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Lampiran 1 Volume lalu lintas

| No | Nama Ruas Jalan | Tipe Jalan | Volume (smp/jam) | | |
|----|--------------------------|------------|------------------|--------------|--------------|
| | | | Rerata | Min. | Maks. |
| 1 | Jl. Jend. Ahmad Yani | | 1,456 | 1,301 | 1,665 |
| 2 | Jl. Sultan Alauddin | | 3,211 | 2,892 | 3,531 |
| 3 | Jl. Andalas | | 1,803 | 1,660 | 1,968 |
| 4 | Jl. Andi Tonro | | 1,510 | 1,374 | 1,626 |
| 5 | Jl. Antang Raya | | 1,107 | 903 | 1,302 |
| 6 | Jl. Batua Raya | | 621 | 508 | 719 |
| 7 | Jl. Borong Raya | | 938 | 811 | 1,047 |
| 8 | Jl. Cakalang | | 1,506 | 1,265 | 1,731 |
| 9 | Jl. Cendrawasih | | 1,655 | 1,421 | 2,122 |
| 10 | Jl. Abdullah Dg Sirua | | 958 | 769 | 1,177 |
| 11 | Jl. Diponegoro | | 1,378 | 1,104 | 1,675 |
| 12 | Jl. Gagak | | 1,028 | 859 | 1,171 |
| 13 | Jl. Ir. Sutami | | 1,990 | 1,690 | 2,314 |
| 14 | Jl. Jend.M. Yusuf | | 1,794 | 1,546 | 2,088 |
| 15 | Jl. R.A. Kartini | | 746 | 574 | 936 |
| 16 | Jl. Kumala | | 1,584 | 1,194 | 1,989 |
| 17 | Jl. Malengkeri | | 823 | 590 | 1,043 |
| 18 | Jl. Masjid Raya | | 1,986 | 1,761 | 2,192 |
| 19 | Jl. Nusantara | | 867 | 568 | 1,169 |
| 20 | Jl. Perintis Kemerdekaan | | 3,164 | 3,021 | 3,272 |
| 21 | Jl. Pongtiku | | 823 | 649 | 993 |
| 22 | Jl. Jend. Sudirman | | 1,613 | 1,410 | 1,892 |
| 23 | Jl. Sultan Hasanuddin | | 1,941 | 1,867 | 2,053 |
| 24 | Jl. Sungai Saddang | | 1,242 | 1,048 | 1,373 |
| 25 | Jl. Teuku Umar | | 1,346 | 1,173 | 1,588 |
| 26 | Jl. Toddopuli Raya | | 1,005 | 821 | 1,130 |
| 27 | Jl. Yos Sudarso | | 1,262 | 1,125 | 1,410 |
| 28 | Jl. Arif Rate | | 1,651 | 1,433 | 1,899 |
| 29 | Jl. Bandang | | 1,951 | 1,495 | 2,739 |
| 30 | Jl. G. Bawakaraeng | | 1,606 | 1,520 | 1,684 |
| 31 | Jl. Hertasning | | 1,396 | 1,196 | 1,582 |
| 32 | Jl. A.P.Pettarani | | 1,891 | 1,710 | 1,981 |
| 33 | Jl. Tentara Pelajar | | 1,586 | 1,328 | 1,808 |
| 34 | Jl. Urip Sumoharjo | | 2,371 | 1,911 | 2,862 |
| 35 | Jl. Veteran Selatan | | 2,703 | 2,393 | 2,927 |
| 36 | Jl. Veteran Utara | | 1,833 | 1,450 | 2,235 |
| | Volume Rerata | | 1,565 | 1,343 | 1,802 |
| | Volume Terendah | | 621 | 508 | 719 |
| | Volume Tertinggi | | 3,211 | 3,021 | 3,531 |

Lampiran .3 data-data lengkung Jalan Perintis Kemerdekaan

PI - 1

II. Perhitungan Lengkung Spiral-Circle-Spiral (S-C-S):

a. Syarat untuk lengkung (S-C-S) bila superelevasi (e) > 3 %.
Diketahui data sbb :

| | | | | | |
|------------|---|-----------|--------|----------|-----------|
| X | = | 6,919.88 | meter | | |
| Y | = | 6,150.64 | meter | | |
| d | = | 72.65 | meter | | |
| "V rencana | = | 30 | km/jam | B = 4.50 | m |
| "R | = | 160.000 | meter | "m dmax | = 75 - |
| "e dmax | = | 0.10 | uo | "C | = 0.4 - |
| "Sudut B | = | 28.017988 | uo | " | 28 1 4.76 |
| "e normal | = | 0.02 | | | |

Penyelesaian :

| | | | | | |
|---------|---|--|-----------------------|-------|--------|
| "R | = | 160.00 | meter | | |
| "D | = | 1432,39 / R | | | |
| | = | 8.95 | uo | | |
| "Vj | = | 0,90 V | = | 27.00 | km/jam |
| "e dmax | = | 0.10 | % | | |
| "f dmax | = | - 0,00065 V + 0,192 | (untuk V < 60 km/jam) | | |
| | = | 0.173 | | | |
| "D dmax | = | (181913,53 (e dmax + f dmax)) / V u2 | | | |
| | = | 55.08 | uo | | |
| "DP | = | e dmax) / Vj u2 = 181913,53 (e dmax) / Vj u2 | | | |
| | = | 24.95 | uo | | |
| "h | = | e dmax (V / Vj) u2 - e dmax | | | |
| | = | 0.023 | | | |
| "tg A1 | = | h / DP | | | |
| | = | 0.00094 | | | |
| "tg A2 | = | (f dmax - h) / (D dmax - DP) | | | |
| | = | 0.00495 | | | |
| "Mo | = | (DP (D dmax - DP) (tg A2 - tg A1)) / 2 D dmax | | | |
| | = | 0.02735 | | | |
| "f d1 | = | Mo (D / DP) u2 + D tg A1 | | | |
| "f d2 | = | Mo ((D dmax - D) (D dmax - DP)) u2 + h | | | |
| | = | + (D - DP) tg A2 | | | |
| "f d1 | = | 0.012 | | | |
| "f d2 | = | 52,812.87 | | | |

Karena D di kiri DP, maka :

| | | | | | |
|---------|---|----------------------------|-------------------|--|--|
| "D | = | 181913,53 (e + f) / V . u2 | | | |
| "maka e | = | 0.044 | > 3 % (S-C-S) ok) | | |

Perhitungan lengkung minimum

| | | | | | |
|------------------------------|---|---------------------|--|-------|---|
| "Ls 1 | = | + e dn) B m dmax | | 21.69 | m |
| "Ls 2 | = | 0,022 (V3 / R C) = | | 0.23 | m |
| | = | - 2,727 (V e / C) | | | |
| "Ls 3 | = | V / (t = 3 detik) = | | 25.00 | m |
| Ls min diambil yang terbesar | = | | | 25.00 | m |

b. Perhitungan Spiral :

$$\begin{aligned}
 "Os &= (Ls \times 90) / (n \times R) \\
 &= \mathbf{4.476} \quad \square \square \square \square \\
 "Oc &= B - 2 Os = \mathbf{19.066} \quad \square \\
 "Lc &= (Oc / 360) \times 2 \pi \times Rc \\
 &= \mathbf{53.241} \quad \text{m} \quad (> 20 \text{ m (S-C-S)}) \\
 "L &= Lc + 2 Ls \\
 &= \mathbf{103.241} \quad \text{m} \\
 "p &= (Ls^2 / 6 Rc) - Rc (1 - \text{Cos } Os) \\
 &= \mathbf{0.163} \quad \text{m} \\
 "k &= (Ls - (Ls^3 / (40 Rc^2))) - Rc \text{ Sin } Os \\
 &= \mathbf{12.497} \quad \text{m} \\
 "Es &= \{(Rc + p) \text{ Sec } 1/2 B - Rc\} \\
 &= \mathbf{5.073} \quad \text{m} \\
 "Ts &= + p) \tan 1/2 B\} + k \\
 &= \mathbf{52.457} \quad \text{m}
 \end{aligned}$$

Data lengkung Spiral-Circle-Spiral adalah :

| | | | | | |
|-------|------------------|--------|-------|----------------|---|
| "V = | 30 | km/jam | "L = | 103.241 | m |
| "B = | 28.017988 | ° | "e = | 4.43 | % |
| "Os = | 4.476 | ° | "Ls = | 25 | m |
| "Rc = | 160 | m | "Lc = | 53.241 | m |
| "Es = | 5.073 | m | "p = | 0.163 | m |
| "Ts = | 52.457 | m | "k = | 12.497 | m |

PI - 2

Perhitungan Lengkung Spiral-Circle-Spiral (S-C-S) :

- a. Syarat untuk lengkung (S-C-S) bila superelevasi (e) > 3 %.
Diketahui data sbb :

| | | | | | |
|------------|---|-----------|--------|---------------|-------------|
| X | = | 6,760.64 | meter | | |
| Y | = | 7,596.17 | meter | | |
| d | = | 1,454.28 | meter | | |
| "V rencana | = | 40 | km/jam | B = 4.50 | m |
| "R | = | 160.000 | meter | "m dmax = 100 | - |
| "e dmax | = | 0.10 | % | "C = 0.4 | - |
| "Sudut B | = | 28.888169 | ° | " | 28 53 17.41 |
| "e normal | = | 0.02 | | | |

Penyelesaian :

$$\begin{aligned}
 "R &= 160.00 \text{ meter} \\
 "D &= 1432,39 / R \\
 &= 8.95 \text{ } \square \text{uo} \\
 "V_j &= 0,90 V = 36.00 \text{ km/jam} \\
 "e \square dmax &= 0.10 \% \\
 "f \square dmax &= -0,00065 V + 0,192 \quad (\text{untuk } V < 60 \text{ km/jam}) \\
 &= 0.166 \\
 "D \square dmax &= \{181913,53 (e \square dmax \square + f \square dmax \square)\} / V \square u^2 \\
 &= 30.24 \text{ } \square \text{uo} \\
 "DP &= \{e \square dmax \square\} / V_j \square u^2 = 181913,53 (e \square dmax \square) / V_j \square u^2 \\
 &= 14.04 \text{ } \square \text{uo} \\
 "h &= e \square dmax \square (V / V_j) \square u^2 \square - e \square dmax \\
 &= 0.023 \\
 "tg A1 &= h / DP \\
 &= 0.00167 \\
 "tg A2 &= (f \square dmax \square - h) / (D \square dmax \square - DP) \\
 &= 0.00880 \\
 "Mo &= \{DP (D \square dmax \square - DP) (tg A2 - tg A1)\} / 2 D \square dmax \\
 &= 0.02679 \\
 "f \square d1 &= Mo \{D \square dmax \square - D\} \square u^2 \square + D \square tg A1 \\
 "f \square d2 &= Mo \{(D \square dmax \square - D) (D \square dmax \square - DP)\} \square u^2 \square + h \\
 &\quad + (D - DP) \square tg A2 \\
 "f \square d1 &= 0.026 \\
 "f \square d2 &= 3,190.76
 \end{aligned}$$

Karena D di kiri DP, maka :

$$\begin{aligned}
 "D &= 181913,53 (e + f) / V \square u^2 \\
 "maka e &= 0.079 > 3 \% \text{ (S-C-S) ok}
 \end{aligned}$$

Perhitungan lengkung minimum

$$\begin{aligned}
 "Ls 1 &= + e \square dn \square B m \square dmax \square = 44.42 \text{ m} \\
 "Ls 2 &= 0,022 (V^3 / R C) = 0.53 \text{ m} \\
 &\quad - 2,727 (V e / C) \\
 "Ls 3 &= V / (t = 3 \text{ detik}) = 33.33 \text{ m} \\
 \text{Ls min diambil yang terbesar} &= 30.00 \text{ m}
 \end{aligned}$$

b. Perhitungan Spiral :

$$\begin{aligned}
 "Os &= (Ls \times 90) / (n \times R) \\
 &= \mathbf{5.371} \quad \text{°} \\
 "Oc &= B - 2 Os = \mathbf{18.145} \quad \text{°} \\
 "Lc &= (Oc / 360) \times 2 \pi \times Rc \\
 &= \mathbf{50.671} \quad \text{m} \quad (> 20 \text{ m (S-C-S)}) \\
 "L &= Lc + 2 Ls \\
 &= \mathbf{110.671} \quad \text{m} \\
 "p &= (Ls^2 / 6 Rc) - Rc (1 - \cos Os) \\
 &= \mathbf{0.235} \quad \text{m} \\
 "k &= (Ls - (Ls^3 / (40 Rc^2))) - Rc \sin Os \\
 &= \mathbf{14.996} \quad \text{m} \\
 "Es &= \{(Rc + p) \sec 1/2 B - Rc\} \\
 &= \mathbf{5.465} \quad \text{m} \\
 "Ts &= (Es + p) \tan 1/2 B + k \\
 &= \mathbf{56.268} \quad \text{m}
 \end{aligned}$$

Data lengkung Spiral-Circle-Spiral adalah :

| | | | | | |
|-------|------------------|--------|-------|----------------|---|
| "V = | 40 | km/jam | "L = | 110.671 | m |
| "B = | 28.888169 | ° | "e = | 7.87 | % |
| "Os = | 5.371 | ° | "Ls = | 30 | m |
| "Rc = | 160 | m | "Lc = | 50.671 | m |
| "Es = | 5.465 | m | "p = | 0.235 | m |
| "Ts = | 56.268 | m | "k = | 14.996 | m |

PI - 3

I. Perhitungan Lengkung Sederhana (Circle):

- a. Syarat untuk lengkung sederhana (circle) bila superelevasi (e) < 3 %.

Diketahui data sbb :

| | | | | | |
|------------|---|----------|-----------|--------------|----------|
| X | = | 7,023.25 | meter | | |
| Y | = | 7,686.91 | meter | | |
| d | = | 277.84 | meter | | |
| "V rencana | = | 60 | km/jam | B = 7.00 | m |
| "R | = | 900.000 | meter | "m □ dmax□ = | 125 - |
| "e □ dmax | = | 0.10 | □uo | "C = | 0.4 - |
| "Sudut B | = | 5.93928 | □uo ° ' " | 5 | 56 21.41 |
| "e normal | = | 0.02 | | | |

Penyelesaian :

$$\begin{aligned}
 "R &= 900.00 \text{ meter} \\
 "D &= 1432,39 / R \\
 &= 1.59 \quad \square\text{uo} \\
 "V_j &= 0,90 V = 54.00 \text{ km/jam} \\
 "e \square dmax &= 0.10 \% \\
 "f \square dmax &= -0,00065 V + 0,192 \\
 &= 0.153 \\
 "D \square dmax &= \{181913,53 (e \square dmax \square + f \square dmax \square)\} / V \square u^2 \\
 &= 12.78 \quad \square\text{uo} \\
 "DP &= (e \square dmax \square) / V_j \square u^2 = 181913,53 (e \square dmax \square) / V_j \square u^2 \\
 &= 6.24 \quad \square\text{uo} \\
 "h &= e \square dmax \square (V / V_j) \square u^2 - e \square dmax \\
 &= \\
 "tg A1 &= h / DP \\
 &= 0.00000 \\
 "tg A2 &= (f \square dmax \square - h) / (D \square dmax \square - DP) \\
 &= 0.02337 \\
 "Mo &= \{DP (D \square dmax \square - DP) (tg A2 - tg A1)\} / 2 D \square dmax \\
 &= 0.03733 \\
 "fi d1 &= Mo (D / DP) \square u^2 \square + D tg A1 \\
 "fi d2 &= Mo \{(D \square dmax \square - D) (D \square dmax \square - DP)\} \square u^2 \square + h \\
 &\quad + (D - DP) tg A2 \\
 "fi d1 &= 0.002 \\
 "fi d2 &= 200.31
 \end{aligned}$$

Karena D di kiri DP, maka :

$$\begin{aligned}
 "f &= 0.002 \\
 "D &= 181913,53 (e + f) / V \square u^2 \\
 "maka e &= 0.029 < 3 \% \text{ (Circle) ok}
 \end{aligned}$$

$$\begin{aligned}
 "Tc &= R tg (1/2 B) = 46.689 \text{ m} \\
 "Ec &= Tc tg (1/4 B) = 1.210 \text{ m} \\
 "Lc &= 0,01745 B R = 93.276 \text{ m}
 \end{aligned}$$

