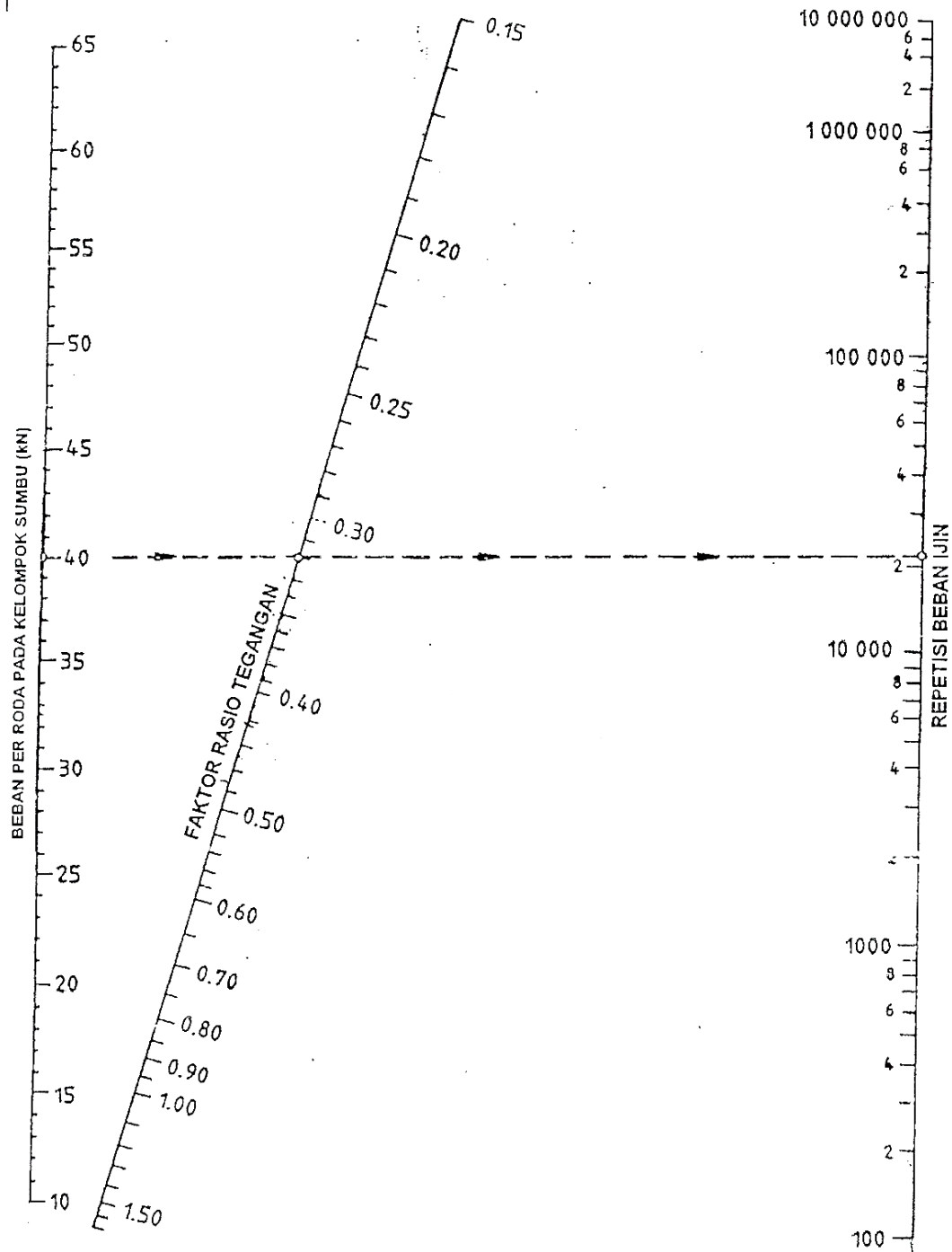
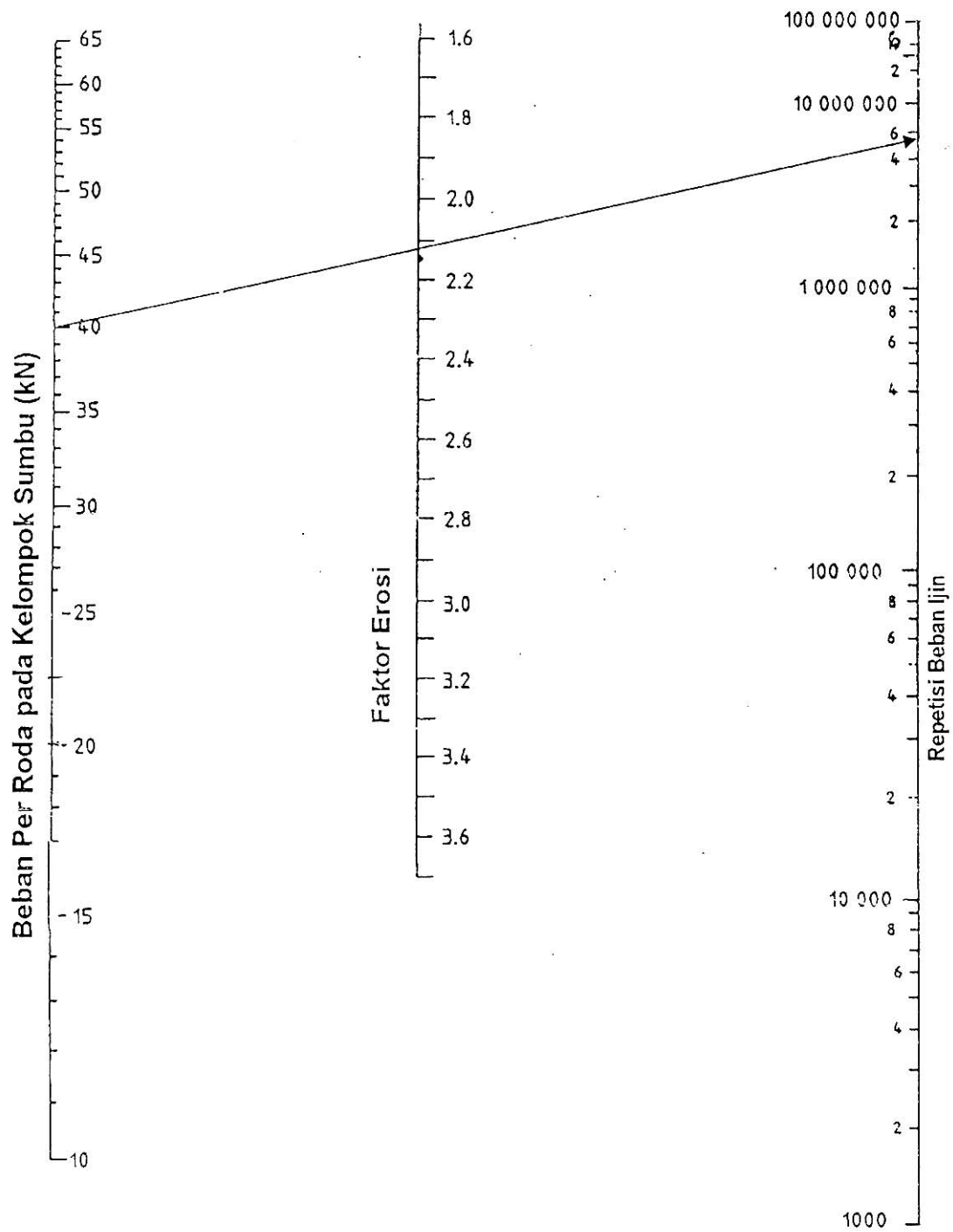


Lampiran 1



Analisis fatik dan beban repetisi ijin berdasarkan rasio tegangan, dengan/tanpa bahu beton

Lampiran 2



Analisis erosi dan jumlah repetisi beban berdasarkan factor erosi, dengan bahu

beton

Lampiran 3

Tabel 9 Tegangan Ekvivalen dan Faktor Erosi untuk Perkerasan Dengan Bahu Beton

| Tebal Slab (mm) | CBR Eff Tanah Dasar (%) | Tegangan Setara | | | | Faktor Erosi | | | | | | | | |
|-----------------|-------------------------|-----------------|------|-------|-------|--------------|------|-------|-------|------------------------------|------|-------|-------|------|
| | | STRT | STRG | STdRG | STrRG | Tanpa Rujii | | | | Dengan Rujii/Beton Bertulang | | | | |
| | | | | | | STRT | STRG | STdRG | STrRG | STRT | STRG | STdRG | STrRG | |
| 150 | 5 | 1,42 | 2,16 | 1,81 | 1,45 | 2,34 | 2,94 | 2,99 | 2,99 | 3 | 2,14 | 2,74 | 2,78 | 2,81 |
| 150 | 10 | 1,36 | 2,04 | 1,7 | 1,38 | 2,32 | 2,92 | 2,94 | 2,94 | 2,13 | 2,72 | 2,73 | 2,75 | |
| 150 | 15 | 1,33 | 1,98 | 1,65 | 1,36 | 2,32 | 2,92 | 2,91 | 2,91 | 2,12 | 2,72 | 2,7 | 2,72 | |
| 150 | 20 | 1,32 | 1,94 | 1,62 | 1,35 | 2,31 | 2,91 | 2,9 | 2,9 | 2,11 | 2,71 | 2,69 | 2,7 | |
| 150 | 25 | 1,3 | 1,9 | 1,59 | 1,33 | 2,3 | 2,9 | 2,88 | 2,88 | 2,1 | 2,7 | 2,67 | 2,67 | |
| 150 | 35 | 1,27 | 1,82 | 1,53 | 1,3 | 2,29 | 2,89 | 2,85 | 2,84 | 2,08 | 2,69 | 2,64 | 2,63 | |
| 150 | 50 | 1,23 | 1,74 | 1,49 | 0,1 | 2,27 | 2,87 | 2,82 | 2,81 | 2,06 | 2,67 | 2,6 | 2,59 | |
| 150 | 75 | 1,2 | 1,65 | 1,43 | 1,26 | 2,25 | 2,85 | 2,79 | 2,77 | 2,04 | 2,65 | 2,57 | 2,56 | |
| 160 | 5 | 1,29 | 1,98 | 1,67 | 1,33 | 2,26 | 2,87 | 2,93 | 2,95 | 2,06 | 2,66 | 2,72 | 2,77 | |
| 160 | 10 | 1,24 | 1,87 | 1,56 | 1,26 | 2,24 | 2,85 | 2,88 | 2,89 | 2,04 | 2,64 | 2,67 | 2,69 | |
| 160 | 15 | 1,21 | 1,82 | 1,51 | 1,23 | 2,24 | 2,84 | 2,85 | 2,86 | 2,04 | 2,64 | 2,64 | 2,66 | |
| 160 | 20 | 1,2 | 1,79 | 1,49 | 1,21 | 2,23 | 2,83 | 2,84 | 2,84 | 2,03 | 2,63 | 2,62 | 2,64 | |
| 160 | 25 | 1,18 | 1,75 | 1,46 | 1,2 | 2,23 | 2,83 | 2,82 | 2,82 | 2,02 | 2,62 | 2,6 | 2,62 | |
| 160 | 35 | 1,15 | 1,67 | 1,41 | 1,17 | 2,22 | 2,82 | 2,79 | 2,78 | 2 | 2,61 | 2,56 | 2,57 | |
| 160 | 50 | 1,12 | 1,6 | 1,36 | 1,15 | 2,2 | 2,8 | 2,75 | 2,75 | 1,98 | 2,59 | 2,53 | 2,53 | |
| 160 | 75 | 1,1 | 1,52 | 1,3 | 1,13 | 2,18 | 2,78 | 2,72 | 2,69 | 1,97 | 2,57 | 2,5 | 2,49 | |
| 170 | 5 | 1,17 | 1,83 | 1,55 | 1,22 | 2,19 | 2,8 | 2,88 | 2,9 | 1,99 | 2,59 | 2,66 | 2,72 | |
| 170 | 10 | 1,13 | 1,75 | 1,45 | 1,16 | 2,17 | 2,78 | 2,83 | 2,84 | 1,97 | 2,57 | 2,61 | 2,64 | |
| 170 | 15 | 1,11 | 1,69 | 1,4 | 1,13 | 2,17 | 2,77 | 2,8 | 2,81 | 1,96 | 2,57 | 2,58 | 2,61 | |
| 170 | 20 | 1,1 | 1,65 | 1,38 | 1,12 | 2,16 | 2,76 | 2,79 | 2,79 | 1,95 | 2,56 | 2,57 | 2,59 | |
| 170 | 25 | 1,08 | 1,62 | 1,35 | 1,1 | 2,16 | 2,76 | 2,77 | 2,77 | 1,95 | 2,55 | 2,55 | 2,57 | |
| 170 | 35 | 1,05 | 1,55 | 1,3 | 1,07 | 2,15 | 2,75 | 2,73 | 2,73 | 1,94 | 2,53 | 2,51 | 2,53 | |
| 170 | 50 | 1,03 | 1,49 | 1,25 | 1,04 | 2,13 | 2,73 | 2,7 | 2,7 | 1,91 | 2,51 | 2,47 | 2,48 | |
| 170 | 75 | 1,02 | 1,41 | 1,19 | 1,03 | 2,11 | 2,71 | 2,66 | 2,64 | 1,89 | 2,49 | 2,43 | 2,43 | |
| 180 | 5 | 1,07 | 1,7 | 1,44 | 1,13 | 2,13 | 2,73 | 2,83 | 2,86 | 1,92 | 2,52 | 2,61 | 2,68 | |
| 180 | 10 | 1,03 | 1,6 | 1,35 | 1,07 | 2,11 | 2,71 | 2,78 | 2,79 | 1,9 | 2,5 | 2,56 | 2,6 | |
| 180 | 15 | 1,01 | 1,55 | 1,3 | 1,04 | 2,1 | 2,71 | 2,75 | 2,76 | 1,89 | 2,5 | 2,53 | 2,57 | |
| 180 | 20 | 1,01 | 1,53 | 1,28 | 1,03 | 2,09 | 2,7 | 2,73 | 2,74 | 1,88 | 2,49 | 2,51 | 2,54 | |
| 180 | 25 | 1 | 1,5 | 1,25 | 1,01 | 2,09 | 2,69 | 2,71 | 2,72 | 1,88 | 2,48 | 2,49 | 2,52 | |
| 180 | 35 | 0,98 | 1,44 | 1,2 | 0,98 | 2,08 | 2,68 | 2,67 | 2,68 | 1,87 | 2,46 | 2,45 | 2,47 | |
| 180 | 50 | 0,95 | 1,38 | 1,16 | 0,96 | 2,06 | 2,66 | 2,64 | 2,64 | 1,84 | 2,44 | 2,42 | 2,42 | |
| 180 | 75 | 0,94 | 1,31 | 1,1 | 0,94 | 2,04 | 2,64 | 2,61 | 2,6 | 1,82 | 2,42 | 2,36 | 2,37 | |
| 190 | 5 | 0,99 | 1,58 | 1,35 | 1,05 | 2,07 | 2,67 | 2,78 | 2,82 | 1,86 | 2,46 | 2,57 | 2,64 | |
| 190 | 10 | 0,96 | 1,49 | 1,26 | 0,99 | 2,05 | 2,65 | 2,72 | 2,75 | 1,84 | 2,44 | 2,51 | 2,56 | |
| 190 | 15 | 0,94 | 1,44 | 1,21 | 0,97 | 2,04 | 2,64 | 2,7 | 2,72 | 1,83 | 2,43 | 2,48 | 2,53 | |
| 190 | 20 | 0,93 | 1,42 | 1,19 | 0,96 | 2,03 | 2,63 | 2,69 | 2,7 | 1,82 | 2,42 | 2,46 | 2,5 | |
| 190 | 25 | 0,92 | 1,4 | 1,17 | 0,94 | 2,03 | 2,63 | 2,67 | 2,68 | 1,81 | 2,41 | 2,44 | 2,48 | |
| 190 | 35 | 0,9 | 1,35 | 1,12 | 0,91 | 2,02 | 2,62 | 2,63 | 2,64 | 1,79 | 2,4 | 2,4 | 2,43 | |
| 190 | 50 | 0,88 | 1,29 | 1,08 | 0,88 | 2 | 2,6 | 2,6 | 2,6 | 1,77 | 2,38 | 2,36 | 2,38 | |
| 190 | 75 | 0,87 | 1,22 | 1,02 | 0,86 | 1,98 | 2,58 | 2,55 | 2,55 | 1,76 | 2,36 | 2,32 | 2,31 | |
| 200 | 5 | 0,91 | 1,47 | 1,27 | 0,99 | 2,01 | 2,61 | 2,74 | 2,78 | 1,8 | 2,4 | 2,52 | 2,6 | |
| 200 | 10 | 0,89 | 1,39 | 1,18 | 0,93 | 1,99 | 2,59 | 2,69 | 2,71 | 1,78 | 2,38 | 2,46 | 2,52 | |
| 200 | 15 | 0,87 | 1,35 | 1,15 | 0,9 | 1,98 | 2,59 | 2,66 | 2,68 | 1,77 | 2,37 | 2,43 | 2,49 | |
| 200 | 20 | 0,86 | 1,33 | 1,12 | 0,89 | 1,97 | 2,58 | 2,64 | 2,66 | 1,76 | 2,36 | 2,42 | 2,48 | |
| 200 | 25 | 0,85 | 1,3 | 1,1 | 0,87 | 1,97 | 2,57 | 2,62 | 2,64 | 1,75 | 2,35 | 2,4 | 2,44 | |
| 200 | 35 | 0,83 | 1,25 | 1,05 | 0,84 | 1,96 | 2,56 | 2,58 | 2,6 | 1,73 | 2,33 | 2,36 | 2,39 | |
| 200 | 50 | 0,82 | 1,2 | 1,01 | 0,82 | 1,94 | 2,54 | 2,54 | 2,55 | 1,71 | 2,31 | 2,32 | 2,33 | |
| 200 | 75 | 0,81 | 1,14 | 0,95 | 0,8 | 1,92 | 2,52 | 2,51 | 2,5 | 1,69 | 2,3 | 2,27 | 2,28 | |
| 210 | 5 | 0,85 | 1,38 | 1,2 | 0,93 | 1,96 | 2,56 | 2,7 | 2,75 | 1,74 | 2,34 | 2,48 | 2,57 | |
| 210 | 10 | 0,82 | 1,3 | 1,11 | 0,87 | 1,94 | 2,54 | 2,65 | 2,67 | 1,72 | 2,32 | 2,42 | 2,49 | |
| 210 | 15 | 0,8 | 1,27 | 1,08 | 0,84 | 1,93 | 2,53 | 2,62 | 2,64 | 1,71 | 2,31 | 2,39 | 2,45 | |
| 210 | 20 | 0,8 | 1,24 | 1,05 | 0,83 | 1,92 | 2,52 | 2,6 | 2,62 | 1,7 | 2,3 | 2,37 | 2,43 | |
| 210 | 25 | 0,79 | 1,22 | 1,03 | 0,81 | 1,91 | 2,51 | 2,58 | 2,6 | 1,69 | 2,29 | 2,35 | 2,4 | |
| 210 | 35 | 0,77 | 1,17 | 0,98 | 0,78 | 1,9 | 2,49 | 2,54 | 2,56 | 1,67 | 2,28 | 2,31 | 2,34 | |
| 210 | 50 | 0,76 | 1,13 | 0,94 | 0,76 | 1,88 | 2,48 | 2,51 | 2,51 | 1,65 | 2,26 | 2,27 | 2,29 | |
| 210 | 75 | 0,75 | 1,07 | 0,9 | 0,74 | 1,86 | 2,47 | 2,45 | 2,46 | 1,64 | 2,24 | 2,22 | 2,22 | |

STRT: Sumbu Tunggal Roda Tunggal; STRG: Sumbu Tunggal Roda Ganda; STdRG: Sumbu Tandem Roda Ganda; STrRG: Su

Lampiran 4

**FORMULIR STANDAR UNTUK
PEREKAMAN ANALISA MASING-MASING HARGA SATUAN**

PROYEK :
 No. PAKET KONTRAK :
 NAMA PAKET :
 PROP / KAB / KODYA :
 : 7.1
 ITEM PEMBAYARAN NO. (3) PERKIRAAN VOL. PEK. 71.30
 JENIS PEKERJAAN : Beton K-350 TOTAL HARGA (Rp.) 33,042,007.14
 SATUAN PEMBAYARAN : M3 % THD. BIAYA PROYEK 0.79

| NO. | KOMPONEN | SATUAN | PERKIRAAN Kuantitas | HARGA SATUAN (Rp.) | JUMLAH HARGA (Rp) |
|-------------------------------|---|--------|---------------------|--------------------|-------------------|
| A. | <u>TENAGA</u> | | | | |
| 1. | Pekerja (L01) | jam | 5.3012 | 1,800.00 | 9,542.17 |
| 2. | Tukang (L02) | jam | 1.7671 | 2,500.00 | 4,417.67 |
| 3. | Mandor (L03) | jam | 0.4418 | 2,750.00 | 1,214.86 |
| JUMLAH HARGA TENAGA | | | | | 15,174.70 |
| B. | <u>BAHAN</u> | | | | |
| 1. | Semen (M12) | Kg | 384.3750 | 575.00 | 221,015.63 |
| 2. | Pasir (M01) | M3 | 0.4271 | 33,800.00 | 14,435.42 |
| 3. | Agregat Kasar (M03) | M3 | 0.6406 | 57,676.45 | 36,948.97 |
| 4. | Kayu Perancah (M19) | M3 | 0.1500 | 650,000.00 | 97,500.00 |
| 5. | Paku (M18) | Kg | 1.5000 | 4,000.00 | 6,000.00 |
| JUMLAH HARGA BAHAN | | | | | 375,900.02 |
| C. | <u>PERALATAN</u> | | | | |
| 1. | Conc. Mixer (E06) | jam | 0.4418 | 12,290.01 | 5,429.32 |
| 2. | Water Tanker (E23) | jam | 0.0521 | 29,327.95 | 1,527.96 |
| 3. | Con. Vibrator (E20) | jam | 0.4418 | 7,304.22 | 3,226.76 |
| 4. | Con, Pump (E28) | jam | 0.4418 | 43,991.98 | 19,434.21 |
| 5. | Alat Bantu | Ls | 1.0000 | 600.00 | 600.00 |
| JUMLAH HARGA PERALATAN | | | | | 30,218.25 |
| D. | JUMLAH HARGA TENAGA, BAHAN DAN PERALATAN (A + B + C) | | | | 421,292.97 |
| E. | OVERHEAD & PROFIT 10.0 % x D | | | | 42,129.30 |
| F. | HARGA SATUAN PEKERJAAN (D + E) | | | | 463,422.26 |

Lampiran 5

**FORMULIR STANDAR UNTUK
PEREKAMAN ANALISA MASING-MASING HARGA SATUAN**

PROYEK :
 No. PAKET KONTRAK :
 NAMA PAKET :
 PROP / KAB / KODYA :
 : 7.1
 ITEM PEMBAYARAN NO. (5) PERKIRAAN VOL. PEK. 71.50
 JENIS PEKERJAAN : Beton K-250 TOTAL HARGA (Rp.) 27,602,370.51
 SATUAN PEMBAYARAN : M3 % THD. BIAYA PROYEK 0.66

| NO. | KOMPONEN | SATUAN | PERKIRAAN Kuantitas | HARGA SATUAN (Rp.) | JUMLAH HARGA (Rp) |
|-------------------------------|---|--------|---------------------|--------------------|-------------------|
| A. | <u>TENAGA</u> | | | | |
| 1. | Pekerja Biasa (L01) | jam | 5.3012 | 1,800.00 | 9,542.17 |
| 2. | Tukang (L02) | jam | 1.7671 | 2,500.00 | 4,417.67 |
| 3. | Mandor (L03) | jam | 0.4418 | 2,750.00 | 1,214.86 |
| JUMLAH HARGA TENAGA | | | | | 15,174.70 |
| B. | <u>BAHAN</u> | | | | |
| 1. | Semen (M12) | Kg | 354.8077 | 575.00 | 204,014.42 |
| 2. | Pasir (M01) | M3 | 0.4435 | 33,800.00 | 14,990.63 |
| 3. | Agregat Kasar (M03) | M3 | 0.6406 | 57,676.45 | 36,948.97 |
| 4. | Kayu Perancah (M19) | M3 | 0.1000 | 650,000.00 | 65,000.00 |
| 5. | Paku (M18) | Kg | 1.0000 | 4,000.00 | 4,000.00 |
| JUMLAH HARGA BAHAN | | | | | 324,954.02 |
| C. | <u>PERALATAN</u> | | | | |
| 1. | Conc. Mixer (E06) | jam | 0.4418 | 12,290.01 | 5,429.32 |
| 2. | Water Tanker (E23) | jam | 0.0534 | 29,327.95 | 1,567.14 |
| 3. | Con. Vibrator (E20) | jam | 0.4418 | 7,304.22 | 3,226.76 |
| 4. | Alat Bantu | Ls | 1.0000 | 600.00 | 600.00 |
| JUMLAH HARGA PERALATAN | | | | | 10,823.22 |
| D. | JUMLAH HARGA TENAGA, BAHAN DAN PERALATAN (A + B + C) | | | | 350,951.94 |
| E. | OVERHEAD & PROFIT 10.0 % x D | | | | 35,095.19 |
| F. | HARGA SATUAN PEKERJAAN (D + E) | | | | 386,047.14 |

Lampiran 7

DAFTAR HARGA DASAR SATUAN BAHAN

Lanjutan

| No. | | KODE | SATUAN | HARGA SATUAN (Rp.) | KETERANGAN |
|-----|-----------------------------|------|--------|--------------------|--------------------|
| 37. | Beton K-250 | M37 | M3 | 386,047.14 | Lokasi Pekerjaan |
| 38. | Beton K-225 | M38 | M3 | 345,293.46 | Lokasi Pekerjaan |
| 39. | Baja Tulangan (Polos) U24 | M39a | Kg | 4,000.00 | Lokasi Pekerjaan |
| | Baja Tulangan (Ulir) D32 | M39b | Kg | 4,600.00 | Lokasi Pekerjaan |
| 40. | Kapur | M40 | M3 | 125,000.00 | Hasil Proses |
| 41. | Chipping | M41 | M3 | 57,676.45 | Base Camp |
| | | | Kg | 30.60 | Base Camp |
| 42. | Cat | M42 | Kg | 22,500.00 | Base Camp |
| 43. | Pemantul Cahaya (Reflector) | M43 | Bh. | 5,250.00 | Base Camp |
| 44. | Pasir Urug | M44 | M3 | 0.00 | Base Camp |
| 45. | Arbocell | M45 | Kg. | 25,000.00 | Base Camp |
| 46. | Baja Bergelombang | M46 | Kg | 7,500.00 | Lokasi Pekerjaan |
| 47. | Beton K-125 | M47 | M3 | 262,572.55 | Lokasi Pekerjaan |
| 48. | Baja Struktur | M48 | Kg | 5,600.00 | Pelabuhan terdekat |
| 49. | Tiang Pancang Baja | M49 | M' | 1,826,090.50 | Lokasi Pekerjaan |
| 50. | T. Pancang Beton Pratekan | M50 | M3 | 1,492,500 | Pelabuhan terdekat |
| 51. | Kawat Las | M51 | Dos | 55,000.00 | Lokasi Pekerjaan |
| 52. | Pipa Baja | M52 | Kg | 5,500.00 | Pelabuhan terdekat |
| 53. | Minyak Fluks | M53 | Liter | 550.00 | Base Camp |