jam | Emp= 0.5 smp/jam | Kend / jam | Smp/jam | Rasio belok | (kend/jam) |
| | ( 1 ) | (2 ) | ( 3) | ( 4) | (5 ) | (6 ) | (7 ) | (8 ) | ( 9) | (10 ) | ( 11) | ( 12) |
| 4 | Jl.Minor A | LT | 44 | 44 | 19 | 24,7 | 261 | 130,5 | 324 | 199,2 | 0.579 | 3 |
| 5 | | ST | 25 | 25 | 17 | 22,1 | 68 | 34 | 110 | 81,1 | | 3 |
| 6 | | RT | 25 | 25 | 0 | 0 | 77 | 38,5 | 102 | 63,5 | 0,185 | 9 |
| 7 | | tot | 94 | 94 | 36 | 46,8 | 406 | 203 | 536 | 343,8 | | 15 |
| 8 | Jl.Minor C | LT | 62 | 62 | 0 | 0 | 169 | 84,5 | 231 | 146,5 | 0,555 | 0 |
| 9 | | ST | 42 | 42 | 0 | 0 | 60 | 30 | 102 | 72 | | 0 |
| 10 | | RT | 30 | 30 | 0 | 0 | 31 | 15,5 | 61 | 45,5 | 0,172 | 6 |
| 11 | | tot | 134 | 134 | 0 | 0 | 260 | 130 | 394 | 264 | | 6 |
| | Jl.Minor A + C | | 228 | 228 | 36 | 46,8 | 666 | 333 | 930 | 607,8 | | 21 |
| 12 | Jl.Mayor B | LT | 11 | 11 | 11 | 14,3 | 196 | 98 | 218 | 123,3 | 0,139 | 9 |
| 13 | | ST | 277 | 277 | 47 | 61,1 | 473 | 236,5 | 797 | 574,6 | | 0 |
| 14 | | RT | 11 | 11 | 13 | 16,9 | 310 | 155 | 334 | 182,9 | 0,207 | 5 |
| 15 | | tot | 299 | 299 | 71 | 92,3 | 979 | 489,5 | 1349 | 880,8 | | 14 |
| 16 | Jl.Mayor D | LT | 297 | 297 | 9 | 11,7 | 216 | 108 | 522 | 416,7 | 0,301 | 0 |
| 17 | | ST | 430 | 430 | 38 | 49,4 | 658 | 329 | 1126 | 808,4 | | 12 |
| 18 | | RT | 69 | 69 | 0 | 0 | 177 | 88,5 | 246 | 157,5 | 0,114 | 0 |
| 19 | | tot | 796 | 796 | 47 | 61,1 | 1051 | 525,5 | 1894 | 1382,6 | | 12 |
| 20 | Jl.Mayor B + D | | 1095 | 1095 | 118 | 153,4 | 2030 | 1015 | 3243 | 2263,4 | | 26 |
| 21 | JL.Utama + minor | LT | | | | | | | | | | |
| 22 | | ST | 414 | 414 | 39 | 50,7 | 842 | 421 | 1295 | 885,7 | 0,308 | 12 |
| 23 | | RT | 774 | 774 | 102 | 132,6 | 1259 | 629,5 | 2135 | 1536,1 | | 15 |
| 24 | | tot | 135 | 135 | 13 | 16,9 | 595 | 297,5 | 743 | 449,4 | 0,156 | 20 |
| 25 | Utama+ minor total | | 1323 | 1323 | 154 | 200,2 | 2696 | 1348 | 4173 | 2871,2 | 0,464 | 47 |
| 26 | | | | | | | | | | | UM/MV | |

Sumber : Hasil Survei, Maret 2012

serviens in lumine veritatis

serviens in lumine veritatis

serviens in lumine veritatis

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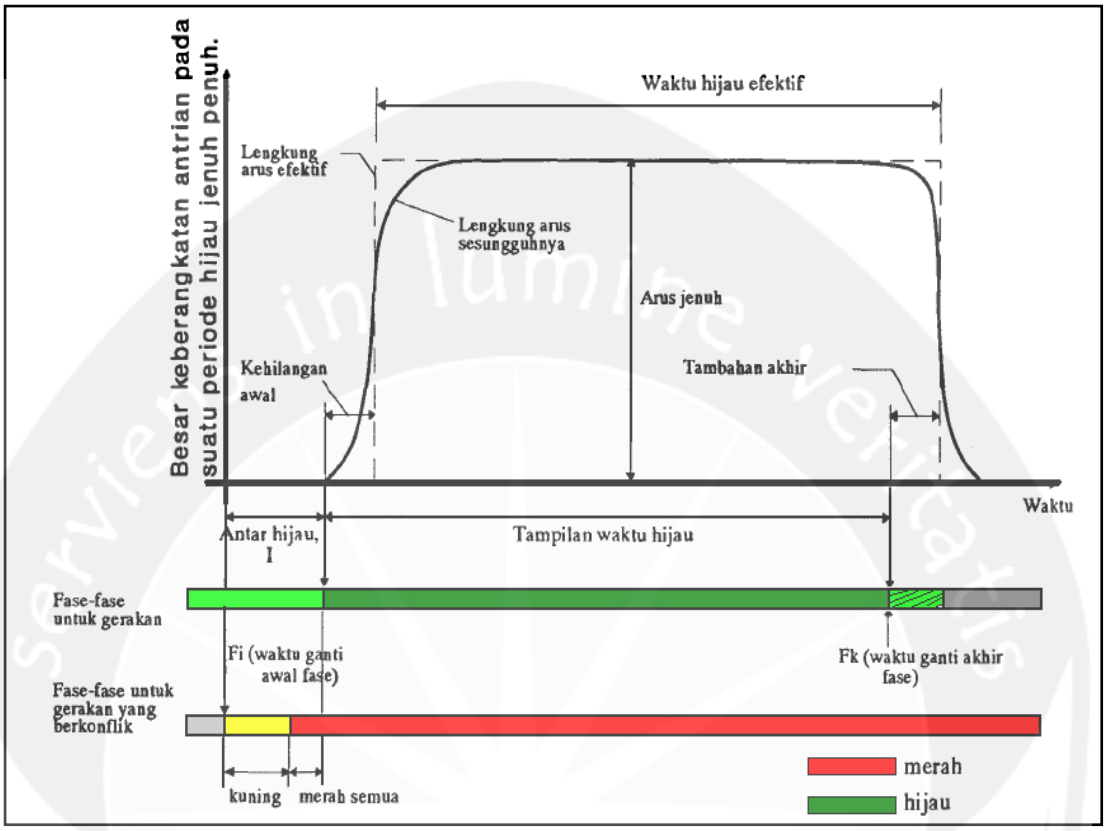
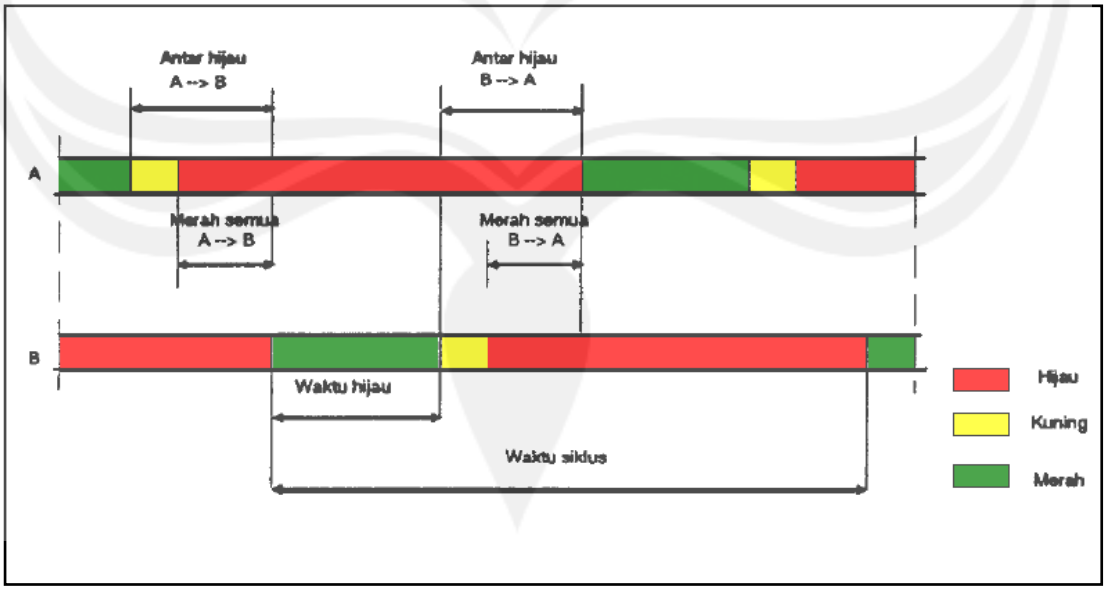



Gambar C.9. Model Dasar Untuk Arus Jenuh (Akcelik 1989)




Gambar C. 10. Urutan Waktu Pada Pengaturan Sinyal Dengan Dua-Fase.

Tabel 5.30.1. Arus Lalu Lintas Simpang Seturan Raya

| No | Periode waktu | Volume arah kiri | | | | Volume arah lurus | | | | Volume arah kanan | | | | Σ Unit Kend. | Emp* Volume arah kiri | | | Emp* Volume arah lurus | | | Emp *Volume arah kanan | | | Σ unit Kend. smp / jam |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LV | HV | MC | UM | LV | HV | MC | UM | LV | HV | MC | UM | | LV | HV | MC | LV | HV | MC | LV | HV | MC | |
| 1 | 06.30 - 06.35 | 10 | 0 | 14 | 0 | 2 | 0 | 0 | 2 | 5 | 0 | 9 | 0 | 42 | 10 | 0 | 7 | 2 | 0 | 4,5 | 10 | 0 | 4,5 | 38 |
| 2 | 06.35 - 06.40 | 2 | 0 | 19 | 0 | | 0 | 0 | 0 | 2 | 0 | 6 | 0 | 29 | 2 | 0 | 133 | 0 | 0 | 3 | 2 | 0 | 3 | 143 |
| 3 | 06.40 - 06.45 | 19 | 0 | 3 | 0 | 5 | 4 | 12 | 5 | 10 | 0 | 9 | 0 | 67 | 19 | 0 | 399 | 5 | 5,2 | 4,5 | 19 | 0 | 4,5 | 456,2 |
| 4 | 06.45 - 06.50 | 23 | 0 | 0 | 3 | 6 | 5 | 17 | 0 | 10 | 0 | 12 | 0 | 76 | 23 | 0 | 0 | 6 | 6,5 | 6 | 23 | 0 | 6 | 70,5 |
| 5 | 06.50 - 06.55 | 2 | 0 | 17 | 8 | 3 | 0 | 0 | 2 | 1 | 0 | 5 | 0 | 38 | 2 | 0 | 8,5 | 3 | 0 | 2,5 | 2 | 0 | 2,5 | 20,5 |
| 6 | 06.55 - 07.00 | 22 | 0 | 0 | 3 | 4 | 0 | 12 | 0 | 2 | 0 | 10 | 0 | 53 | 22 | 0 | 0 | 4 | 0 | 5 | 22 | 0 | 5 | 58 |
| 7 | 07.00 - 07.05 | 19 | 0 | 0 | 3 | 5 | 4 | 11 | 0 | 10 | 0 | 6 | 3 | 61 | 19 | 0 | 0 | 5 | 5,2 | 3 | 19 | 0 | 3 | 54,2 |
| 8 | 07.05 - 07.10 | 8 | 0 | 7 | 3 | 5 | 5 | 10 | 0 | 6 | 0 | 9 | 0 | 53 | 8 | 0 | 3,5 | 5 | 6,5 | 4,5 | 8 | 0 | 4,5 | 40 |
| 9 | 07.10 - 07.15 | 10 | 0 | 3 | 4 | 1 | 3 | 1 | 3 | 5 | 0 | 4 | 4 | 38 | 10 | 0 | 10,5 | 1 | 3,9 | 2 | 10 | 0 | 2 | 39,4 |
| 10 | 07.15 - 07.20 | | 0 | 2 | 5 | 1 | 0 | 4 | 0 | 4 | 0 | 8 | 0 | 24 | 0 | 0 | 21 | 1 | 0 | 4 | 0 | 0 | 4 | 30 |
| 11 | 07.20 - 07.25 | 1 | 0 | 3 | 5 | | 0 | 2 | 2 | 3 | 0 | 3 | 2 | 21 | 1 | 0 | 63 | 0 | 0 | 1,5 | 1 | 0 | 1,5 | 68 |
| 12 | 07.25 - 07.30 | 4 | 0 | 2 | 0 | 1 | 0 | 4 | 0 | 4 | 0 | 8 | 0 | 23 | 4 | 0 | 126 | 1 | 0 | 4 | 4 | 0 | 4 | 143 |
| 13 | 07.30 - 07.35 | 22 | 0 | 0 | 3 | 4 | 0 | 11 | 0 | 2 | 0 | 10 | 0 | 52 | 22 | 0 | 0 | 4 | 0 | 5 | 22 | 0 | 5 | 58 |
| 14 | 07.35 - 07.40 | 11 | 0 | 0 | 0 | 5 | 2 | 5 | 0 | 1 | 0 | 5 | 0 | 29 | 11 | 0 | 0 | 5 | 6,76 | 2,5 | 11 | 0 | 2,5 | 38,76 |
| 15 | 07.40 - 07.45 | 11 | 0 | 15 | 0 | | 15 | 16 | 0 | | 0 | 5 | 2 | 64 | 11 | 0 | 7,5 | 0 | 19,5 | 2,5 | 11 | 0 | 2,5 | 54 |
| 16 | 07.45 - 07.50 | 9 | 0 | 8 | 1 | 3 | 0 | 10 | 2 | 4 | 0 | 5 | 7 | 49 | 9 | 0 | 60 | 3 | 0 | 2,5 | 9 | 0 | 2,5 | 86 |
| 17 | 07.50 - 07.55 | 7 | 0 | 3 | 5 | 5 | 0 | 2 | 5 | 3 | 0 | 3 | 2 | 35 | 7 | 0 | 180 | 5 | 0 | 1,5 | 7 | 0 | 1,5 | 202 |
| 18 | 07.55 - 08.00 | 13 | 0 | 0 | 0 | 5 | 2 | 8 | 0 | 1 | 0 | 5 | 0 | 34 | 13 | 0 | 0 | 5 | 2,6 | 2,5 | 13 | 0 | 2,5 | 38,6 |
| 19 | 08.00 - 08.05 | 10 | 0 | 7 | 3 | 5 | 5 | 15 | 0 | 6 | 0 | 18 | 0 | 69 | 10 | 0 | 3,5 | 5 | 6,5 | 9 | 10 | 0 | 9 | 53 |
| 20 | 08.05 - 08.10 | 19 | 0 | 0 | 3 | 5 | 4 | 18 | 5 | 13 | 0 | 9 | 0 | 76 | 19 | 0 | 0 | 5 | 5,2 | 4,5 | 19 | 0 | 4,5 | 57,2 |
| 21 | 08.10 - 08.15 | 15 | 0 | 5 | 0 | 1 | 0 | 4 | 0 | 4 | 0 | 8 | 0 | 37 | 15 | 0 | 2,5 | 1 | 0 | 4 | 15 | 0 | 4 | 41,5 |
| 22 | 08.15 - 08.20 | 29 | 0 | 0 | 3 | 4 | 0 | 14 | 0 | 2 | 0 | 10 | 0 | 62 | 29 | 0 | 0 | 4 | 0 | 5 | 29 | 0 | 5 | 72 |
| 23 | 08.20 - 08.25 | 12 | 0 | 3 | 4 | 1 | 2 | 1 | 3 | 5 | 0 | 4 | 4 | 39 | 12 | 0 | 1,5 | 1 | 2,6 | 2 | 12 | 0 | 2 | 33,1 |
| 24 | 08.25 - 08.30 | 0 | 0 | 14 | 0 | 1 | 0 | 10 | 0 | 3 | 0 | 3 | 0 | 31 | 0 | 0 | 21 | 1 | 0 | 1,5 | 0 | 0 | 1,5 | 25 |

Sumber : Hasil Survei, Maret 2012

Keterangan :

1. Kendaraan Berat (*Heavy Vehicles*, HV) Diantaranya : bus besar, truk minyak, truk angkutan.
2. Kendaraan Ringan (*Light vehicles*, LV) Diantaranya : bus angkutan, pick up, colt, kijang, sedan, jeep.
3. Sepeda Motor (*Motor cycles*, MC) Diantaranya : sepeda motor dan scoter.
4. Kendaraan Tak Bermotor (*Unmototorized*, UM)

Tabel 5. 30.2. Arus Lalu Lintas Simpang Seturan Raya

| No | Periode waktu | Volume arah kiri | | | | Volume arah lurus | | | | Volume arah kanan | | | | Σ Unit Kend. | Emp* Volume arah kiri | | | Emp* Volume arah lurus | | | Emp *Volume arah kanan | | | Σ unit Kend. smp / jam |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LV | HV | MC | UM | LV | HV | MC | UM | LV | HV | MC | UM | | LV | HV | MC | LV | HV | MC | LV | HV | MC | |
| 1 | 12.00 - 12.05 | 11 | 0 | 5 | 3 | 2 | 4 | 13 | 5 | 10 | 0 | 3 | 7 | 63 | 11 | 0 | 2,5 | 2 | 5,2 | 6,5 | 5 | 0 | 4,5 | 36,7 |
| 2 | 12.05 - 12.10 | 10 | 0 | 11 | 5 | 6 | 6 | 15 | 0 | 9 | 0 | 13 | 4 | 79 | 10 | 0 | 5,5 | 6 | 7,8 | 7,5 | 2 | 0 | 27 | 65,8 |
| 3 | 12.10 - 12.15 | 8 | 0 | 4 | 6 | 1 | 0 | 2 | 5 | 3 | 0 | 4 | 3 | 36 | 8 | 0 | 2 | 1 | 0 | 1 | 10 | 0 | 27 | 49 |
| 4 | 12.15 - 12.20 | 17 | 0 | 5 | 3 | 6 | 0 | 9 | 5 | 10 | 0 | 12 | 9 | 76 | 17 | 0 | 2,5 | 6 | 0 | 4,5 | 10 | 0 | 54 | 94 |
| 5 | 12.20 - 12.25 | 7 | 0 | 3 | 5 | 8 | 4 | 5 | 5 | 3 | 0 | 3 | 5 | 48 | 7 | 0 | 1,5 | 8 | 5,2 | 2,5 | 1 | 0 | 30 | 55,2 |
| 6 | 12.25 - 12.30 | 2 | 0 | 15 | 3 | 1 | 2 | 5 | 0 | 3 | 0 | 2 | 3 | 36 | 2 | 0 | 7,5 | 1 | 2,6 | 2,5 | 2 | 0 | 25 | 42,6 |
| 7 | 12.30 - 12.35 | 9 | 0 | 10 | 5 | 3 | 4 | 12 | 5 | 3 | 0 | 7 | 2 | 60 | 9 | 0 | 5 | 3 | 5,2 | 6 | 10 | 0 | 30 | 68,2 |
| 8 | 12.35 - 12.40 | | 0 | 20 | 6 | 8 | 0 | 5 | | 3 | 0 | 3 | | 45 | 0 | 0 | 10 | 8 | 0 | 2,5 | 6 | 0 | 27 | 53,5 |
| 9 | 12.40 - 12.45 | 6 | 0 | 9 | 3 | 1 | 0 | 23 | 4 | 5 | 0 | 2 | 3 | 56 | 6 | 0 | 4,5 | 1 | 0 | 11,5 | 5 | 0 | 18 | 46 |
| 10 | 12.45 - 12.50 | | 0 | 9 | 3 | 0 | 4 | 5 | 5 | 3 | 0 | 4 | 0 | 33 | 0 | 0 | 4,5 | 0 | 5,2 | 2,5 | 4 | 0 | 16 | 32,2 |
| 11 | 12.50 - 12.55 | 8 | 0 | 4 | 0 | 1 | 2 | 4 | 0 | 3 | 0 | 0 | 0 | 22 | 8 | 0 | 2 | 1 | 2,6 | 2 | 3 | 0 | 12 | 30,6 |
| 12 | 12.55 - 13.00 | | 0 | 0 | 0 | 2 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 2 | 0 | 4,5 | 4 | 0 | 12 | 22,5 |
| 13 | 13.00 - 13.05 | 11 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 14 | 11 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 40 | 54 |
| 14 | 13.05 - 13.10 | | 0 | 12 | 5 | 3 | 4 | 12 | 5 | 3 | 0 | 1 | 0 | 45 | 0 | 0 | 6 | 3 | 5,2 | 6 | 1 | 0 | 25 | 46,2 |
| 15 | 13.10 - 13.15 | 3 | 0 | 2 | 6 | 9 | 0 | 5 | 5 | 3 | 0 | 13 | 6 | 52 | 3 | 0 | 1 | 9 | 0 | 2,5 | 0 | 0 | 12,5 | 28 |
| 16 | 13.15 - 13.30 | 11 | 0 | 5 | 0 | 2 | 4 | 13 | 0 | 3 | 0 | 7 | 0 | 45 | 11 | 0 | 2,5 | 2 | 5,2 | 6,5 | 4 | 0 | 12,5 | 43,7 |
| 17 | 13.20 - 13.25 | 6 | 0 | 15 | 3 | 1 | 0 | 5 | 0 | 3 | 0 | 3 | 0 | 36 | 6 | 0 | 7,5 | 1 | 0 | 2,5 | 3 | 0 | 7,5 | 27,5 |
| 18 | 13.25 - 13.30 | 15 | 0 | 15 | 5 | 3 | 4 | 17 | 0 | 3 | 0 | 7 | 0 | 69 | 15 | 0 | 7,5 | 3 | 5,2 | 8,5 | 1 | 0 | 7,5 | 47,7 |
| 19 | 13.30 - 13.35 | 3 | 0 | 2 | 6 | 4 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 21 | 3 | 0 | 1 | 4 | 0 | 1,5 | 6 | 0 | 45 | 60,5 |
| 20 | 13.35 - 13.40 | | 0 | 3 | 2 | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 0 | 11 | 0 | 0 | 1,5 | 0 | 5,2 | 0 | 13 | 0 | 81 | 100,7 |
| 21 | 13.40 - 13.45 | 2 | 0 | 5 | 0 | 2 | 4 | 2 | 0 | 3 | 0 | 5 | 0 | 23 | 2 | 0 | 2,5 | 2 | 5,2 | 1 | 4 | 0 | 36 | 52,7 |
| 22 | 13.45 - 13.50 | | 0 | 10 | 3 | 1 | 2 | 5 | 0 | 3 | 0 | 2 | 0 | 26 | 0 | 0 | 5 | 1 | 2,6 | 2,5 | 2 | 0 | 40 | 53,1 |
| 23 | 13.50 - 13.55 | 5 | 0 | 3 | 5 | 8 | 4 | 5 | 5 | 3 | 0 | 3 | 4 | 45 | 5 | 0 | 1,5 | 8 | 5,2 | 2,5 | 5 | 0 | 20 | 47,2 |
| 24 | 13.55 - 14.00 | 10 | 0 | 2 | 3 | 1 | 2 | 5 | 0 | 3 | 0 | 4 | 0 | 30 | 10 | 0 | 1 | 1 | 2,6 | 2,5 | 3 | 0 | 6 | 26,1 |

Sumber : Hasil Survei, Maret 2012

Keterangan :

1. Kendaraan Berat (*Heavy Vehicles*, HV) Diantaranya : bus besar, truk minyak, truk angkutan.
2. Kendaraan Ringan (*Light vehicles*, LV) Diantaranya : bus angkutan, pick up, colt, kijang, sedan, jeep.
3. Sepeda Motor (*Motor cycles*, MC) Diantaranya : sepeda motor dan scoter.
4. Kendaraan Tak Bermotor (*Unmototorized*, UM)

Tabel 5. 30.3. Arus Lalu Lintas Simpang Seturan Raya

| No | Periode waktu | Volume arah kiri | | | | Volume arah lurus | | | | Volume arah kanan | | | | Σ Unit Kend. | Emp* Volume arah kiri | | | Emp* Volume arah lurus | | | Emp *Volume arah kanan | | | Σ unit Kend. smp / jam |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LV | HV | MC | UM | LV | HV | MC | UM | LV | HV | MC | UM | | LV | HV | MC | LV | HV | MC | LV | HV | MC | |
| 1 | 16.00 - 16.05 | | | 4 | 6 | 1 | | 35 | 5 | 3 | | 38 | 3 | 95 | 0 | 0 | 2 | 6 | 1,3 | 17,5 | 3 | 0 | 19 | 48,8 |
| 2 | 16.05 - 16.10 | 20 | | | 3 | 1 | 2 | 15 | | 3 | | 4 | | 48 | 20 | 0 | 0 | 3 | 1,3 | 7,5 | 3 | 0 | 2 | 36,8 |
| 3 | 16.10 - 16.15 | | | | 3 | 46 | 4 | 56 | 5 | 58 | | 69 | | 241 | 0 | 0 | 0 | 3 | 59.8 | 28 | 58 | 0 | 34,5 | 183,3 |
| 4 | 16.15 - 16.20 | 29 | | | 5 | 3 | 2 | 17 | | 3 | | 5 | | 64 | 29 | 0 | 0 | 5 | 3,9 | 8,5 | 3 | 0 | 2,5 | 51,9 |
| 5 | 16.20 - 16.25 | 12 | | | 6 | 1 | 3 | 35 | | 3 | 2 | 9 | 3 | 74 | 12 | 0 | 0 | 6 | 1,3 | 17,5 | 3 | 2,6 | 4,5 | 46,9 |
| 6 | 16.25 - 16.30 | 15 | | | 3 | 1 | 2 | 15 | | | 8 | | | 44 | 15 | 0 | 0 | 3 | 1,3 | 7,5 | 0 | 10,4 | 0 | 37,2 |
| 7 | 16.30 - 16.35 | 15 | | | 5 | 3 | 15 | 45 | | 3 | 2 | 56 | | 144 | 15 | 0 | 0 | 5 | 3,9 | 22,5 | 3 | 2,6 | 28 | 80 |
| 8 | 16.35 - 16.40 | | | | 5 | 49 | 65 | | | 4 | 5 | | | 128 | 0 | 0 | 0 | 5 | 63,7 | 0 | 4 | 6,5 | 0 | 79,2 |
| 9 | 16.40 - 16.45 | | | | 5 | 3 | 4 | | | 35 | | | | 47 | 0 | 0 | 0 | 5 | 3,9 | 0 | 35 | 0 | 0 | 43,9 |
| 10 | 16.45 - 16.50 | 20 | | | 6 | 1 | | | 5 | 3 | | 55 | 3 | 93 | 20 | 0 | 0 | 6 | 1,3 | 0 | 3 | 0 | 27,5 | 57,8 |
| 11 | 16.50 - 16.55 | | | | 5 | 10 | 2 | | 5 | 23 | | 45 | 2 | 92 | 0 | 0 | 0 | 5 | 13 | 0 | 23 | 0 | 22,5 | 63,5 |
| 12 | 16.55 - 17.00 | 17 | | | 5 | 65 | 4 | | | | | | | 91 | 17 | 0 | 0 | 5 | 84,5 | 0 | 0 | 0 | 0 | 106,5 |
| 13 | 17.00 - 17.05 | | | | | 29 | 7 | 57 | | 25 | 4 | | 2 | 124 | 0 | 0 | 0 | 0 | 37,7 | 28,5 | 25 | 5,2 | 0 | 96,4 |
| 14 | 17.05 - 17.10 | | | | | 2 | 4 | | | | | | | 6 | 0 | 0 | 0 | 0 | 2,6 | 0 | 0 | 0 | 0 | 2,6 |
| 15 | 17.10 - 17.15 | | | | 3 | 20 | 7 | 55 | | 16 | | | | 101 | 0 | 0 | 0 | 3 | 26 | 27,5 | 16 | 0 | 0 | 72,5 |
| 16 | 17.15 - 17.30 | | | | 4 | 1 | 45 | 55 | 3 | 55 | 3 | 45 | 4 | 215 | 0 | 0 | 0 | 4 | 1,3 | 27,5 | 55 | 3,9 | 22,5 | 114,2 |
| 17 | 17.20 - 17.25 | 29 | | | 5 | 50 | 25 | | | | 1 | | | 110 | 29 | 0 | 0 | 5 | 65 | 0 | 0 | 1,3 | 0 | 100,3 |
| 18 | 17.25 - 17.30 | 10 | | | 3 | 7 | 5 | | 5 | | | | | 30 | 10 | 0 | 0 | 3 | 9,1 | 0 | 0 | 0 | 0 | 22,1 |
| 19 | 17.30 - 17.35 | 22 | | | | 2 | | 2 | 4 | | | | | 30 | 22 | 0 | 0 | 0 | 2,6 | 1 | 0 | 0 | 0 | 25,6 |
| 20 | 17.35 - 17.40 | | | | 3 | 8 | 65 | | | | 4 | 45 | | 125 | 0 | 0 | 0 | 3 | 10,4 | 0 | 0 | 5,2 | 22,5 | 41,1 |
| 21 | 17.40 - 17.45 | | | | 6 | 3 | | | | | | | 3 | 12 | 0 | 0 | 0 | 6 | 3,9 | 0 | 0 | 0 | 0 | 9,9 |
| 22 | 17.45 - 17.50 | 25 | | | 6 | | 55 | | | 8 | | 50 | 3 | 147 | 25 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 25 | 64 |
| 23 | 17.50 - 17.55 | | | | 3 | 75 | 55 | | | 35 | | 75 | | 243 | 0 | 0 | 0 | 3 | 97,5 | 0 | 35 | 0 | 37,5 | 173 |
| 24 | 17.55 - 18.00 | | | | | 35 | 5 | 69 | 4 | 6 | 3 | | | 122 | 0 | 0 | 0 | 0 | 45,5 | 34,5 | 6 | 3,9 | 0 | 89,9 |

Sumber : Hasil Survei, Maret 2012

Keterangan :

1. Kendaraan Berat (*Heavy Vehicles*, HV) Diantaranya : bus besar, truk minyak, truk angkutan.
2. Kendaraan Ringan (*Light vehicles*, LV) Diantaranya : bus angkutan, pick up, colt, kijang, sedan, jeep.
3. Sepeda Motor (*Motor cycles*, MC) Diantaranya : sepeda motor dan scoter.
4. Kendaraan Tak Bermotor (*Unmototorized*, UM)

Tabel 5.30.4. Arus Lalu Lintas Simpang Seturan Raya

| No | Periode waktu | Volume arah kiri | | | | Volume arah lurus | | | | Volume arah kanan | | | | Σ Unit Kend. | Emp* Volume arah kiri | | | Emp* Volume arah lurus | | | Emp *Volume arah kanan | | | Σ unit Kend. smp / jam |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LV | HV | MC | UM | LV | HV | MC | UM | LV | HV | MC | UM | | LV | HV | MC | LV | HV | MC | LV | HV | MC | |
| 1 | 12.00 - 12.05 | 35 | | 17 | 7 | 6 | | 28 | | | | 5 | | 98 | 35 | 0 | 8,5 | 6 | 0 | 14 | 0 | 0 | 2,5 | 66 |
| 2 | 12.05 - 12.10 | | | 33 | 6 | 12 | | 4 | 6 | 3 | | 5 | 2 | 71 | 0 | 0 | 16,5 | 12 | 0 | 2 | 3 | 0 | 2,5 | 36 |
| 3 | 12.10 - 12.15 | 7 | | 35 | 3 | 35 | 21 | 79 | 3 | 5 | | 2 | 4 | 194 | 7 | 0 | 17,5 | 35 | 27,3 | 39,5 | 5 | 0 | 1 | 132,3 |
| 4 | 12.15 - 12.20 | 2 | | 79 | | 40 | | 89 | 3 | 3 | | 2 | 5 | 223 | 2 | 0 | 39,5 | 40 | 0 | 44,5 | 3 | 0 | 1 | 130 |
| 5 | 12.20 - 12.25 | 46 | | 5 | 7 | 10 | | 5 | 5 | 8 | | | 2 | 88 | 46 | 0 | 2,5 | 10 | 0 | 2,5 | 8 | 0 | 0 | 69 |
| 6 | 12.25 - 12.30 | | | 11 | 3 | 5 | | 10 | 5 | 2 | | | | 36 | 0 | 0 | 5,5 | 5 | 0 | 5 | 2 | 0 | 0 | 17,5 |
| 7 | 12.30 - 12.35 | 9 | | 4 | 3 | 56 | 2 | 64 | 3 | 5 | | 2 | | 148 | 9 | 0 | 2 | 56 | 2.6 | 32 | 5 | 0 | 1 | 107,6 |
| 8 | 12.35 - 12.40 | 1 | | 7 | 3 | 65 | | 78 | 5 | 6 | | 4 | 5 | 174 | 1 | 0 | 3,5 | 65 | 0 | 39 | 6 | 0 | 2 | 116,5 |
| 9 | 12.40 - 12.45 | 9 | | 45 | 7 | 8 | 33 | 59 | 5 | 4 | | | | 170 | 9 | 0 | 22,5 | 8 | 42,9 | 29,5 | 4 | 0 | 0 | 115,9 |
| 10 | 12.45 - 12.50 | 65 | | 7 | 3 | 5 | | 9 | 7 | 2 | | | | 98 | 65 | 0 | 3,5 | 5 | 0 | 4,5 | 2 | 0 | 0 | 80 |
| 11 | 12.50 - 12.55 | 1 | | 4 | 4 | 1 | | 1 | 3 | | | 6 | 2 | 22 | 1 | 0 | 2 | 1 | 0 | 0,5 | 0 | 0 | 3 | 7,5 |
| 12 | 12.55 - 13.00 | 45 | | | | | 2 | 5 | | 1 | | | | 53 | 45 | 0 | 0 | 0 | 2,6 | 2,5 | 1 | 0 | 0 | 51,1 |
| 13 | 13.00 - 13.05 | | | 11 | | | 2 | | | 1 | | | | 14 | 0 | 0 | 5,5 | 0 | 2,6 | 0 | 1 | 0 | 0 | 9,1 |
| 14 | 13.05 - 13.10 | 9 | | 65 | 3 | 45 | 2 | 53 | 3 | 1 | | 2 | | 183 | 9 | 0 | 32,5 | 45 | 2,6 | 26,5 | 1 | 0 | 1 | 117,6 |
| 15 | 13.10 - 13.15 | 2 | | 5 | | 2 | 1 | 35 | 5 | 1 | | 1 | | 52 | 2 | 0 | 2,5 | 2 | 1,3 | 17,5 | 1 | 0 | 0.5 | 26,8 |
| 16 | 13.15 - 13.30 | 55 | | 11 | 7 | 10 | | 5 | 5 | 8 | | | | 101 | 55 | 0 | 5,5 | 10 | 0 | 2,5 | 8 | 0 | 0 | 81 |
| 17 | 13.20 - 13.25 | 2 | | 6 | 10 | 7 | | 5 | 4 | 1 | | | | 35 | 2 | 0 | 3 | 7 | 0 | 2,5 | 1 | 0 | 0 | 15,5 |
| 18 | 13.25 - 13.30 | 55 | | 73 | 7 | 49 | 2 | 69 | 5 | 4 | | 6 | | 270 | 55 | 0 | 36,5 | 49 | 2,6 | 34,5 | 4 | 0 | 3 | 184,6 |
| 19 | 13.30 - 13.35 | | | 69 | 1 | 8 | 2 | 79 | 45 | | | 9 | | 213 | 0 | 0 | 34,5 | 8 | 2,6 | 39,5 | 0 | 0 | 4,5 | 89,1 |
| 20 | 13.35 - 13.40 | 17 | | 79 | 2 | 43 | 19 | 88 | 2 | 1 | | 2 | | 253 | 17 | 0 | 39,5 | 43 | 24,7 | 44 | 1 | 0 | 1 | 170,2 |
| 21 | 13.40 - 13.45 | 51 | | 5 | 2 | 3 | | 1 | 8 | | | | | 70 | 51 | 0 | 2,5 | 3 | 0 | 0,5 | 0 | 0 | 0 | 57 |
| 22 | 13.45 - 13.50 | 17 | | 5 | 2 | 3 | | 1 | 8 | | | | 4 | 40 | 17 | 0 | 2,5 | 3 | 0 | 0,5 | 0 | 0 | 0 | 23 |
| 23 | 13.50 - 13.55 | 49 | | 2 | 5 | 3 | | 1 | 8 | | | | 4 | 72 | 49 | 0 | 1 | 3 | 0 | 0,5 | 0 | 0 | 0 | 53,5 |
| 24 | 13.55 - 14.00 | 15 | | 3 | 2 | 2 | | 1 | 3 | | | | 4 | 30 | 15 | 0 | 1,5 | 2 | 0 | 0,5 | 0 | 0 | 0 | 19 |

Sumber : Hasil Survei, Maret 2012

Keterangan :

1. Kendaraan Berat (*Heavy Vehicles*, HV ) Diantaranya : bus besar, truk minyak, truk angkutan.
2. Kendaraan Ringan (*Light vehicles*, LV) Diantaranya : bus angkutan, pick up, colt, kijang, sedan, jeep.
3. Sepeda Motor (*Motor cycles*, MC) Diantaranya : sepeda motor dan scoter.
4. Kendaraan Tak Bermotor (*Unmototorized*, UM)

Tabel 5.30.5. Arus Lalu Lintas Simpang Seturan Raya

| No | Periode waktu | Volume arah kiri | | | | Volume arah lurus | | | | Volume arah kanan | | | | Σ Unit Kend. | Emp* Volume arah kiri | | | Emp* Volume arah lurus | | | Emp *Volume arah kanan | | | Σ unit Kend. smp / jam |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LV | HV | MC | UM | LV | HV | MC | UM | LV | HV | MC | UM | | LV | HV | MC | LV | HV | MC | LV | HV | MC | |
| 1 | 16.00 - 16.05 | 16 | | 45 | 3 | 5 | | 14 | 7 | 11 | | 35 | | 136 | 16 | 0 | 22,5 | 5 | 0 | 7 | 11 | 0 | 17,5 | 79 |
| 2 | 16.05 - 16.10 | 12 | | 54 | 7 | 8 | 2 | 5 | 5 | 8 | | 1 | 1 | 103 | 12 | 0 | 27 | 8 | 2,6 | 2,5 | 8 | 0 | 0,5 | 60,6 |
| 3 | 16.10 - 16.15 | 35 | 2 | 4 | 3 | 45 | 9 | 85 | 3 | 6 | | 79 | 5 | 276 | 35 | 2,6 | 2 | 45 | 11,7 | 42,5 | 6 | 0 | 39,5 | 184,3 |
| 4 | 16.15 - 16.20 | 45 | | 59 | 7 | 25 | 4 | 56 | 5 | 15 | | 49 | 2 | 267 | 45 | 0 | 29,5 | 25 | 5,2 | 28 | 15 | 0 | 24,5 | 172,2 |
| 5 | 16.20 - 16.25 | 17 | | 49 | 3 | 5 | | 16 | 5 | 11 | | 22 | 5 | 133 | 17 | 0 | 24,5 | 5 | 0 | 8 | 11 | 0 | 11 | 76,5 |
| 6 | 16.25 - 16.30 | 9 | | 25 | 4 | 5 | 5 | 15 | 5 | 12 | | 4 | 6 | 90 | 9 | 0 | 12.5 | 5 | 6,5 | 7,5 | 12 | 0 | 2 | 54.5 |
| 7 | 16.30 - 16.35 | 45 | 1 | 4 | 3 | 35 | 8 | 99 | 3 | 5 | 4 | 69 | | 276 | 45 | 1,3 | 2 | 35 | 10,4 | 49,5 | 5 | 5,2 | 34,5 | 187,9 |
| 8 | 16.35 - 16.40 | 16 | | 7 | 3 | 50 | 4 | 79 | 7 | 26 | | 45 | | 237 | 16 | 0 | 3,5 | 50 | 5,2 | 39,5 | 26 | 0 | 22,5 | 162,7 |
| 9 | 16.40 - 16.45 | 35 | | 3 | 5 | 59 | | 89 | 3 | | | 15 | | 209 | 35 | 0 | 1,5 | 59 | 0 | 44.5 | 0 | 0 | 7.5 | 147.5 |
| 10 | 16.45 - 16.50 | 6 | | 59 | 7 | 7 | 3 | 5 | 5 | 5 | | 24 | 1 | 122 | 6 | 0 | 29,5 | 7 | 3,9 | 2,5 | 5 | 0 | 12 | 65,9 |
| 11 | 16.50 - 16.55 | 24 | | 32 | 3 | 5 | 2 | 3 | 4 | | | 8 | | 81 | 24 | 0 | 16 | 5 | 2,6 | 1.5 | 0 | 0 | 4 | 53,1 |
| 12 | 16.55 - 17.00 | 65 | 3 | 3 | 5 | 36 | 7 | 69 | 3 | | | 35 | | 226 | 65 | 3,9 | 1,5 | 36 | 9,1 | 34.5 | 0 | 0 | 17,5 | 167,5 |
| 13 | 17.00 - 17.05 | 49 | | 3 | 5 | 45 | 8 | 48 | 3 | 13 | 4 | 30 | | 208 | 49 | 0 | 1,5 | 45 | 10,4 | 24 | 13 | 5,2 | 15 | 163,1 |
| 14 | 17.05 - 17.10 | 7 | | 61 | 7 | 7 | | 5 | 5 | | | 21 | | 113 | 7 | 0 | 30,5 | 7 | 0 | 2,5 | 0 | 0 | 10,5 | 57,5 |
| 15 | 17.10 - 17.15 | 18 | | 33 | 7 | 7 | | 23 | 5 | | | | | 93 | 18 | 0 | 16,5 | 7 | 0 | 11,5 | 0 | 0 | 0 | 53 |
| 16 | 17.15 - 17.30 | 69 | | 3 | 5 | 48 | 9 | 89 | 3 | | 9 | 54 | | 289 | 69 | 0 | 1,5 | 48 | 11,7 | 44,5 | 0 | 11,7 | 27 | 213,4 |
| 17 | 17.20 - 17.25 | 79 | | 49 | 5 | 65 | 9 | 80 | 3 | 6 | 3 | 35 | | 334 | 79 | 0 | 24,5 | 65 | 11,7 | 40 | 6 | 3,9 | 17,5 | 247,6 |
| 18 | 17.25 - 17.30 | 79 | 5 | 3 | 5 | 65 | 4 | 89 | 3 | | | 58 | | 311 | 79 | 6.5 | 1,5 | 65 | 5,2 | 44,5 | 0 | 0 | 29 | 230,7 |
| 19 | 17.30 - 17.35 | 9 | | 49 | 8 | 7 | | 5 | 5 | | | 22 | | 105 | 9 | 0 | 24,5 | 7 | 0 | 2,5 | 0 | 0 | 11 | 54 |
| 20 | 17.35 - 17.40 | 49 | | 3 | 5 | 100 | | 145 | 3 | 4 | | 10 | | 319 | 49 | 0 | 1,5 | 100 | 0 | 72,5 | 4 | 0 | 5 | 232 |
| 21 | 17.40 - 17.45 | 9 | | 65 | 7 | 7 | 3 | 5 | 5 | 5 | | 25 | 1 | 132 | 9 | 0 | 32,5 | 7 | 3,9 | 2,5 | 5 | 0 | 12,5 | 72,4 |
| 22 | 17.45 - 17.50 | 20 | | 26 | 7 | 7 | 3 | 5 | 5 | 5 | | | | 78 | 20 | 0 | 13 | 7 | 3,9 | 2,5 | 5 | 0 | 0 | 51,4 |
| 23 | 17.50 - 17.55 | 51 | | 3 | 5 | 54 | 11 | 97 | 3 | 9 | 6 | 55 | | 294 | 51 | 0 | 1,5 | 54 | 14,3 | 48,5 | 9 | 7,8 | 27,5 | 213,6 |
| 24 | 17.55 - 18.00 | 59 | | 23 | 3 | 145 | 2 | 250 | 7 | 5 | | 8 | | 502 | 59 | 0 | 11,5 | 145 | 2,6 | 125 | 5 | 0 | 4 | 352,1 |

Sumber : Hasil Survei, Maret 2012

Keterangan :

1. Kendaraan Berat (*Heavy Vehicles*, HV) Diantaranya : bus besar, truk minyak, truk angkutan.
2. Kendaraan Ringan (*Light vehicles*, LV) Diantaranya : bus angkutan, pick up, colt, kijang, sedan, jeep.
3. Sepeda Motor (*Motor cycles*, MC) Diantaranya : sepeda motor dan scoter.
4. Kendaraan Tak Bermotor (*Unmototorized*, UM)

Tabel 5.30.6. Arus Lalu Lintas Simpang Seturan Raya

| No | Periode waktu | Volume arah kiri | | | | Volume arah lurus | | | | Volume arah kanan | | | | Σ Unit Kend. | Emp* Volume arah kiri | | | Emp* Volume arah lurus | | | Emp *Volume arah kanan | | | Σ unit Kend. smp / jam |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LV | HV | MC | UM | LV | HV | MC | UM | LV | HV | MC | UM | | LV | HV | MC | LV | HV | MC | LV | HV | MC | |
| 1 | 06.30 - 06.35 | 4 | | 45 | 3 | 3 | | 5 | 3 | 5 | | 4 | 2 | 74 | 4 | 0 | 22,5 | 3 | 0 | 2,5 | 5 | 0 | 2 | 39 |
| 2 | 06.35 - 06.40 | 5 | | 18 | | 10 | | 5 | 5 | 5 | | | 1 | 49 | 5 | 0 | 9 | 10 | 0 | 2,5 | 5 | 0 | 0 | 31,5 |
| 3 | 06.40 - 06.45 | 9 | | 125 | | 136 | 2 | 189 | | 11 | | 55 | 3 | 530 | 9 | 0 | 62,5 | 136 | 2,6 | 94,5 | 11 | 0 | 27,5 | 343,1 |
| 4 | 06.45 - 06.50 | 39 | | 19 | | 113 | 8 | 89 | | 7 | | 8 | | 283 | 39 | 0 | 9,5 | 113 | 10,4 | 44,5 | 7 | 0 | 4 | 227,4 |
| 5 | 06.50 - 06.55 | 35 | | 85 | 5 | 11 | 7 | 17 | | 5 | | 6 | | 171 | 35 | 0 | 42,5 | 11 | 9,1 | 8,5 | 5 | 0 | 3 | 114,1 |
| 6 | 06.55 - 07.00 | 7 | | 24 | | 5 | | 21 | | 11 | | 4 | 3 | 75 | 7 | 0 | 12 | 5 | 0 | 10,5 | 11 | 0 | 2 | 47,5 |
| 7 | 07.00 - 07.05 | 9 | | 80 | - | 149 | | 132 | | 7 | | 56 | | 433 | 9 | 0 | 40 | 149 | 0 | 66 | 7 | 0 | 28 | 299 |
| 8 | 07.05 - 07.10 | 48 | | 13 | | 44 | 2 | 88 | 5 | 11 | | 7 | | 218 | 48 | 0 | 6,5 | 44 | 2,6 | 44 | 11 | 0 | 3,5 | 159,6 |
| 9 | 07.10 - 07.15 | 8 | | 9 | 5 | 151 | 2 | 172 | | 11 | | 30 | 3 | 391 | 8 | 0 | 4,5 | 151 | 2,6 | 86 | 11 | 0 | 15 | 278,1 |
| 10 | 07.15 - 07.20 | 8 | | 65 | 2 | 1 | | 1 | 3 | | | 10 | | 90 | 8 | 0 | 32,5 | 1 | 0 | 0,5 | 0 | 0 | 5 | 47 |
| 11 | 07.20 - 07.25 | 9 | | 11 | | 9 | | 4 | 5 | 7 | | 8 | | 53 | 9 | 0 | 5,5 | 9 | 0 | 2 | 7 | 0 | 4 | 36,5 |
| 12 | 07.25 - 07.30 | 23 | | 22 | 10 | 2 | | 12 | 2 | 5 | | 9 | | 85 | 23 | 0 | 11 | 2 | 0 | 6 | 5 | 0 | 4,5 | 51,5 |
| 13 | 07.30 - 07.35 | 45 | | | 3 | 4 | | 16 | | 2 | | 6 | | 76 | 45 | 0 | 0 | 4 | 0 | 8 | 2 | 0 | 3 | 62 |
| 14 | 07.35 - 07.40 | 19 | | 65 | 3 | 159 | 15 | 211 | 5 | 10 | | 41 | | 528 | 19 | 0 | 32,5 | 159 | 19,5 | 105,5 | 10 | 0 | 20,5 | 366 |
| 15 | 07.40 - 07.45 | 23 | | | 3 | 61 | 5 | 89 | | 10 | | 12 | | 203 | 23 | 0 | 0 | 61 | 6.5 | 44,5 | 10 | 0 | 6 | 151 |
| 16 | 07.45 - 07.50 | 9 | | 49 | 8 | 3 | | 9 | 2 | 8 | | 5 | 7 | 100 | 9 | 0 | 24,5 | 3 | 0 | 4,5 | 8 | 0 | 2,5 | 51,5 |
| 17 | 07.50 - 07.55 | 23 | | | 3 | 4 | | 12 | | 2 | | 10 | | 54 | 23 | 0 | 0 | 4 | 0 | 6 | 2 | 0 | 5 | 40 |
| 18 | 07.55 - 08.00 | 19 | | 55 | 3 | 50 | 4 | 85 | | 10 | | 45 | 3 | 274 | 19 | 0 | 27,5 | 50 | 5,2 | 42,5 | 10 | 0 | 22,5 | 176,7 |
| 19 | 08.00 - 08.05 | 8 | 60 | 7 | 3 | 65 | 5 | 99 | | 6 | | 9 | | 262 | 8 | 78 | 3,5 | 65 | 6,5 | 49,5 | 6 | 0 | 4,5 | 221 |
| 20 | 08.05 - 08.10 | 10 | | 69 | 4 | 10 | 2 | 59 | 3 | 5 | | 25 | 4 | 191 | 10 | 0 | 34,5 | 10 | 2,6 | 29,5 | 5 | 0 | 12,5 | 104,1 |
| 21 | 08.10 - 08.15 | 6 | | 37 | 5 | 1 | | 4 | | 4 | | 8 | | 65 | 6 | 0 | 18,5 | 1 | 0 | 2 | 4 | 0 | 4 | 35,5 |
| 22 | 08.15 - 08.20 | 7 | | 3 | 5 | 10 | | 2 | 5 | 3 | | 3 | 2 | 40 | 7 | 0 | 1,5 | 10 | 0 | 1 | 3 | 0 | 1,5 | 24 |
| 23 | 08.20 - 08.25 | 23 | | 45 | 3 | 6 | 5 | 17 | | 10 | | 12 | | 121 | 23 | 0 | 22,5 | 6 | 6,5 | 8,5 | 10 | 0 | 6 | 82,5 |
| 24 | 08.25 - 08.30 | 9 | | 8 | 8 | 3 | | 9 | 2 | 8 | | 5 | 7 | 59 | 9 | 0 | 4 | 3 | 0 | 4,5 | 8 | 0 | 2,5 | 31 |

Sumber : Hasil Survei, Maret 2012

Keterangan :

1. Kendaraan Berat (*Heavy Vehicles*, HV) Diantaranya : bus besar, truk minyak, truk angkutan.
2. Kendaraan Ringan (*Light vehicles*, LV) Diantaranya : bus angkutan, pick up, colt, kijang, sedan, jeep.
3. Sepeda Motor (*Motor cycles*, MC) Diantaranya : sepeda motor dan scoter.
4. Kendaraan Tak Bermotor (*Unmototorized*, UM)

Tabel 5.30.7. Arus Lalu Lintas Simpang Seturan Raya

| No | Periode waktu | Volume arah kiri | | | | Volume arah lurus | | | | Volume arah kanan | | | | Σ Unit Kend. | Emp* Volume arah kiri | | | Emp* Volume arah lurus | | | Emp *Volume arah kanan | | | Σ unit Kend. smp / jam |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LV | HV | MC | UM | LV | HV | MC | UM | LV | HV | MC | UM | | LV | HV | MC | LV | HV | MC | LV | HV | MC | |
| 1 | 12.00 - 12.05 | 45 | | 39 | 7 | 10 | | 5 | 5 | 5 | | 1 | 2 | 119 | 45 | 0 | 19,5 | 10 | 0 | 2,5 | 5 | 0 | 0,5 | 82,5 |
| 2 | 12.05 - 12.10 | 14 | | 6 | 3 | 5 | 4 | 6 | - | 10 | | 6 | 3 | 57 | 14 | 0 | 3 | 5 | 5,2 | 3 | 10 | 0 | 3 | 43,2 |
| 3 | 12.10 - 12.15 | 12 | | 3 | 4 | 45 | 2 | 80 | 5 | 3 | | 5 | 3 | 162 | 12 | 0 | 1,5 | 45 | 2,6 | 40 | 3 | 0 | 2,5 | 106,6 |
| 4 | 12.15 - 12.20 | 9 | | 45 | 3 | 89 | | 70 | 11 | 5 | | 2 | 5 | 239 | 9 | 0 | 22,5 | 89 | 0 | 35 | 5 | 0 | 1 | 161,5 |
| 5 | 12.20 - 12.25 | 43 | | 29 | 4 | 5 | 3 | 15 | 6 | 5 | | 4 | 12 | 126 | 43 | 0 | 14,5 | 5 | 3,9 | 7,5 | 5 | 0 | 2 | 80,9 |
| 6 | 12.25 - 12.30 | 5 | | 9 | 3 | 20 | 2 | 16 | 11 | 5 | | 4 | 3 | 78 | 5 | 0 | 4,5 | 20 | 2,6 | 8 | 5 | 0 | 2 | 47,1 |
| 7 | 12.30 - 12.35 | 5 | | 9 | 3 | 79 | 16 | 39 | 7 | 10 | | 8 | - | 176 | 5 | 0 | 4,5 | 79 | 20,8 | 19,5 | 10 | 0 | 4 | 142,8 |
| 8 | 12.35 - 12.40 | 47 | | 55 | 7 | 150 | 2 | 176 | 8 | 10 | | 1 | 1 | 457 | 47 | 0 | 27,5 | 150 | 2,6 | 88 | 10 | 0 | 0,5 | 325,6 |
| 9 | 12.40 - 12.45 | 1 | | 4 | 3 | 80 | | 30 | 5 | 12 | | 9 | - | 144 | 1 | 0 | 2 | 80 | 0 | 15 | 12 | 0 | 4,5 | 114,5 |
| 10 | 12.45 - 12.50 | 49 | | 49 | 3 | 16 | 2 | 12 | 12 | 7 | | 8 | - | 158 | 49 | 0 | 24,5 | 16 | 2,6 | 6 | 7 | 0 | 4 | 109,1 |
| 11 | 12.50 - 12.55 | 35 | | 5 | 7 | 8 | 2 | 5 | 5 | 11 | | | 2 | 80 | 35 | 0 | 2,5 | 8 | 2,6 | 2,5 | 11 | 0 | 0 | 61,6 |
| 12 | 12.55 - 13.00 | 60 | | 39 | | 1 | | 4 | | 4 | | 8 | | 116 | 60 | 0 | 19,5 | 1 | 0 | 2 | 4 | 0 | 4 | 90,5 |
| 13 | 13.00 - 13.05 | 22 | | | 3 | 4 | | 11 | | 2 | | 10 | | 52 | 22 | 0 | 0 | 4 | 0 | 5,5 | 2 | 0 | 5 | 38,5 |
| 14 | 13.05 - 13.10 | 11 | | | | 45 | 6 | 69 | | 1 | | 5 | | 137 | 11 | 0 | 0 | 45 | 7,8 | 34,5 | 1 | 0 | 2,5 | 101,8 |
| 15 | 13.10 - 13.15 | 50 | | 15 | | 39 | 15 | 74 | | | | 5 | 2 | 200 | 50 | 0 | 7,5 | 39 | 19,5 | 37 | 0 | 0 | 2,5 | 155,5 |
| 16 | 13.15 - 13.30 | 38 | | 29 | 1 | 3 | | 10 | 2 | 4 | | 5 | 7 | 99 | 38 | 0 | 14,5 | 3 | 0 | 5 | 4 | 0 | 2,5 | 67 |
| 17 | 13.20 - 13.25 | 55 | | 3 | 5 | 5 | | 2 | 5 | 3 | | 3 | 2 | 83 | 55 | 0 | 1,5 | 5 | 0 | 1 | 3 | 0 | 1,5 | 67 |
| 18 | 13.25 - 13.30 | 13 | | | | 45 | 6 | 64 | | 1 | | 5 | | 134 | 13 | 0 | 0 | 45 | 7,8 | 32 | 1 | 0 | 2,5 | 101,3 |
| 19 | 13.30 - 13.35 | 30 | | 7 | 3 | 165 | 5 | 98 | | 6 | | 18 | | 332 | 30 | 0 | 3,5 | 165 | 6,5 | 49 | 6 | 0 | 9 | 269 |
| 20 | 13.35 - 13.40 | 19 | | | 3 | 34 | 4 | 89 | 5 | 13 | | 9 | | 176 | 19 | 0 | 0 | 34 | 5,2 | 44,5 | 13 | 0 | 4,5 | 120,2 |
| 21 | 13.40 - 13.45 | 39 | | 60 | | 1 | | 4 | | 4 | | 8 | | 116 | 39 | 0 | 30 | 1 | 0 | 2 | 4 | 0 | 4 | 80 |
| 22 | 13.45 - 13.50 | 29 | | | 3 | 4 | | 14 | | 2 | | 10 | | 62 | 29 | 0 | 0 | 4 | 0 | 7 | 2 | 0 | 5 | 47 |
| 23 | 13.50 - 13.55 | 12 | | 13 | 4 | 1 | 2 | 1 | 3 | 5 | | 4 | 4 | 49 | 12 | 0 | 6,5 | 1 | 2,6 | 0,5 | 5 | 0 | 2 | 29,6 |
| 24 | 13.55 - 14.00 | 55 | | 14 | | 1 | | 10 | | 3 | | 3 | | 86 | 55 | 0 | 7 | 1 | 0 | 5 | 3 | 0 | 1,5 | 72,5 |

Sumber : Hasil Survei, Maret 2012

Keterangan :

1. Kendaraan Berat (*Heavy Vehicles*, HV) Diantaranya : bus besar, truk minyak, truk angkutan.
2. Kendaraan Ringan (*Light vehicles*, LV) Diantaranya : bus angkutan, pick up, colt, kijang, sedan, jeep.
3. Sepeda Motor (*Motor cycles*, MC) Diantaranya : sepeda motor dan scoter.
4. Kendaraan Tak Bermotor (*Unmototorized*, UM)

Tabel 5.30.8. Arus Lalu Lintas Simpang Seturan Raya

| No | Periode waktu | Volume arah kiri | | | | Volume arah lurus | | | | Volume arah kanan | | | | Σ Unit Kend. | Emp* Volume arah kiri | | | Emp* Volume arah lurus | | | Emp *Volume arah kanan | | | Σ unit Kend. smp / jam |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LV | HV | MC | UM | LV | HV | MC | UM | LV | HV | MC | UM | | LV | HV | MC | LV | HV | MC | LV | HV | MC | |
| 1 | 16.00 - 16.05 | 5 | | 47 | 3 | 15 | 3 | 25 | 5 | 13 | | 5 | 4 | 125 | 5 | 0 | 23,5 | 15 | 3,9 | 12,5 | 13 | 0 | 2,5 | 75,4 |
| 2 | 16.05 - 16.10 | 35 | | 45 | 6 | 10 | 6 | 5 | 5 | 16 | | 35 | 7 | 170 | 35 | 0 | 22,5 | 10 | 7,8 | 2,5 | 16 | 0 | 17,5 | 111,3 |
| 3 | 16.10 - 16.15 | 46 | | 45 | 3 | 49 | 5 | 69 | 12 | 7 | | 49 | - | 285 | 46 | 0 | 22,5 | 49 | 6,5 | 34,5 | 7 | 0 | 24,5 | 190 |
| 4 | 16.15 - 16.20 | 6 | | 35 | 4 | 19 | 2 | 39 | 5 | 3 | | 65 | 3 | 181 | 6 | 0 | 17,5 | 19 | 2,6 | 19,5 | 3 | 0 | 32,5 | 100,1 |
| 5 | 16.20 - 16.25 | 5 | | 55 | 3 | 18 | 2 | 18 | 7 | 11 | | 9 | - | 128 | 5 | 0 | 27,5 | 18 | 2,6 | 9 | 11 | 0 | 4,5 | 77,6 |
| 6 | 16.25 - 16.30 | 26 | | 49 | 3 | 5 | 8 | 7 | 5 | 13 | | 45 | 4 | 165 | 26 | 0 | 24,5 | 5 | 10,4 | 3,5 | 13 | 0 | 22,5 | 104,9 |
| 7 | 16.30 - 16.35 | 56 | | 3 | 6 | 69 | 3 | 65 | 5 | 16 | | 30 | 7 | 260 | 56 | 0 | 1,5 | 69 | 3.9 | 32,5 | 16 | 0 | 15 | 193,9 |
| 8 | 16.35 - 16.40 | 17 | | 52 | 3 | 7 | 2 | 43 | 5 | 11 | | 54 | 5 | 199 | 17 | 0 | 26 | 7 | 2,6 | 21,5 | 11 | 0 | 27 | 112,1 |
| 9 | 16.40 - 16.45 | 57 | | 45 | 4 | 45 | 2 | 65 | 4 | 3 | | 5 | 3 | 233 | 57 | 0 | 22,5 | 45 | 2,6 | 32,5 | 3 | 0 | 2,5 | 165,1 |
| 10 | 16.45 - 16.50 | 13 | | 5 | 3 | 25 | | 35 | 5 | 5 | | 5 | 4 | 100 | 13 | 0 | 2,5 | 25 | 0 | 17,5 | 5 | 0 | 2,5 | 65,5 |
| 11 | 16.50 - 16.55 | 30 | | 45 | 3 | 5 | 9 | 16 | 5 | 9 | | 49 | 3 | 174 | 30 | 0 | 22,5 | 5 | 11,7 | 8 | 9 | 0 | 24,5 | 110,7 |
| 12 | 16.55 - 17.00 | 19 | | 48 | | | 46 | 65 | | 1 | | | | 179 | 19 | 0 | 24 | 0 | 59,8 | 32,5 | 1 | 0 | 0 | 136,3 |
| 13 | 17.00 - 17.05 | 6 | | 45 | | 35 | 4 | 56 | | 1 | | 49 | | 196 | 6 | 0 | 22,5 | 35 | 5,2 | 28 | 1 | 0 | 24,5 | 122,2 |
| 14 | 17.05 - 17.10 | 9 | | 55 | 3 | 38 | | 45 | | 1 | | 2 | | 153 | 9 | 0 | 27,5 | 38 | 0 | 22,5 | 1 | 0 | 1 | 99 |
| 15 | 17.10 - 17.15 | 2 | | 35 | | 2 | | 35 | 5 | 1 | | 49 | | 129 | 2 | 0 | 17,5 | 2 | 0 | 17,5 | 1 | 0 | 24,5 | 64,5 |
| 16 | 17.15 - 17.30 | 45 | | 35 | 7 | 32 | | 45 | | 8 | | 50 | | 222 | 45 | 0 | 17,5 | 32 | 0 | 22,5 | 8 | 0 | 25 | 150 |
| 17 | 17.20 - 17.25 | 2 | 3 | 34 | 10 | 7 | 6 | 27 | 4 | 3 | | 30 | | 126 | 2 | 3.9 | 17 | 7 | 7,8 | 13,5 | 3 | 0 | 15 | 69,2 |
| 18 | 17.25 - 17.30 | 56 | | 57 | 7 | 45 | 2 | 79 | | 4 | | 35 | | 285 | 56 | 0 | 28,5 | 45 | 2,6 | 39,5 | 4 | 0 | 17,5 | 193,1 |
| 19 | 17.30 - 17.35 | | | 65 | 1 | 35 | 2 | 37 | 5 | | | | | 145 | 0 | 0 | 32,5 | 35 | 2,6 | 18,5 | 0 | 0 | 0 | 88,6 |
| 20 | 17.35 - 17.40 | 2 | | 35 | 2 | 1 | 8 | 45 | | 1 | | 40 | | 134 | 2 | 0 | 17,5 | 1 | 10,4 | 22,5 | 1 | 0 | 20 | 74,4 |
| 21 | 17.40 - 17.45 | 4 | | 65 | 2 | 15 | | 45 | 8 | | | | | 139 | 4 | 0 | 32,5 | 15 | 0 | 22,5 | 0 | 0 | 0 | 74 |
| 22 | 17.45 - 17.50 | 17 | | 56 | 2 | 3 | 3 | 1 | 8 | | | 46 | 4 | 140 | 17 | 0 | 28 | 3 | 3.9 | 0,5 | 0 | 0 | 23 | 75,4 |
| 23 | 17.50 - 17.55 | 68 | | 69 | 5 | 45 | | 75 | 8 | | | 55 | 4 | 329 | 68 | 0 | 34,5 | 45 | 0 | 37,5 | 0 | 0 | 27,5 | 212,5 |
| 24 | 17.55 - 18.00 | 45 | | 47 | 2 | 30 | 5 | 73 | 3 | 2 | | 25 | 4 | 236 | 45 | 0 | 23,5 | 30 | 6,5 | 36,5 | 2 | 0 | 12,5 | 156 |

Sumber : Hasil Survei, Maret 2012

Keterangan :

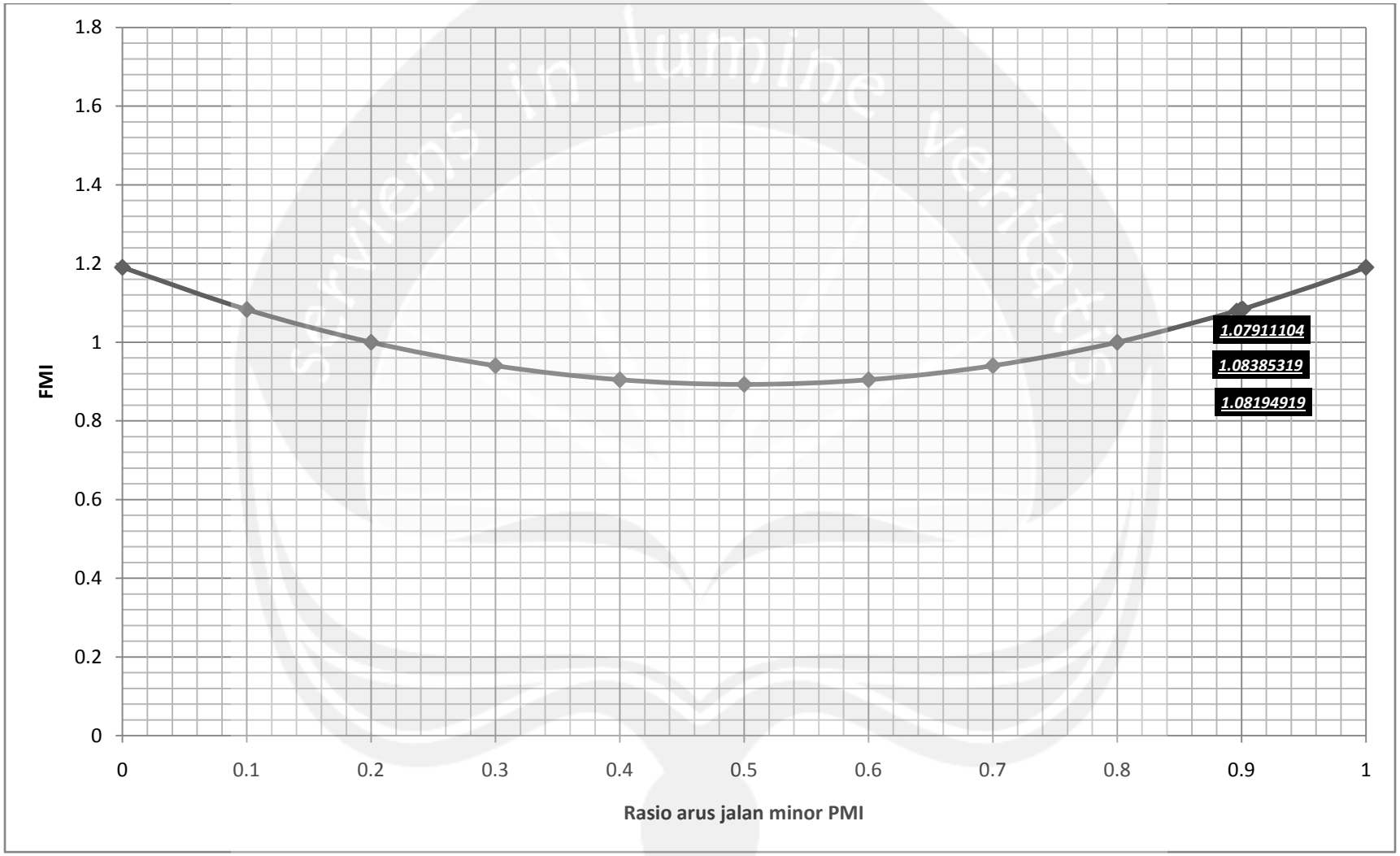
1. Kendaraan Berat (*Heavy Vehicles*, HV) Diantaranya : bus besar, truk minyak, truk angkutan.
2. Kendaraan Ringan (*Light vehicles*, LV) Diantaranya : bus angkutan, pick up, colt, kijang, sedan, jeep.
3. Sepeda Motor (*Motor cycles*, MC) Diantaranya : sepeda motor dan scoter.
4. Kendaraan Tak Bermotor (*Unmototorized*, UM)

Tabel 5.30.9. Arus Lalu Lintas Simpang Seturan Raya

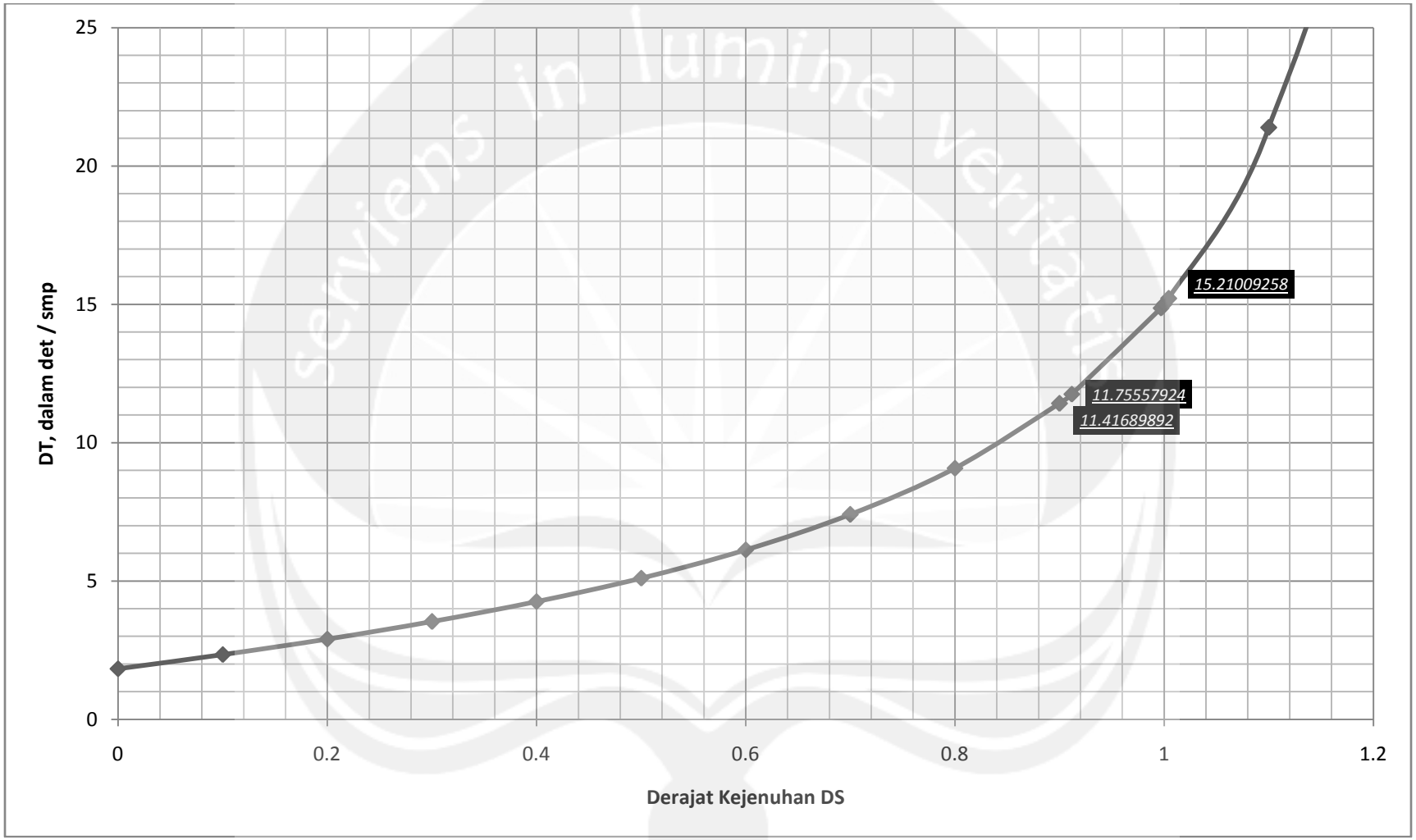
| No | Periode waktu | Volume arah kiri | | | | Volume arah lurus | | | | Volume arah kanan | | | | Σ Unit Kend. | Emp* Volume arah kiri | | | Emp* Volume arah lurus | | | Emp *Volume arah kanan | | | Σ unit Kend. smp / jam |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LV | HV | MC | UM | LV | HV | MC | UM | LV | HV | MC | UM | | LV | HV | MC | LV | HV | MC | LV | HV | MC | |
| 1 | 06.30 - 06.35 | 4 | 0 | 15 | 2 | 3 | 0 | 4 | 0 | 10 | 0 | 8 | 5 | 51 | 4 | 0 | 7 | 3 | 0 | 2 | 10 | 0 | 0 | 26 |
| 2 | 06.35 - 06.40 | 12 | 0 | 14 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 32 | 12 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 27,5 | 45,5 |
| 3 | 06.40 - 06.45 | 9 | 0 | 6 | 0 | 34 | 0 | 12 | 1 | 20 | 0 | 55 | 3 | 140 | 9 | 0 | 35 | 34 | 0 | 6 | 20 | 0 | 2,5 | 106,5 |
| 4 | 06.45 - 06.50 | 15 | 0 | 70 | 3 | 9 | 3 | 43 | 3 | 4 | 0 | 5 | 6 | 161 | 15 | 0 | 7,5 | 9 | 3,9 | 21,5 | 4 | 0 | 3 | 63,9 |
| 5 | 06.50 - 06.55 | 6 | 0 | 15 | 1 | 5 | 0 | 5 | 1 | 0 | | 6 | 0 | 39 | 6 | 0 | 5 | 5 | 0 | 2,5 | 0 | 0 | 1,5 | 20 |
| 6 | 06.55 - 07.00 | 5 | 0 | 10 | 0 | 2 | | 5 | 0 | | 0 | 3 | 3 | 28 | 5 | 0 | 1,5 | 2 | 0 | 2,5 | 0 | 0 | 0 | 11 |
| 7 | 07.00 - 07.05 | 6 | 0 | 3 | 2 | 31 | 1 | 22 | 0 | | | | | 65 | 6 | 0 | 5 | 31 | 1,3 | 11 | 0 | 0 | 3,5 | 57,8 |
| 8 | 07.05 - 07.10 | 5 | 0 | 10 | 5 | 40 | 3 | 70 | 2 | 6 | 0 | 7 | 0 | 148 | 5 | 0 | 10 | 40 | 3,9 | 35 | 6 | 0 | 0 | 99,9 |
| 9 | 07.10 - 07.15 | 5 | 0 | 20 | 4 | 19 | 3 | 25 | 7 | | | | | 83 | 5 | 0 | 22,5 | 19 | 3,9 | 12,5 | 0 | 0 | 3 | 65,9 |
| 10 | 07.15 - 07.20 | 5 | 0 | 45 | 1 | 2 | 0 | 5 | 6 | 0 | 0 | 6 | 0 | 70 | 5 | 0 | 10 | 2 | 0 | 2,5 | 0 | 0 | 1,5 | 21 |
| 11 | 07.20 - 07.25 | 10 | 0 | 20 | 1 | 5 | | 5 | 3 | | 0 | 3 | 5 | 52 | 10 | 0 | 27,5 | 5 | 0 | 2,5 | 0 | 0 | 4,5 | 49,5 |
| 12 | 07.25 - 07.30 | 25 | | 55 | 4 | 5 | 0 | 5 | 0 | 8 | | 9 | 0 | 111 | 25 | 0 | 15 | 5 | 0 | 2,5 | 8 | 0 | 1 | 56,5 |
| 13 | 07.30 - 07.35 | | 0 | 30 | 0 | 0 | | 4 | | | 0 | 2 | | 36 | 0 | 0 | 10 | 0 | 0 | 2 | 0 | 0 | 0 | 12 |
| 14 | 07.35 - 07.40 | 5 | 0 | 20 | 5 | 25 | 2 | 22 | 3 | | | | | 82 | 5 | 0 | 25 | 25 | 2,6 | 11 | 0 | 0 | 1,5 | 70,1 |
| 15 | 07.40 - 07.45 | 20 | 0 | 50 | 5 | 20 | 1 | 70 | 4 | 0 | 0 | 3 | 7 | 180 | 20 | 0 | 15 | 20 | 1,3 | 35 | 0 | 0 | 1 | 92,3 |
| 16 | 07.45 - 07.50 | 20 | 0 | 30 | | 5 | 0 | 1 | 1 | 3 | 0 | 2 | 0 | 62 | 20 | 0 | 15 | 5 | 0 | 0,5 | 3 | 0 | 1 | 44.5 |
| 17 | 07.50 - 07.55 | 6 | 0 | 30 | 2 | 2 | | 1 | 4 | | 0 | 2 | 0 | 47 | 6 | 0 | 4,5 | 2 | 0 | 0,5 | 0 | 0 | 0 | 13 |
| 18 | 07.55 - 08.00 | 5 | 0 | 9 | 1 | 22 | 0 | 19 | 1 | | | | | 57 | 5 | 0 | 20 | 22 | 0 | 9,5 | 0 | 0 | 5 | 61,5 |
| 19 | 08.00 - 08.05 | 5 | 0 | 40 | 10 | 20 | 2 | 100 | 3 | 2 | 0 | 10 | 3 | 195 | 5 | 0 | 5,5 | 20 | 2,6 | 50 | 2 | 0 | 0 | 85,1 |
| 20 | 08.05 - 08.10 | 5 | 0 | 11 | 3 | 18 | 1 | 12 | 0 | | | | | 50 | 5 | 0 | 15 | 18 | 1,3 | 6 | 0 | 0 | 1,5 | 46,8 |
| 21 | 08.10 - 08.15 | 15 | 0 | 30 | 2 | 5 | 0 | 5 | 3 | 4 | 0 | 3 | 0 | 67 | 15 | 0 | 2,5 | 5 | 0 | 2,5 | 4 | 0 | 2,5 | 31,5 |
| 22 | 08.15 - 08.20 | 4 | 0 | 5 | 0 | 0 | | 10 | | | 0 | 5 | 0 | 24 | 4 | 0 | 20 | 0 | 0 | 5 | 0 | 0 | 0,5 | 29,5 |
| 23 | 08.20 - 08.25 | 20 | 0 | 40 | 1 | 5 | 0 | 5 | 4 | 5 | 0 | 1 | 0 | 81 | 20 | 0 | 2,5 | 5 | 0 | 2,5 | 5 | 0 | 2 | 37 |
| 24 | 08.25 - 08.30 | 8 | 0 | 5 | 0 | 3 | | 0 | | | 0 | 4 | 0 | 20 | 8 | 0 | 115 | 3 | 0 | 0 | 0 | 0 | 17,5 | 143,5 |

Keterangan :

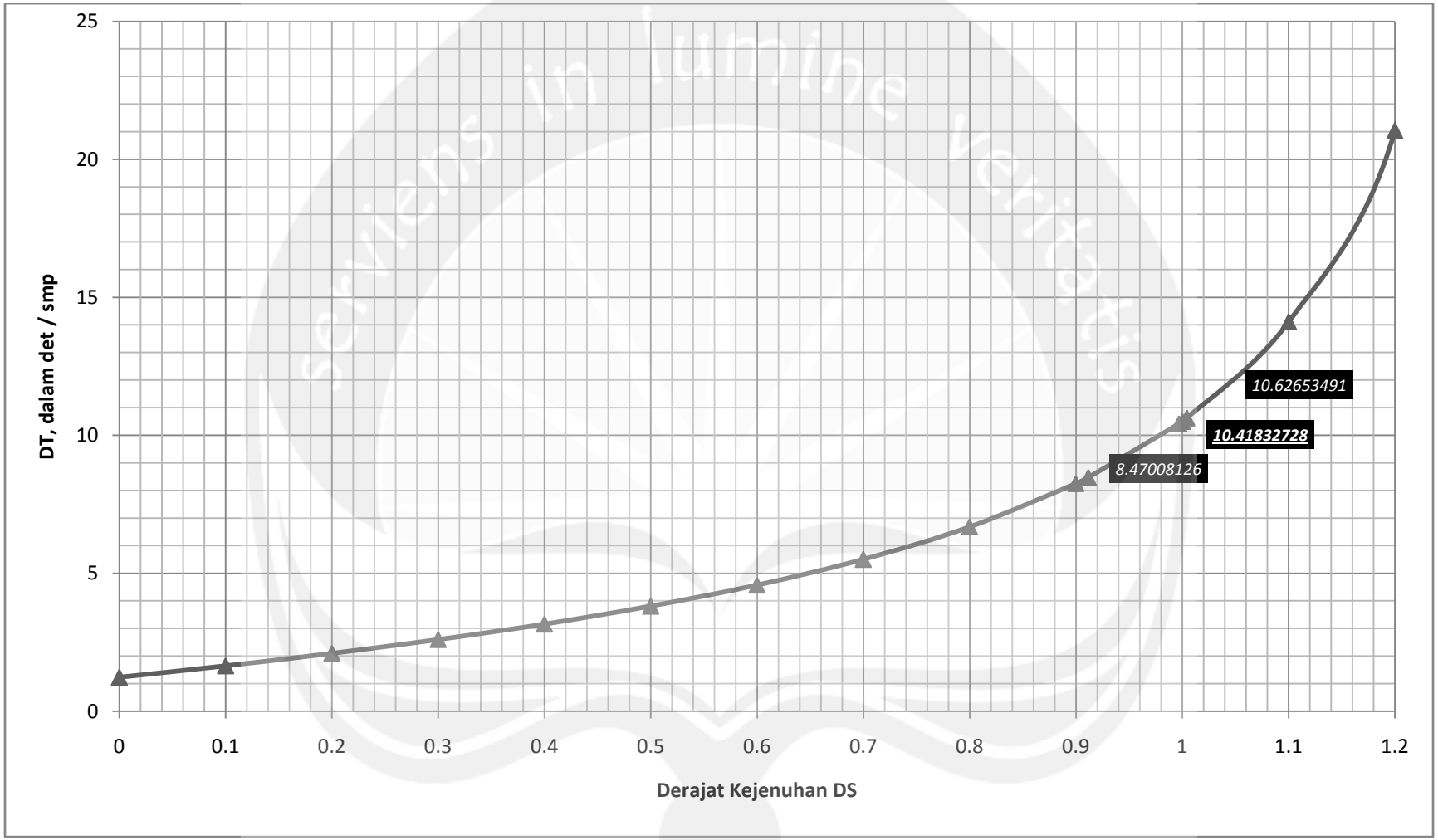
1. Kendaraan Berat (*Heavy Vehicles*, HV) Diantaranya : bus besar, truk minyak, truk angkutan.
2. Kendaraan Ringan (*Light vehicles*, LV) Diantaranya : bus angkutan, pick up, colt, kijang, sedan, jeep.
3. Sepeda Motor (*Motor cycles*, MC) Diantaranya : sepeda motor dan scoter.
4. Kendaraan Tak Bermotor (*Unmototorized*, UM)



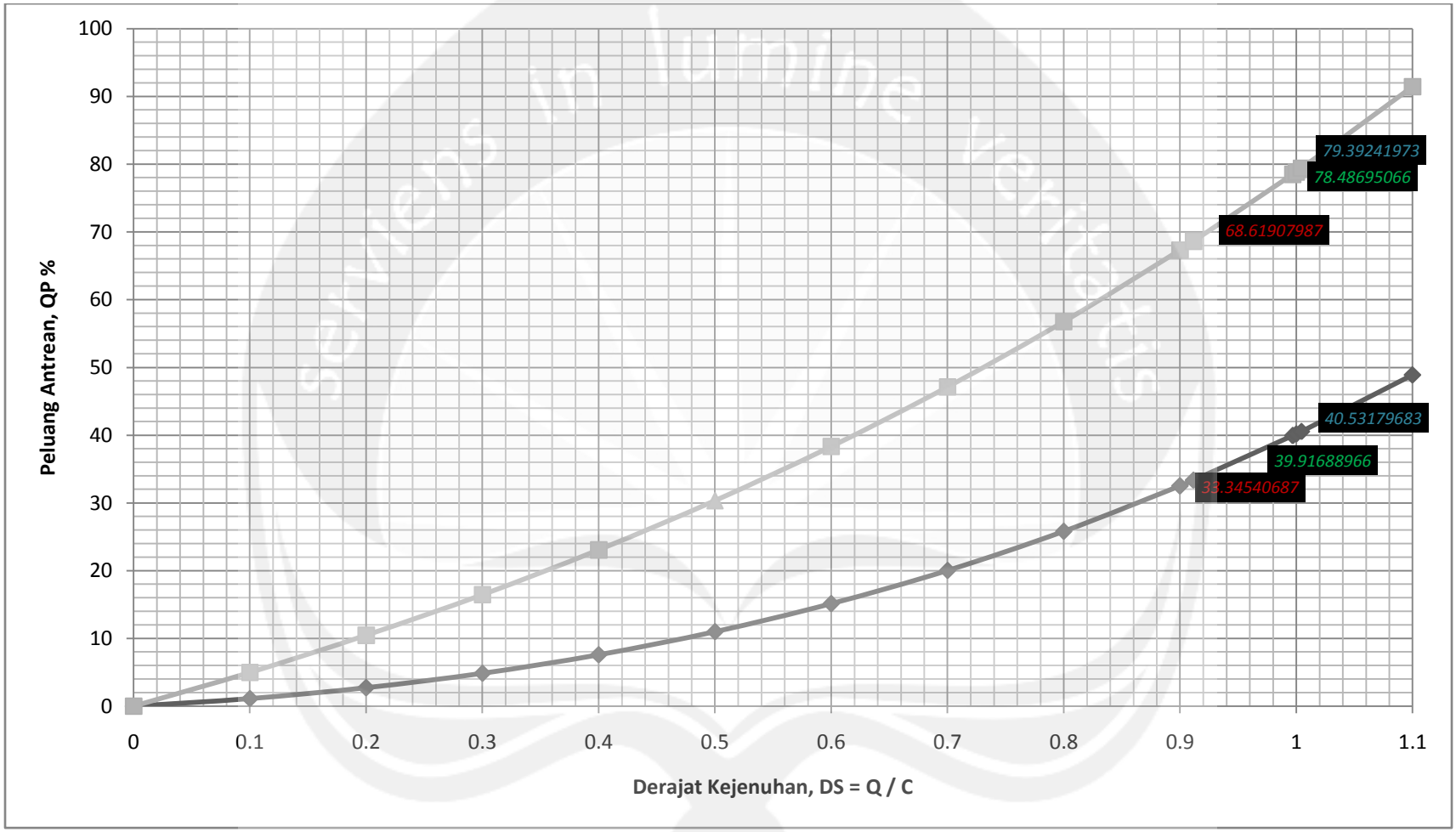

Gambar 5.31.1. Factor Penyusaian Ratio Arus Jalan Minor ($F_{MI}$)
Sumber : Hasil Analisa Hitungan Survei, Maret 2012




Gambar 5.31.2. Tundaan Lalu Lintas Minor ($DT_{MI}$)
Sumber : Hasil Analisa Hitungan Survei, Maret 2012




Gambar 5.31.3. Tundaan Lalu Lintas Mayor ( $DT_{MA}$ )
Sumber : Hasil Analisa Hitungan Survei, Maret 2012




Gambar 5.31.4. Grafik Peluang Antrian (QP)
Sumber : Hasil Analisa Hitungan Survei, Maret 2012

| | | |
|---|---|---|
| SIMPANG TAK BERSINYAL<br>- ***ANALISA***<br>**USIG II** | ***Tanggal : 12, 13, 14 maret 2012***<br>***Kota : D.I.Y.***<br>***Jalan utama : jalan Seturan Raya***<br>***Jalan minor : jalan Selokan Mataram*** | ***Ukuran kota : > 3 juta penduduk***<br>***Lingkungan jalan : komersial***<br>***Hambatan samping : tinggi***<br>***Periode : S12, S13, dan 14*** |

**PERHITUNGAN ANTRIAN DAN WAKTU TUNDA**

**SIMPANG JALAN SETURAN RAYA – JALAN SELOKAN MATARAM** 3.875

Tabel.5.29.1. Lebar pendekat dan tipe simpang

| Pilihan | Jumlah lengan | Lebar pendekat | | | | | | Lebar pendekat Rata rata W1 | Jumlah lajur gambar B-1:2 | | Tipe simpang tbl B-1:1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Jalan minor | | | Jalan utama | | | | | | |
| | | WA | WC | WAC | WB | WD | WBD | | Jalan minor | Jalan utama | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| 1 | *4,00* | *5,00* | *5,00* | *5,00* | *5,00* | *7,50* | *6,25* | *2,8125* | *2* | *2* | *422* |
| 2 | *4,00* | *5,00* | *5,00* | *5,00* | *5,00* | *7,50* | *6,25* | *2,8125* | *2* | *2* | *422* |
| 3 | *4,00* | *5,00* | *5,00* | *5,00* | *5,00* | *7,50* | *6,25* | *2,8125* | *2* | *2* | *422* |
| 4 | *4,00* | *5,00* | *5,00* | *5,00* | *7,50* | *7,50* | *7,50* | *3,1250* | *2* | *2* | *422* |
| 5 | *4,00* | *6,00* | *6,00* | *6,00* | *7,50* | *8,00* | *7,75* | *3,1875* | *2* | *2* | *422* |
| 6 | *4,00* | *6,00* | *6,00* | *6,00* | *11,0* | *8,00* | *9,50* | *3,8750* | *2* | *2* | *422* |

Sumber : Hasil Survei, Maret 2012, Seturan Raya – Selokan Mataram

Tabel.5.29.2. Kapasitas

| Periode waktu | Kapasitas dasar ( Co) smp/jam | Factor Penyusaian Kapasitas | | | | | | | Kapasitas (C ) smp/jam |
|---|---|---|---|---|---|---|---|---|---|
| | | Lebar rata-rata pendekat (FW) | Median jalan utama (FM) | Ukuran kota (FCS) | Hamabatan samping (FRSU) | Belok kiri (FLT) | Belok kanan (FRT) | Rasio minor/ total (FMI) | |
| (13) | | (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) |
| *S3 / 12 /3 / 2012* | *2900* | *0,94* | *1,00* | *1,00* | *0,93* | *1,35203* | *1,00* | *0,89* | *3075,21* |
| *S3 / 13 /3 / 2012* | *2900* | *0,94* | *1,00* | *1,00* | *0,93* | *1,37285* | *1,00* | *0,92* | *3230,13* |
| *P1 / 15 /3 / 2012* | *2900* | *0,94* | *1,00* | *1,00* | *0,93* | *1,31393* | *1,00* | *0,92* | *3081,86* |
| *S3 / 13 /3 / 2012* | *3400* | *0,96* | *1,00* | *1,00* | *0,93* | *1.37285* | *1,00* | *0,92* | *3882,36* |
| *S3 / 13 /3 / 2012* | *3400* | *0,97* | *1,00* | *1,00* | *0,93* | *1.37285* | *1,00* | *0,92* | *3901,42* |
| *S3 / 13 /3 / 2012* | *3400* | *1,02* | *1,00* | *1,00* | *0,93* | *1.37285* | *1,00* | *0,92* | *4934,84* |

Sumber : Hasil Survei, Maret 2012, Seturan Raya – Selokan Mataram

| | | | |
|---|---|---|---|
| SIMPANG TAK BERSINYAL<br>- **ANALISA**<br>**USIG II** | *Tanggal : 12, 13, 14 maret 2012* | *Ukuran kota : > 3 juta penduduk* | |
| | *Kota : D.I.Y.* | *Lingkungan jalan : komersial* | |
| | *Jalan utama : jalan Seturan Raya* | *Hambatan samping : tinggi* | |
| | *Jalan minor : jalan Selokan Mataram* | *Periode : pagi* | |

**PERHITUNGAN ANTRIAN DAN WAKTU TUNDA**
**SIMPANG JALAN SETURAN RAYA – JALAN SELOKAN MATARAM**

Tabel 5. 29.3. Perilaku Lalu Lintas

| Periode waktu | Arus lalu lintas (Q) Smp/jam (22) | Derajat kejenuhan (DS) (23) | Tundaan lalu lintas simpang (DTi) (24) | Tundaan lalu lintas jalan utama (DTMA) (25) | Tundaan lalu lintas jalan minor (DTMI) (26) | Tundaan geometric simpang (DG) (27) | Tundaan simpang (D) (28) | Peluang Antrian (QP %) (29) | Peluang antrian (QP %) (30) | Sasaran (31) |
|---|---|---|---|---|---|---|---|---|---|---|
| *S3 / 12 /3 / 2012* | *3065,7* | *0,99* | *14,86* | *10,41* | *9,12* | *4,01* | *18,88* | *39,91* | *78,98* | *DS > 0.85* |
| *S3 / 13 /3 / 2012* | *3244,4* | *1,00* | *15,21* | *10,62* | *45,23* | *3,97* | *19,18* | *40,53* | *80,24* | *DS > 0.85* |
| *P1 / 15 /3 / 2012* | *2871,2* | *0,91* | *11,75* | *8,47* | *35,49* | *4,53* | *16,28* | *33,34* | *65,78* | *DS >0.85* |
| *S3 / 13 /3 / 2012* | *3244,4* | *0,83* | *9,81* | *7,18* | *29,18* | *5,00* | *14,82* | *28,08* | *55,59* | *DS < 0.85* |
| *S3 / 13 /3 / 2012* | *3244,4* | *0,83* | *9,72* | *7,12* | *28,92* | *5,03* | *14,75* | *27,82* | *55,08* | *DS < 0.85* |
| *S3 / 13 /3 / 2012* | *3244,4* | *0,80* | *9,56* | *6,73* | *27,23* | *5,19* | *14,5* | *26,06* | *52,76* | *DS < 0.85* |

Sumber : Hasil Survei, Maret 2012, Jalan Seturan Raya – Selokan Mataram

*Catatan mengenai perbandingan dengan sasaran*

*Pilihan - 1* *Kondisi awal ,DS > 0.85 besar*

*Pilihan - 2* *Karena hambatan samping tinggi maka maka perlu ada pemasangan rambu larangan berhenti disekitar simpang.*

*Pilihan - 3* *Penambahan pelebaran pendekat jalan utama arah B bagian jembatan menjadi menjadi 5 - 11 m dan jalan minor A dan C : (0 5 x 2 = 1m) sisi kiri dan kanan DS menjadi kurang dan masih sangat tinggi.*

*Pilihan - 4* *Penggabungan Pilihan – 1, Pilihan - 2 dan, Pilihan – 3.*

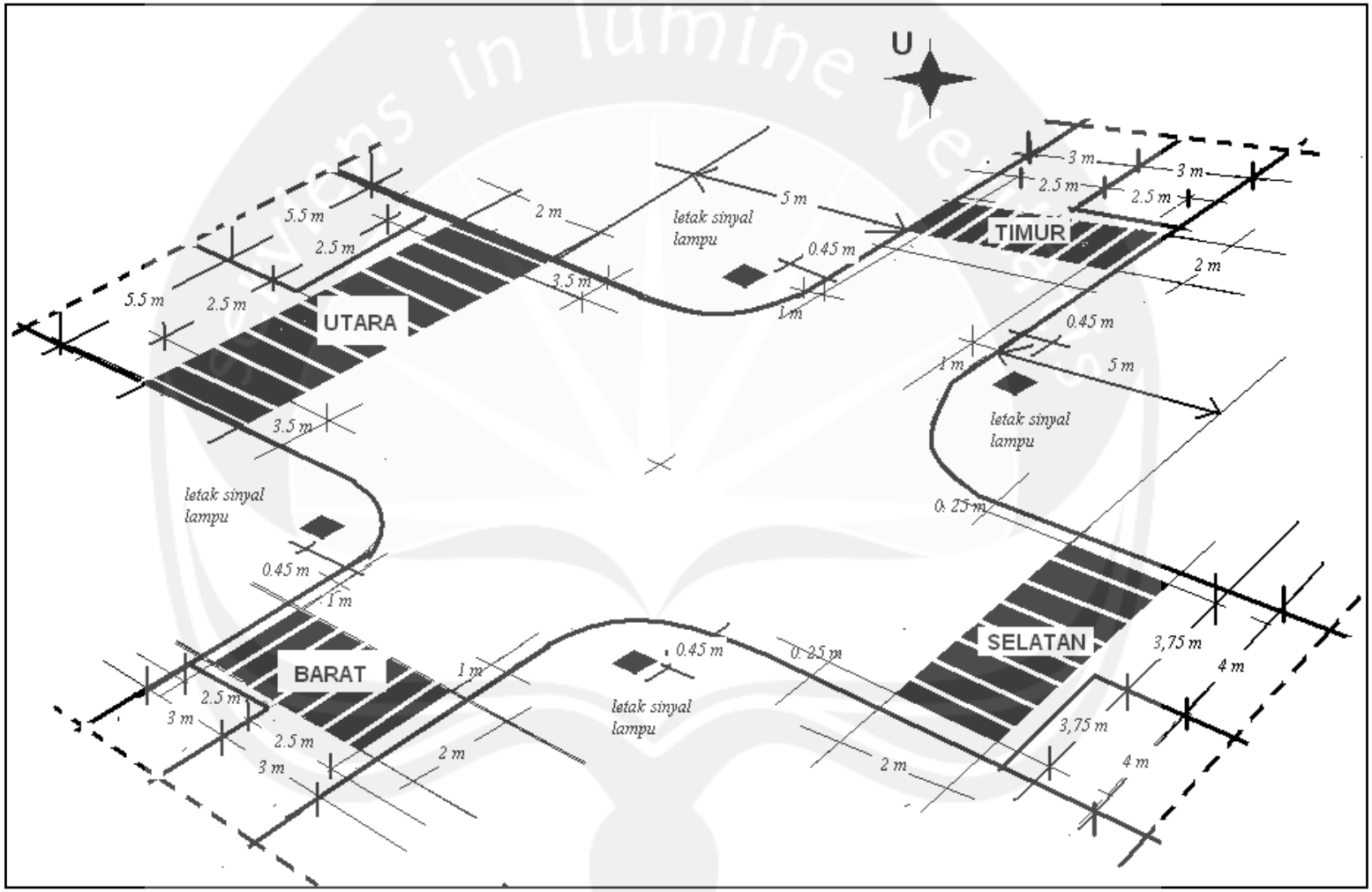
*Pilihan - 5* *Penambahan lampu sinyal diarah pendekat C dan A, karena DS kembali normal maka alangkah baiknya di tambah penanda jalan STOP dan yield serta penunjuk arah.*

serviens in lumine veritatis

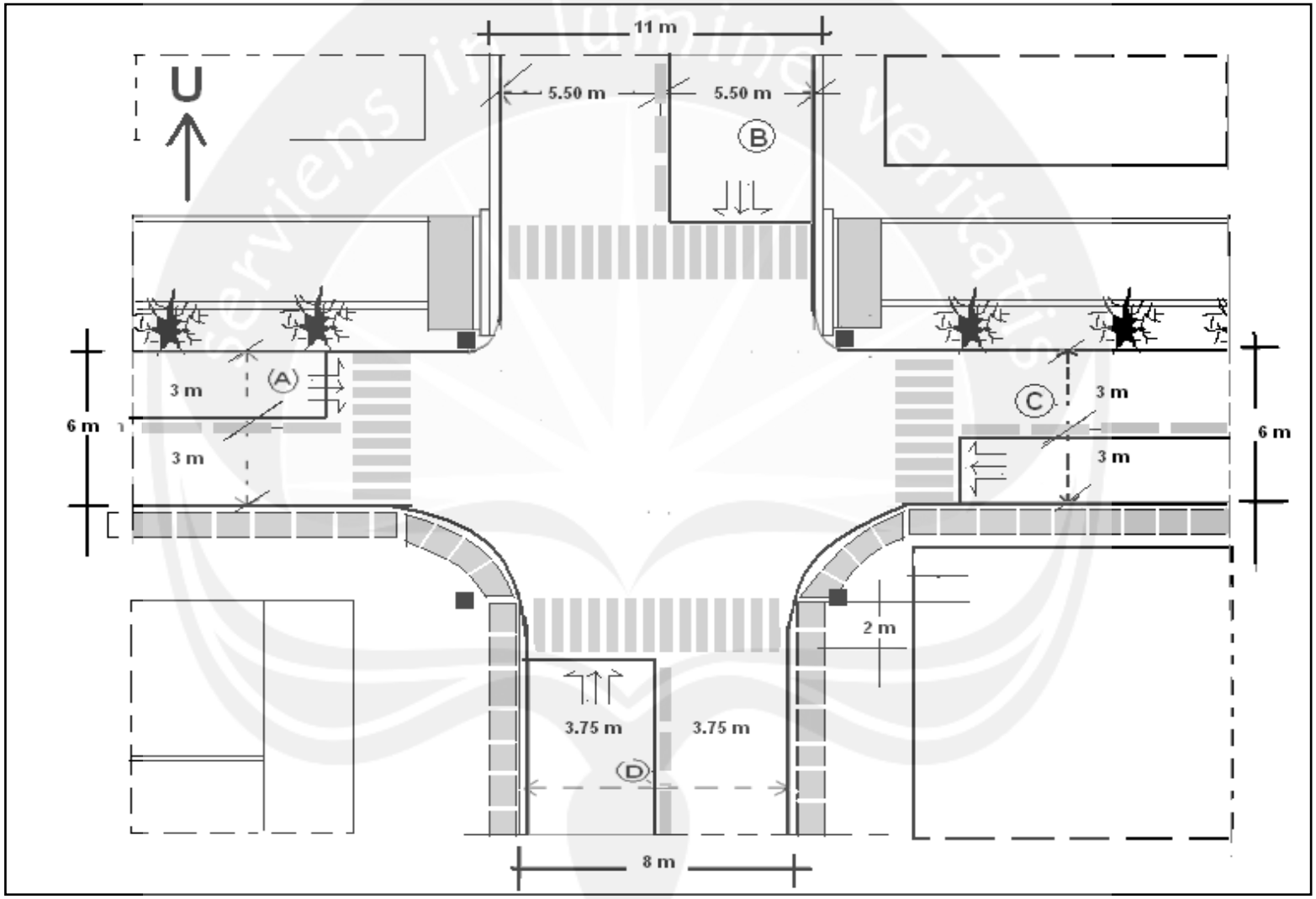
Gambar C. 11. Lokasi Simpang Seturan Raya

Gambar C. 12. Lokasi Simpang Seturan Raya

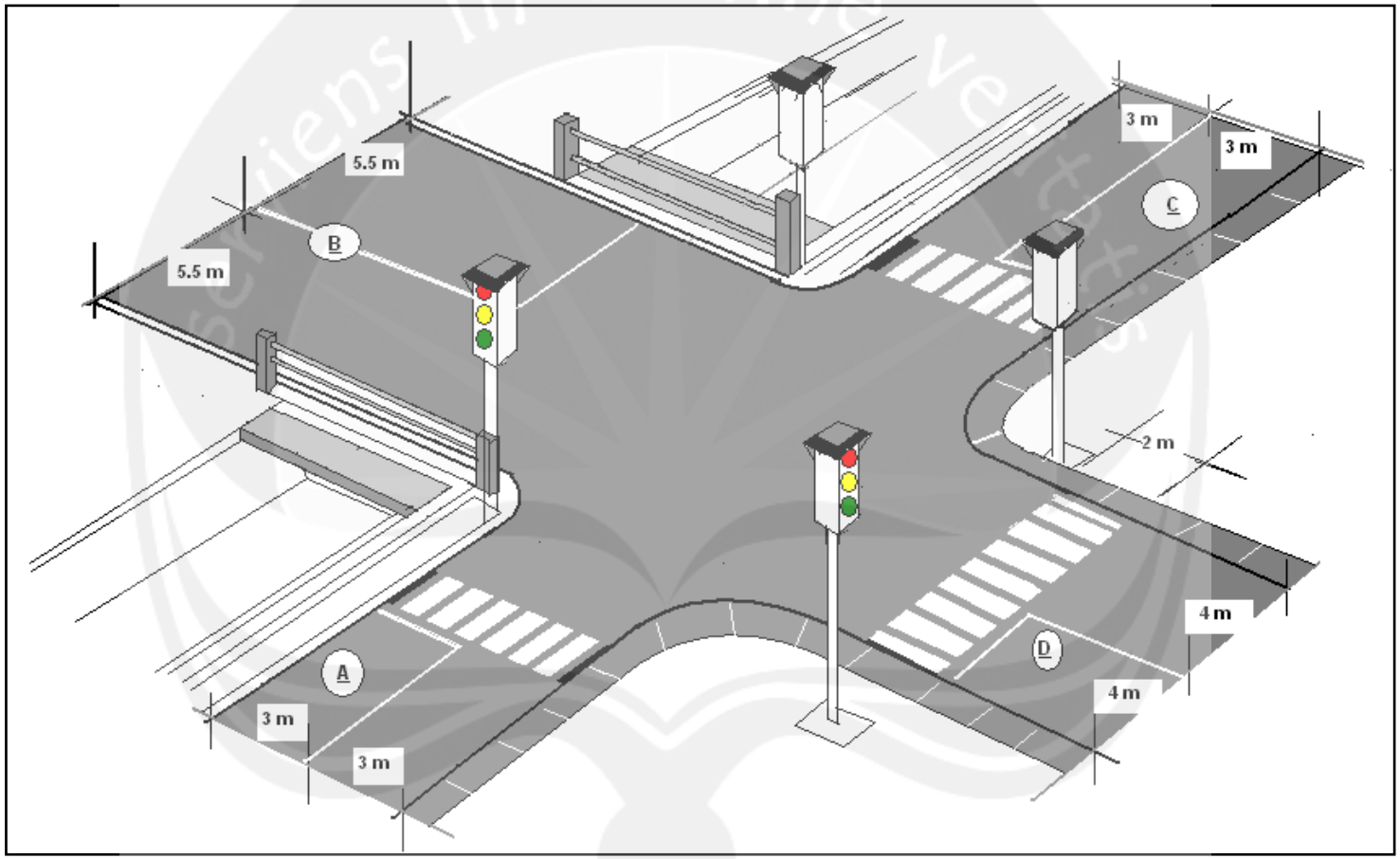
Gambar C. 13. Lokasi Simpang Seturan Raya




Gambar C. 6. Alternatif Perencanaan Tata Letak Sinyal Lampu, Penyebrangan, & Perbaikan Lebar Pendekat.




Gambar C. 7. Desain Alternatif Rencana Sinyal Lampu.




Gambar C. 8. Alternatif Rencana Perbaikan Sinyal Lampu.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **SIMPANG BERSINYAL**<br>Formulir SIG - III :<br>-WAKTU ANTAR HIJAU<br>-WAKTU HILANG | | Tanggal :<br>Ditangani oleh :<br>Kota :<br>Simpang :<br>Perihal : 2 fase | | | | | |
| LALULINTAS BERANGKAT | | LALU LINTAS DATANG | | | | | Waktu merah semua (dtk) |
| Pendekat | Kecepatan $V_{EV}$ (m/dtk) | Pendekat | U | S | T | B | |
| | | Kecepatan $V_{AV}$ (m/dtk) | 10 | 10 | 10 | 0 | |
| U | 10 | Jarak berangkat-datang (m) | | | | | |
| | | Waktu berangkat-datang (dtk)*) | | | | | |
| S | 10 | Jarak berangkat-datang (m) | | | | | |
| | | Waktu berangkat-datang (dtk)*) | | | | | |
| T | 10 | Jarak berangkat-datang (m) | | | | | |
| | | Waktu berangkat-datang (dtk)*) | | | | | |
| B | | Jarak berangkat-datang (m) | | | | | |
| | | Waktu berangkat-datang (dtk)*) | | | | | |
| 0 | | Jarak berangkat-datang (m) | | | | | |
| | | Waktu berangkat-datang (dtk)*) | | | | | |
| 0 | | Jarak berangkat-datang (m) | | | | | |
| | | Waktu berangkat-datang (dtk)*) | | | | | |
| | Penentuan waktu all red didasarkan pada aturan fase | Penentuan waktu merah semua : (data ini dapat dirubah sendiri sesuai fase)<br>Fase 1 --> Fase 2 | | | | | |
| | | Fase 2 --> Fase 3 | | | | | |
| | | Fase 3 --> Fase 4 | | | | | |
| | | Fase 4 --> Fase 1 | | | | | |
| | | Jumlah fase | 2 | kuning/fase | 3 | | |
| | | Waktu hilang total (LTI)= Merah semua total+waktu kuning (dtk / siklus ) | | | | | 0 |

Dari gambar 5.1.

*) Waktu untuk berangkat = ( $L_{EV}$ + $I_{EV}$ ) / $V_{EV}$, dimana $I_{EV}$ = 2 m

Waktu untuk datang = $L_{AV}$ / $V_{AV}$

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **SIMPANG BERSINYAL**<br>Formulir SIG - III :<br>-WAKTU ANTAR HIJAU<br>-WAKTU HILANG | | Tanggal :<br>Ditangani oleh :<br>Kota :<br>Simpang :<br>Perihal : 2 fase | | | | | |
| LALULINTAS BERANGKAT | | LALU LINTAS DATANG | | | | | Waktu merah semua (dtk) |
| Pendekat | Kecepatan $V_{EV}$ (m/dtk) | Pendekat | U | S | T | B | |
| | | Kecepatan $V_{AV}$ (m/dtk) | 10 | 10 | 10 | 0 | |
| U | 10 | Jarak berangkat-datang (m) | | | | | |
| | | Waktu berangkat-datang (dtk)*) | | | | | |
| S | 10 | Jarak berangkat-datang (m) | | | | | |
| | | Waktu berangkat-datang (dtk)*) | | | | | |
| T | 10 | Jarak berangkat-datang (m) | | | | | |
| | | Waktu berangkat-datang (dtk)*) | | | | | |
| B | | Jarak berangkat-datang (m) | | | | | |
| | | Waktu berangkat-datang (dtk)*) | | | | | |
| 0 | | Jarak berangkat-datang (m) | | | | | |
| | | Waktu berangkat-datang (dtk)*) | | | | | |
| 0 | | Jarak berangkat-datang (m) | | | | | |
| | | Waktu berangkat-datang (dtk)*) | | | | | |
| | Penentuan waktu all red didasarkan pada aturan fase | Penentuan waktu merah semua : (data ini dapat dirubah sendiri sesuai fase)<br>Fase 1 --> Fase 2 | | | | | |
| | | Fase 2 --> Fase 3 | | | | | |
| | | Fase 3 --> Fase 4 | | | | | |
| | | Fase 4 --> Fase 1 | | | | | |
| | | Jumlah fase | 2 | kuning/fase | 3 | | |
| | | Waktu hilang total (LTI)= Merah semua total+waktu kuning (dtk / siklus ) | | | | | 0 |

Dari gambar 5.1.

*) Waktu untuk berangkat = ( $L_{EV}$ + $I_{EV}$ ) / $V_{EV}$, dimana $I_{EV}$ = 2 m

Waktu untuk datang = $L_{AV}$ / $V_{AV}$

Tabel Formulir SIG - IV

| | | |
|---|---|---|
| **SIMPANG BERSINYAL** | Tanggal : 13 maret 2012 | Ditangani oleh : flori |
| Formulir SIG-IV : PENENTUAN WAKTU SINYAL | Kota : DIY | Perihal : 2 fase |
| KAPASITAS | Simpang : Seturan Raya | Periode : jam pagi-sore |

| Distribusi arus lalu lintas(smp/jam) | Fase 1 | Fase 2 | Fase 3 | Fase |
|---|---|---|---|---|
| 376 707 404 U | | | | |
| 336 456 | | | | |
| B 139 174 T | | | | |
| 63 213 | | | | |
| 441 1115 253 | | | | |
| S | | | | |

| Kode Pendekat (1) | Hijau dalam fase no. (2) | Tipe Pendekat (P / O) (3) | Rasio kendaraan berbelok $P_{LTOR}$ (4) | $P_{LT}$ (5) | $P_{RT}$ (6) | Arus RT smp/ Arah dari $Q_{RT}$ (7) | Arah lawan $Q_{RTO}$ (8) | Lebar efektif (m) $W_E$ (9) | Arus jenuh smp/jam Hijau: Nilai dasar smp/j hijau So (10) | Faktor Penyesuaian: Semua tipe pendekat: Ukuran kota $F_{CS}$ (11) | Hambatan Samping $F_{SF}$ (12) | kelandaian $F_G$ (13) | Parkir $F_P$ (14) | Hanya tipe P: Belok Kanan $F_{RT}$ (15) | Belok Kiri $F_{LT}$ (16) | Nilai disesuaikan smp/jam hijau S (17) | Arus lalu lintas smp/j Q (18) | Rasio Arus FR = Q/S (19) | Rasio fase PR = $FR_{CR}$ / IFR (20) | Waktu hijau det g (21) | Kapasitas smp/j C = Sxg/c (22) | Derajat jenuh DS= Q / C (23) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U | 1 | o | 0.253 | 0.000 | 0.119 | 0 | 0 | 5.25 | 4068.8 | 1,0 | 0.930 | 1,0 | 1.00 | 1,00 | 1,00 | 3000 | 993 | 0.331 | 0.690 | 20 | 1532 | 0.6481 |
| S | 1 | o | 0.314 | 0.000 | 0.110 | 0 | 0 | 3.75 | 2906.3 | 1,0 | 0.930 | 1,0 | 1.00 | 1,00 | 1,00 | 3500 | 1036 | 0.000 | 0.000 | 20 | 1787 | 0.5796 |
| T | 2 | o | 0.480 | 0.000 | 0.230 | 0 | 0 | 3.00 | 2325 | 1,0 | 0.950 | 1,0 | 1.00 | 1,00 | 1,00 | 2000 | 297 | 0.148 | 0.310 | 9 | 458 | 0.6481 |
| B | 2 | o | 0.574 | 0.000 | 0.140 | 0 | 0 | 3.00 | 2325 | 1,0 | 0.950 | 1,0 | 1.00 | 1,00 | 1,00 | 2000 | 233 | 0.000 | 0.000 | 9 | 458 | 0.5083 |
| | | | 0.000 | 0.000 | 0.000 | 0 | 0 | 0.00 | 0 | 1,0 | 0.000 | 1,0 | | 1,00 | 1,00 | 0 | 0 | | | | | |
| | | | 0.000 | 0.000 | 0.000 | 0 | 0 | 0.00 | 0 | 1,0 | 0.000 | 1,0 | | 1,00 | 1,00 | 0 | 0 | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Waktu hilang total | | Waktu siklus pra penyesuaian $c_{ua}$ (det) | 38.4 | | IFR = | | Total g = 58 |
| LTI ( det ) | 10 | Waktu siklus disesuaian c (det) | 48,4 | | $\sum FR_{CRIT}$ | 0.479 | |

Pd T-08-2005-B

# PEDOMAN

**Konstruksi dan Bangunan**

# Perencanaan Campuran Lapis Pondasi Hasil Daur Ulang Perkerasan Lama dengan Semen

**DEPARTEMEN PEKERJAAN UMUM**

# Perencanaan campuran lapis pondasi hasil daur ulang perkerasan lama dengan semen

## 1 Ruang lingkup

Pedoman ini menetapkan persyaratan, ketentuan bahan, peralatan laboratorium, perencanaan campuran dan cara penentuan kadar semen campuran hasil daur ulang perkerasan lama dengan semen, sebagai Lapis Pondasi dan Pondasi Bawah.
Jenis perkerasan yang didaur ulang mencakup perkerasan beraspal yang telah tua atau perkerasan tidak beraspal, tetapi tidak termasuk perkerasan beton semen.

## 2 Acuan normatif

SNI 03-1743-1989, *Metode pengujian kepadatan berat untuk tanah*

SNI-03-1966-1990, *Metode pengujian batas plastis tanah*

SNI 03-1967-1990, *Metode pengujian batas cair dengan alat Casagrande*

SNI 03-1968-1990, *Metode pengujian tentang analisis saringan agregat halus dan kasar*

SNI 03-1969-1990, *Metode pengujian berat jenis dan penyerapan air agregat kasar*

SNI 03-1970-1990, *Metode pengujian berat jenis dan penyerapan air agregat halus*

SNI 03-1971-1990, *Metode pengujian kadar air agregat*

SNI 03-2417-1991, *Metode pengujian keausan agregat dengan mesin abrasi Los Angeles*

SNI-03-3438-1994, *Tatacara pembuatan rencana stabilisasi tanah dengan semen portland untuk jalan*

SNI 03-6388-2000, *Spesifikasi agregat lapis pondasi bawah, lapis pondasi dan lapis permukaan*

SNI 03-6817-2002, *Metode pengujian mutu air untuk digunakan dalam beton*

SNI 03-6887-2002, *Metode pengujian kuat tekan bebas campuran tanah-semen*

SNI 06-2426-1991, *Metode pengujian sulfat dalam air dengan alat spektrofometer*

SNI 06-2431-1991, *Metode pengujian klorida dalam air dengan argentometrik mohr*

SII -13 - 1977, *Semen portland*

## 3 Istilah dan definisi

Istilah dan definisi yang digunakan dalam pedoman ini sebagai berikut :

**3.1**

**daur ulang**

penggunaan kembali material perkerasan jalan yang ada untuk pekerjaan rehabilitasi atau rekonstruksi jalan

**3.2**

**hidrasi**

proses reaksi dengan air

**3.3**

**Indeks Plastisitas (IP) atau *plasticity index***

batas cair dikurangi batas plastis

**3.4**

**kuat tekan bebas (KTB) atau *unconfined compressive strength* (UCS)**

besarnya tegangan maksimum pada waktu pengujian sampai contoh benda uji mengalami keruntuhan

## 4 Bahan

Bahan campuran terdiri atas bahan garukan perkerasan, semen dan air. Apabila bahan garukan tidak memenuhi persyaratan gradasi, maka harus ditambahkan agregat baru.

### 4.1 Bahan garukan perkerasan

Bahan garukan perkerasan digunakan sebagai agregat, diperoleh dari campuran lapis perkerasan lama yang digaruk dan dihancurkan hingga lolos saringan 1 ½ inci (37,50 mm) untuk lapis pondasi dan lolos saringan 2 inci (50 mm) untuk lapis pondasi bawah. Bahan garukan perkerasan harus kering udara.

### 4.2 Agregat baru

Agregat yang akan ditambahkan dapat berupa batu pecah, sirtu, sirtu pecah, slag, pasir, abu batu atau kombinasi dari beberapa bahan ini yang memenuhi persyaratan. Agregat baru terdiri dari agregat kasar dan halus.

#### 4.2.1 Agregat kasar

##### 4.2.1.1 Lapis pondasi

Agregat kasar yang tertahan pada ayakan No.8 (2,36 mm) dapat terdiri atas batu pecah, sirtu pecah atau slag yang keras, awet dan bersih. Agregat kasar yang berasal dari sirtu/kerikil, harus mempunyai paling sedikit satu bidang pecah.

##### 4.2.1.2 Lapis pondasi bawah

Agregat kasar yang tertahan pada ayakan No.8 (2,36 mm) dapat terdiri atas agregat seperti butir 4.2.1.1 atau sirtu. Agregat kasar yang berasal dari sirtu/kerikil, tidak harus mempunyai bidang pecah.

#### 4.2.2 Agregat halus

Agregat halus yang lolos ayakan No.8 (2,36 mm) dapat terdiri atas pasir alam atau abu batu dan partikel halus lainnya yang bersih.
Fraksi yang lolos saringan No.200 (0,075 mm) harus tidak lebih dari dua pertiga fraksi yang lolos saringan No.40 (0,425 mm).

### 4.3 Mutu agregat yang disyaratkan

Agregat harus bebas dari gumpalan lempung atau bahan-bahan lain yang tidak dikehendaki dan memenuhi sifat-sifat yang diberikan pada Tabel 1.

**Tabel 1 Persyaratan mutu agregat**

| Sifat-sifat | Agregat untuk Lapis Pondasi | | Agregat untuk Lapis Pondasi Bawah | |
|---|---|---|---|---|
| | Kasar | Halus | Kasar | Halus |
| Keausan agregat dengan alat Abrasi, maksimum.*) | 40% | - | 50% | - |
| Indeks Plastisitas, IP, maksimum. | - | 10% | - | 10% |

*) Pengujian agregat dilakukan terhadap agregat yang tidak terselimuti aspal dan atau agregat baru.

### 4.4 Semen

Semen yang digunakan sebagai bahan tambah adalah semen Portland tipe I sesuai SII –13-1977.

### 4.5 Air

Air yang digunakan untuk mencampur, merawat atau penggunaan lainnya harus bebas dari minyak, sulfat dan klorida atau bahan lainnya yang merugikan terhadap hasil akhir. Ketentuan air yang digunakan diperlihatkan pada Tabel 2.

**Tabel 2 Ketentuan air**

| No | Macam pengujian | Persyaratan | Cara pengujian |
|---|---|---|---|
| 1 | pH | 4,5 – 8,5 | SNI 06–2423-1991 |
| 2 | Bahan organik | Maksimum 2000 ppm | SNI 03-6817-2002 |
| 3 | Minyak mineral | <2% berat semen | SNI M68-1990-03 |
| 4 | Kadar sulfat | <10000 ppm | SNI 06-2426-1991 |
| 5 | Kadar klorida | <20000 ppm | SNI 06-2431-1991 |

## 5 Peralatan

Peralatan laboratorium yang digunakan dalam pengujian harus memenuhi persyaratan ketelitian dan kalibrasi. Peralatan meliputi :

- 1 set pengukur Berat Jenis agregat kasar dan halus
- 1 set pengukur Batas Cair Casagrande dan Batas Plastis
- 1 set saringan ukuran dari 2 inci (50 mm) hingga No.200 (0,075 mm)
- 1 set alat uji kepadatan berat
- 1 set alat uji kuat tekan bebas; ukuran tabung diameter 7 cm dan tinggi 14 cm
- Alat pengaduk dan alat bantu lainnya

## 6 Perencanaan campuran

Perencanaan campuran dilakukan di laboratorium untuk mendapatkan kadar semen yang menghasilkan kekuatan campuran optimum dan memenuhi kriteria kekuatan campuran daur ulang perkerasan dengan bahan tambah semen. Pencampuran harus homogen.

### 6.1 Gradasi

Gradasi campuran bahan garukan atau kombinasi bahan garukan dan agregat baru sesuai dengan gradasi seperti ditunjukkan pada Tabel 3.

**Tabel 3 Gradasi campuran**

| Ukuran saringan (ASTM) | Persen berat yang lolos saringan | |
|---|---|---|
| | Lapis Pondasi | Lapis Pondasi Bawah |
| 2" (50,0 mm) | | 100 |
| 1 1/2" (37,5 mm) | 100 | 88 - 95 |
| 1" (25,0 mm) | 79 – 85 | 70 – 85 |
| 3/8" (9,50 mm) | 44 – 58 | 30 – 65 |
| No.4 (4,75 mm) | 29 – 44 | 25 – 55 |
| No.10 (2,0 mm) | 17 – 30 | 15 – 40 |
| No.40 (0,425 mm) | 7 – 17 | 8 – 20 |
| No.200 (0,075 mm) | 2 - 8 | 2 - 8 |

### 6.2 Kriteria kekuatan campuran

Kekuatan campuran akan meningkat sesuai dengan meningkatnya kadar semen yang ditambahkan, sehingga campuran dapat dipergunakan sebagai lapis perkerasan dengan kualitas sesuai kriteria kekuatan yang disyaratkan pada Tabel 4.

**Tabel 4 Kriteria kekuatan campuran daur ulang perkerasan dengan semen**

| Peruntukan | Kuat Tekan Bebas , pada umur 7 hari | |
|---|---|---|
| | M.Pa | Kg/cm$^2$ |
| Lapis Pondasi | 1,50 – 3,00 | 15 – 30 |
| Lapis Pondasi Bawah | 0,75 – 1,50 | 7,5 – 15 |

### 6.3 Penentuan kadar semen

#### 6.3.1 Pengujian berat isi kering maksimum dan kadar air optimum

a) Kadar semen dan air yang diperlukan harus ditunjukkan sebagai persentase terhadap berat total agregat;

b) Tentukan 5 variasi kadar semen untuk 5 set benda uji dengan rentang antara 1,5% - 7,5% berat total agregat; dengan interval sama;

c) Untuk berbagai variasi kadar semen; kadar air optimum perkiraan ditetapkan (umumnya pada rentang 5% - 8% terhadap berat total agregat; untuk kadar semen yang rendah dipilih kadar air perkiraan yang rendah, demikian pula kadar semen yang tinggi dipilih kadar air perkiraan yang tinggi pula);

d) Siapkan benda uji agregat sesuai prosedur SNI 03-1743-1989 metode D;

e) Bagilah setiap set benda uji agregat menjadi 6 bagian dan tiap bagian dicampur air dengan kadar air yang berbeda yang bervariasi antara 1-3%. Penambahan air diatur sehingga didapat 3 benda uji dengan kadar air kira-kira dibawah optimum dan 3 benda uji dengan kadar air kira-kira diatas optimum;

f) Sebelum penambahan semen, tambahkan air sekitar 50% dari total yang diperlukan ke tiap benda uji agregat, aduk sampai merata; masing-masing benda uji dimasukkan kedalam kantong plastik, kemudian peram berkisar antara 18 – 24 jam;

g) Setelah pemeraman, tambahkan semen dan air kekurangannya ke tiap benda uji, aduk sampai merata; kemudian segera lakukan pemadatan untuk menghindari proses hidrasi yang terlalu cepat;

h) Tentukan berat isi kering maksimum dan kadar air optimum tiap benda uji agregat dan semen yang diperoleh dari percobaan Pemadatan Berat (SNI 03-1743-1989).

### 6.3.2 Pengujian kuat tekan bebas (KTB)

a) Siapkan benda uji untuk pengujian KTB seperti butir 6.3.1.d), f) dan g), masing-masing 2 contoh dengan kepadatan maksimum dan kadar air optimum didapat dari percobaan pada butir 6.3.1.h). Benda uji untuk pengujian KTB dalam bentuk silinder berdiameter 7 cm dan tinggi 14 cm. Masing-masing benda uji dibungkus plastik lalu disimpan pada tempat pemeraman pada temperatur ruang masing-masing selama 7 hari. Guna menjaga kondisi tetap lembab, benda uji ditutup karung basah;

b) Setelah pemeraman, lakukan pengujian kuat tekan bebas sesuai SNI 03-6887-2002.

### 6.3.3 Pemilihan kadar semen, kadar air optimum dan berat isi kering maksimum

a) Gambarkan grafik hubungan antara kadar semen campuran dengan KTB setiap variasi kadar semen untuk menentukan kadar semen yang memberikan nilai KTB yang disyaratkan pada Tabel 4;

b) Gambarkan grafik hubungan antara kadar semen campuran dengan kadar air optimum setiap variasi kadar semen untuk menentukan kadar air optimum campuran pada kadar semen yang dipilih;

c) Gambarkan grafik hubungan antara kadar semen campuran dengan berat isi kering maksimum setiap variasi kadar semen untuk menentukan kepadatan kering maksimum campuran pada kadar semen yang dipilih.

# Lampiran A

DEPARTEMEN PEKERJAAN UMUM
BADAN PENELITIAN DAN PENGEMBANGAN PEKERJAAN UMUM
**PUSAT PENELITIAN DAN PENGEMBANGAN PRASARANA TRANSPORTASI**
Jl. A. H. Nasution 264 Kotak Pos 2 Ujungberung Telp. (022) 7802251-3 Fax. (022) 706052 - Bandung 40294 e-mail: pusjal@melsa.net.id

| | | | |
|---|---|---|---|
| No. Contoh | : 60% Bahan Garukan + 40% Agregat Baru + 3% Semen | Dikerjakan | : Iwan Riswan, BE |
| Contoh dari | : Yogyakarta | Dihitung | : Paidjo |
| Pekerjaan | : Daur Ulang Perkerasan Lama dengan Semen | Digambar | : Iwan Riswan, BE |
| | | Diperiksa | : Sutarman, BE |

## PENGUJIAN KEPADATAN ~~RINGAN~~ / BERAT
~~SNI-1742-1989-F~~ / SNI-1743-1989-F

~~Ringan~~ / Berat

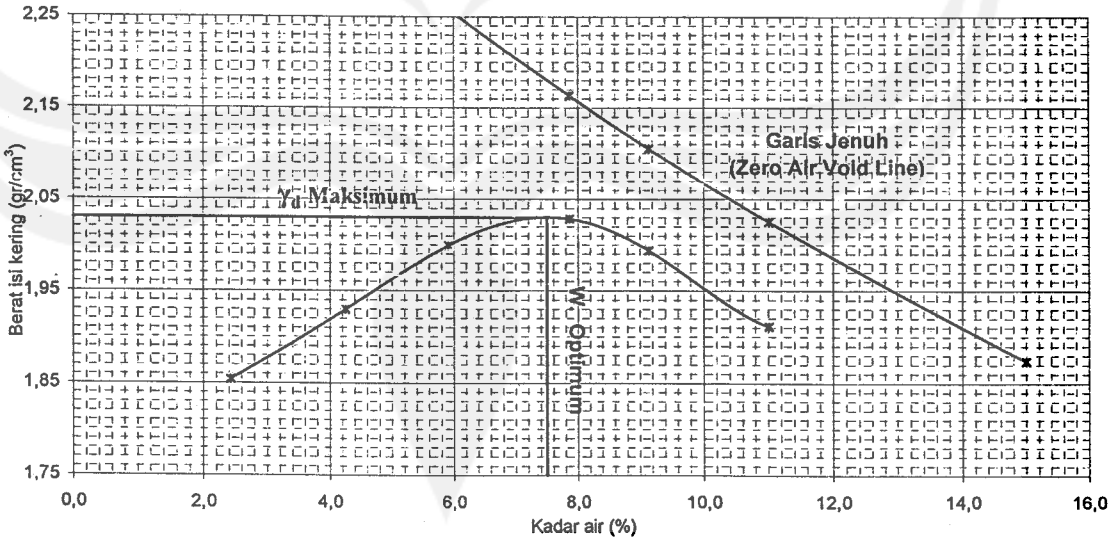
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| berat tanah basah | (gr) | | | | | | | |
| kadar air mula | (%) | | | | | | | |
| penambahan air | (%) | 2 | 4 | 6 | 8 | 10 | 12 | |
| penambahan air | (cc) | | | | | | | |

Berat isi

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| berat tanah + cetakan | 6635 | 6878 | 7106 | 7258 | 7232 | 7115 | |
| berat cetakan | 2545 | 2545 | 2545 | 2545 | 2545 | 2545 | |
| berat tanah basah | 4090 | 4333 | 4561 | 4713 | 4687 | 4570 | |
| isi cetakan | 2154 | 2154 | 2154 | 2154 | 2154 | 2154 | |
| berat isi basah ($\gamma_s$) | 1,899 | 2,012 | 2,117 | 2,188 | 2,176 | 2,122 | |
| berat isi kering $\gamma d = 100x\{\gamma_s/(100+w)\}$ | 1,854 | 1,930 | 1,999 | 2,028 | 1,994 | 1,911 | |

Kadar air

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| tanah basah + cawan | 420,2 | 417,3 | 464,3 | 482,2 | 423,9 | 305,6 | |
| tanah kering + cawan | 411,1 | 401,7 | 440,4 | 449,6 | 391,3 | 278,9 | |
| berat air | 9,1 | 15,6 | 24,0 | 32,6 | 32,6 | 26,7 | |
| berat cawan | 36,1 | 35,6 | 35,1 | 34,9 | 35,0 | 36,5 | |
| berat tanah kering | 375,0 | 366,2 | 405,3 | 414,7 | 356,3 | 242,4 | |
| kadar air (%) | 2,4 | 4,3 | 5,9 | 7,9 | 9,1 | 11,0 | |




Catatan :

| | | |
|---|---|---|
| Berat jenis | = | 2,607 |
| Kadar air optimum | = | 7,5 % |
| Berat isi kering maksimum | = | 2,030 gr/cm³ |

**Gambar 1**

DEPARTEMEN PEKERJAAN UMUM
BADAN PENELITIAN DAN PENGEMBANGAN PEKERJAAN UMUM
PUSAT PENELITIAN DAN PENGEMBANGAN PRASARANA TRANSPORTASI
Jl. A. H. Nasution 264 Kotak Pos 2 Ujungberung Telp. (022) 7802251-3 Fax. (022) 708052 - Bandung 40294 e-mail : pusjal@melsa.net.id

PROYEK : Daur Ulang Perkerasan Lama dengan Semen
LOKASI : Yogyakarta
NO. CONTOH : 60% Bahan Garukan + 40% Agregat Baru + Semen 3%
Umur pemeraman 7 hari

DIKERJAKAN : Iwan Riswan, BE
DIPERIKSA : Sutarman, BE

## PEMERIKSAAN KUAT TEKAN BEBAS (UNCONFINED COMPRESSIVE STRENGTH)
## SNI 03-6887-2002

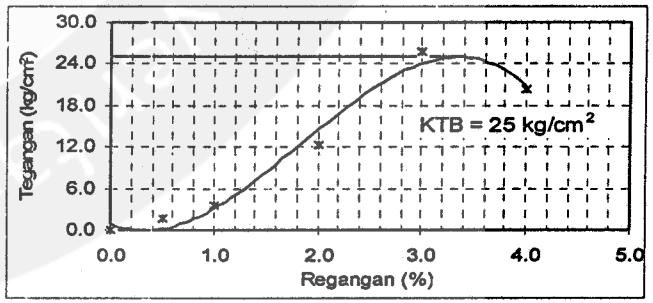
| Waktu (menit) | REGANGAN Pembacaan Arloji | REGANGAN Regangan Arloji (%) | BEBAN Pembacaan Arloji | BEBAN Kalibrasi Cincin | BEBAN Beban (kg) | LUAS Angka Koreksi | LUAS Luas Terkoreksi ($cm^2$) | LUAS Tegangan ($kg/cm^2$) |
|---|---|---|---|---|---|---|---|---|
| 0 | - | 0.0 | 0 | 6.06 | 0.00 | 1.000 | 39.59 | 0.00 |
| 0.5 | 71 | 0.5 | 24 | | 65.97 | 1.005 | 39.79 | 1.66 |
| 1 | 142 | 1.0 | 51 | | 140.19 | 1.010 | 39.99 | 3.51 |
| 2 | 284 | 2.0 | 180 | | 494.78 | 1.020 | 40.38 | 12.25 |
| 3 | 426 | 3.0 | 383 | | 1052.78 | 1.031 | 40.82 | 25.79 |
| 4 | 568 | 4.0 | 305 | | 838.37 | 1.042 | 41.25 | 20.32 |
| 5 | 710 | 5.0 | | | | 1.053 | 41.69 | |
| 6 | 852 | 6.0 | | | | 1.064 | 42.08 | |
| 7 | 994 | 7.0 | | | | 1.075 | 42.56 | |
| 8 | 1136 | 8.0 | | | | 1.087 | 42.03 | |
| 9 | 1278 | 9.0 | | | | 1.099 | 43.51 | |
| 10 | 1420 | 10.0 | | | | 1.111 | 43.98 | |
| 11 | 1562 | 11.0 | | | | 1.125 | 44.50 | |
| 12 | 1704 | 12.0 | | | | 1.137 | 44.97 | |
| 13 | 1846 | 13.0 | | | | 1.149 | 45.49 | |
| 14 | 1988 | 14.0 | | | | 1.162 | 46.04 | |
| 15 | 2130 | 15.0 | | | | 1.172 | 46.56 | |
| 16 | 2272 | 16.0 | | | | 1.190 | 47.11 | |
| 17 | 2414 | 17.0 | | | | 1.205 | 47.71 | |
| 18 | 2556 | 18.0 | | | | 1.219 | 48.30 | |
| 19 | 2698 | 19.0 | | | | 1.234 | 48.89 | |
| 20 | 2840 | 20.0 | | | | 1.249 | 49.48 | |

| | | | | | |
|---|---|---|---|---|---|
| Berat isi kering mak | 2.030 | $gr/cm^3$ | Kadar air optimum | 7.50 | % |
| Diameter contoh | 7.10 | cm | B. contoh basah+cawan | 265.30 | gr |
| Tinggi contoh | 14.20 | cm | B.contoh kering+cawan | 248.40 | gr |
| Luas semula | 39.59 | $cm^2$ | Berat cawan | 22.45 | gr |
| Isi contoh | 562.18 | $cm^3$ | Berat air | 16.90 | gr |
| Berat contoh | 1140 | gr | Berat contoh kering | 225.95 | gr |
| Berat isi | 2.028 | $gr/cm^3$ | Kadar air | 7.48 | % |

CATATAN

Alat nomor :

Kalibrasi : kg/cm Contoh : Asli / Buatan




**Gambar 2**

DEPARTEMEN PEKERJAAN UMUM
BADAN PENELITIAN DAN PENGEMBANGAN PEKERJAAN UMUM
PUSAT PENELITIAN DAN PENGEMBANGAN PRASARANA TRANSPORTASI
Jl. A. H. Nasution 264 Kotak Pos 2 Ujungberung Telp. (022) 7802251-3 Fax. (022) 708052 - Bandung 40294 e-mail: pusjal@melsa.net.id

DIKERJAKAN : Iwan Riswan, BE

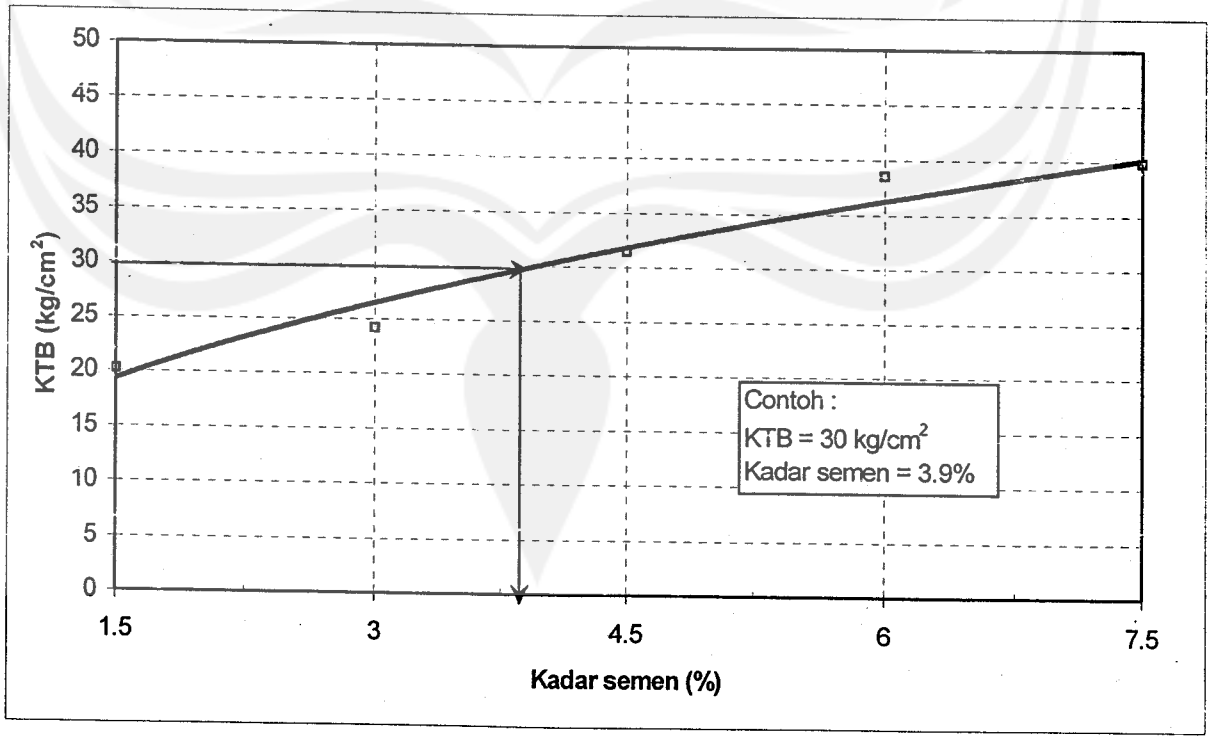
DIPERIKSA : Sutarman, BE

**Contoh Perhitungan Jumlah Semen :**

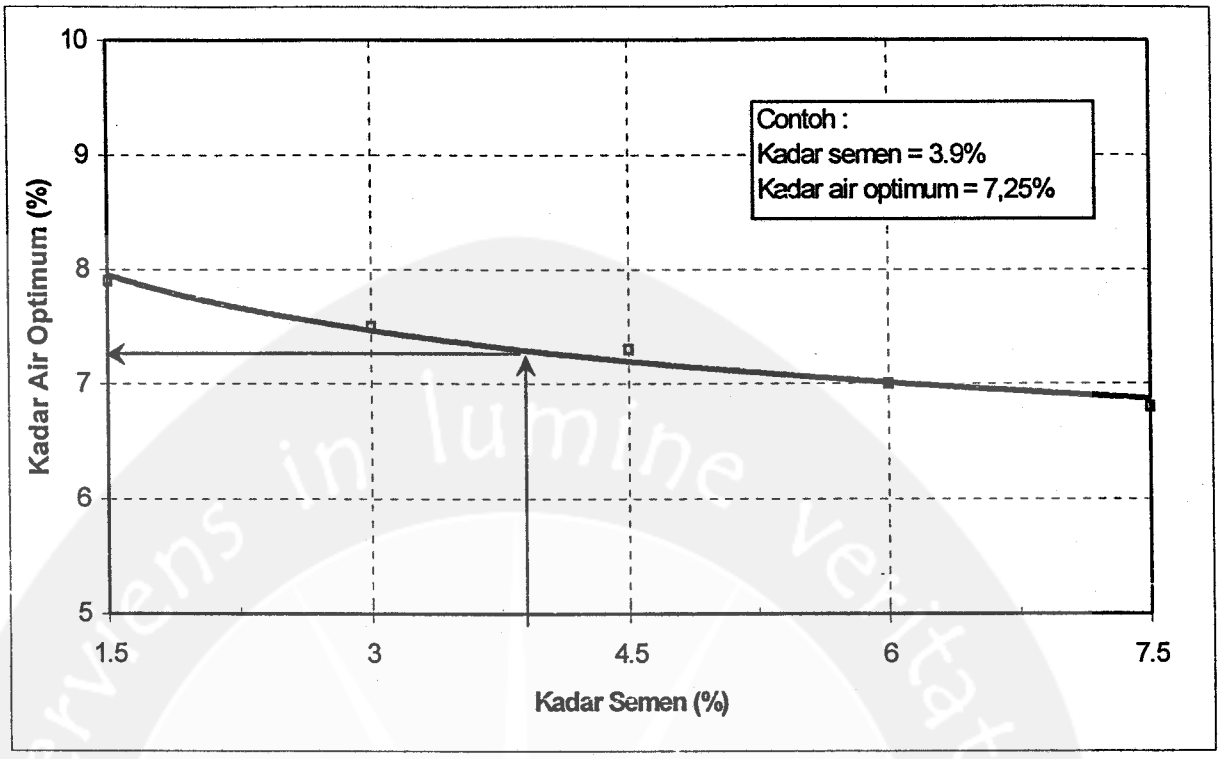
| | | | |
|---|---|---|---|
| a. | Berat contoh | = | 6000.0 gr |
| b. | Kadar air optimum | = | 7.5 % |
| c. | Kadar air yang ada | = | 1.4 % |
| d. | Kadar semen rencana percobaan | = | 3.0 % |
| e. | Berat contoh kering {( 1/( 1 + c )} x a | = | 5920.1 gr |
| f. | Berat semen ( d x e ) | = | 177.6 gr |
| g. | Berat air yang ditambahkan ( b x e ) - c | = | 364.1 cc |

**Tabel Contoh hasil pengujian KTB**

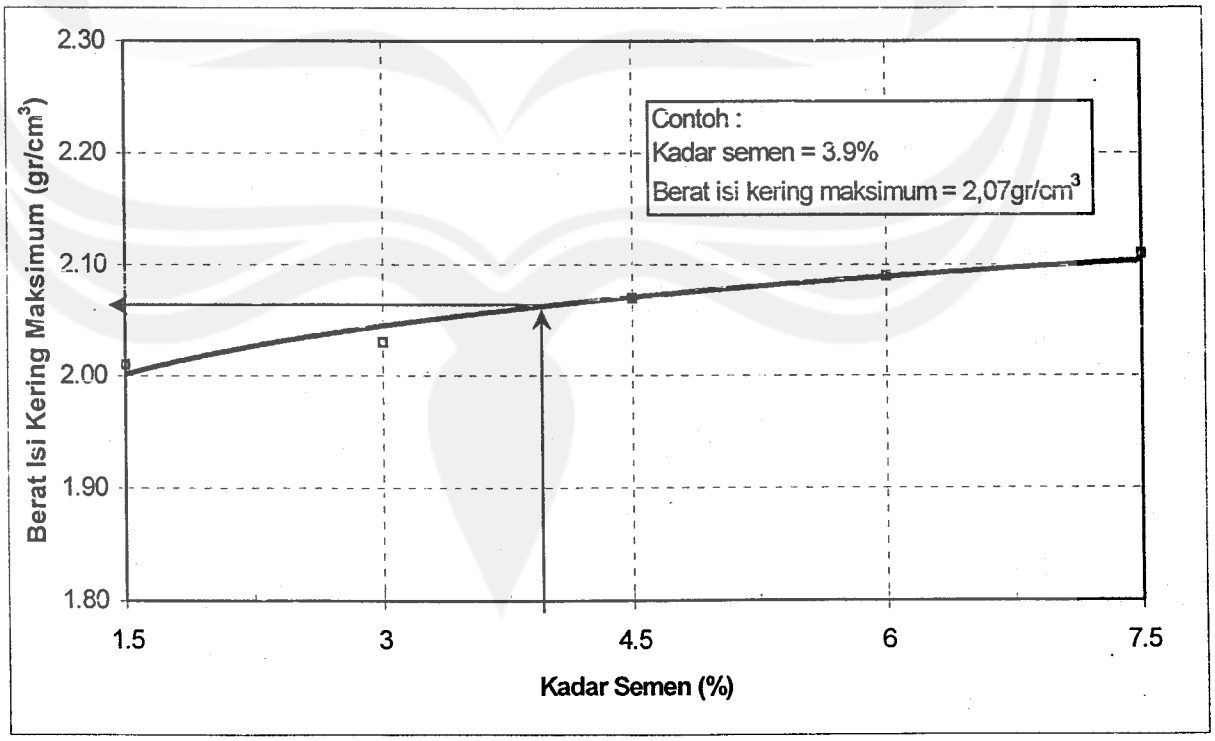
| No. | Kadar Semen (%) | Kadar Air Optimum (%) | Berat Isi Kering Maks ($gr/cm^3$) | Kuat Tekan Bebas ($kg/cm^2$) | Keterangan |
|---|---|---|---|---|---|
| 1 | 1.50 | 7.90 | 2.01 | 20.21 | Umur Pemeraman 7 hari |
| 2 | 3.00 | 7.50 | 2.03 | 24.16 | |
| 3 | 4.50 | 7.30 | 2.07 | 31.45 | |
| 4 | 6.00 | 7.00 | 2.09 | 38.59 | |
| 5 | 7.50 | 6.80 | 2.11 | 39.87 | |




**Gambar 3 Contoh hubungan antara kadar semen dengan KTB**




**Gambar 4 Contoh hubungan antara kadar semen dengan kadar air optimum**




**Gambar 5 Contoh hubungan antara kadar semen dengan berat isi kering maksimum**

# Lampiran B
# (informatif)

## Daftar nama dan lembaga

1) **Pemrakarsa**

Pusat Penelitian dan Pengembangan Prasarana Transportasi, Badan Penelitian dan Pengembangan ex Departemen Kimpraswil.

2) **Penyusun**

| Nama | Instansi |
|---|---|
| DR. Djoko Widajat, MSc. | Pusat Litbang Prasarana Transportasi |
| Iwan Riswan, BE | Pusat Litbang Prasarana Transportasi |
| Sutarman, BE | Pusat Litbang Prasarana Transportasi |
| Paidjo | Pusat Litbang Prasarana Transportasi |

**Bibliografi :**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Formulir SIG - V

| | | |
|---|---|---|
| **SIMPANG BERSINYAL** | Tanggal : 13 maret 2012 | Ditangani oleh : flori |
| Formulir SIG-V : PANJANG ANTRIAN | Kota : DIY | Kondisi Eksiting |
| JUMLAH KENDARAAN TERHENTI | Simpang : Seturan Raya | Periode : jam pagi-sore |
| TUNDAAN | Waktu siklus : | |

| Kode Pendekat | Arus Lalu Lintas smp/jam **Q** | Kapasitas smp / jam **C** | Derajat Kejenuhan **DS= Q/C** | Rasio Hijau **GR= g/c** | Jumlah kendaraan antri (smp) $NQ_1$ | $NQ_2$ | **Total NQ= $NQ_1+NQ_2$** | $NQ_{MAX}$ liat gb e22 | Panjang Antrian ( m ) **QL** | Angka Henti stop/smp **NS** | Jumlah Kendaraan Terhenti smp/jam $N_{SV}$ | Tundaan Tundaan lalu lintas rata-rata det/smp **DT** | Tundaan geo-metrik rata-rata det/smp **DG** | Tundaan rata-rata det/smp **D = DT+DG** | Tundaan total smp.det **D x Q** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) |
| U | 993 | 1532 | 0.648 | 0.51 | 0.4 | 7.7 | 8.2 | 105452.0 | 401722 | 0.694 | 689 | 7.9 | 3.0 | 10.9 | 10777 |
| S | 1036 | 1787 | 0.580 | 0.51 | 0.2 | 7.7 | 7.9 | 101630.3 | 542028 | 0.641 | 664 | 6.9 | 2.8 | 9.7 | 10063 |
| T | 297 | 458 | 0.648 | 0.23 | 0.4 | 2.9 | 3.3 | 42418.6 | 282791 | 0.934 | 277 | 16.7 | 3.8 | 20.5 | 6092 |
| B | 233 | 458 | 0.508 | 0.23 | 0.0 | 2.2 | 2.2 | 28200.8 | 188005 | 0.791 | 184 | 13.1 | 3.3 | 16.4 | 3817 |
| | 0 | 0 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0.000 | 0 | 0.0 | 0.0 | 0.0 | 0 |
| | 0 | 0 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0.000 | 0 | 0.0 | 0.0 | 0.0 | 0 |
| LTOR(semua) | 686 | | | | | | | | | | | 0.0 | 6.0 | 6.0 | 4114.8 |
| Arus total. Q tot. | | | | | | | | | | Total : | 1814 | | | Total : | 34863 |
| Arus kor. Q kor. | 3244 | | | | | | | | | Kendaraan terhenti rata-rata stop/smp : | 0.56 | | | Tundaan simpang rata-rata(det/smp) : | 10.75 |

Formulir SIG - V

| | | |
|---|---|---|
| **SIMPANG BERSINYAL** | Tanggal : 13 maret 2012 | Ditangani oleh : flori |
| Formulir SIG-V : PANJANG ANTRIAN | Kota : DIY | Kondisi Eksiting |
| JUMLAH KENDARAAN TERHENTI | Simpang : Seturan Raya | Periode : jam pagi-sore |
| TUNDAAN | Waktu siklus : | |

| Kode Pendekat | Arus Lalu Lintas smp/jam **Q** | Kapasitas smp / jam **C** | Derajat Kejenuhan **DS= Q/C** | Rasio Hijau **GR= g/c** | Jumlah kendaraan antri (smp) $NQ_1$ | $NQ_2$ | **Total NQ= $NQ_1+NQ_2$** | $NQ_{MAX}$ liat gb e22 | Panjang Antrian ( m ) **QL** | Angka Henti stop/smp **NS** | Jumlah Kendaraan Terhenti smp/jam $N_{SV}$ | Tundaan Tundaan lalu lintas rata-rata det/smp **DT** | Tundaan geo-metrik rata-rata det/smp **DG** | Tundaan rata-rata det/smp **D = DT+DG** | Tundaan total smp.det **D x Q** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) |
| U | 993 | 1532 | 0.648 | 0.51 | 0.4 | 7.7 | 8.2 | 105452.0 | 401722 | 0.694 | 689 | 7.9 | 3.0 | 10.9 | 10777 |
| S | 1036 | 1787 | 0.580 | 0.51 | 0.2 | 7.7 | 7.9 | 101630.3 | 542028 | 0.641 | 664 | 6.9 | 2.8 | 9.7 | 10063 |
| T | 297 | 458 | 0.648 | 0.23 | 0.4 | 2.9 | 3.3 | 42418.6 | 282791 | 0.934 | 277 | 16.7 | 3.8 | 20.5 | 6092 |
| B | 233 | 458 | 0.508 | 0.23 | 0.0 | 2.2 | 2.2 | 28200.8 | 188005 | 0.791 | 184 | 13.1 | 3.3 | 16.4 | 3817 |
| | 0 | 0 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0.000 | 0 | 0.0 | 0.0 | 0.0 | 0 |
| | 0 | 0 | 0.000 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0.000 | 0 | 0.0 | 0.0 | 0.0 | 0 |
| LTOR(semua) | 686 | | | | | | | | | | | 0.0 | 6.0 | 6.0 | 4114.8 |
| Arus total. Q tot. | | | | | | | | | | Total : | 1814 | | | Total : | 34863 |
| Arus kor. Q kor. | 3244 | | | | | | | | | Kendaraan terhenti rata-rata stop/smp : | 0.56 | | | Tundaan simpang rata-rata(det/smp) : | 10.75 |