

C-7 Chiang Mai No.22

| Description | Scale | Quantity | Unit | Rate (฿) | Total Cost (฿) | F/C (฿) | L/C (฿) |
|---------------------------------|---------------------------------|----------|----------------|-------------------|------------------|----------------|------------------|
| 1. Banking | | | | | | | |
| Retaining well | 8400 m ² × 3.5 × 1.2 | 190.0 | m | 3,596 | 683,240 | 406,653 | 276,587 |
| Earth | | 35,280.0 | m ³ | 40 | 1,411,200 | — | 1,411,200 |
| Bulldozer | | 564.0 | hr | 329. ⁴ | 185,782 | 127,408 | 58,374 |
| Labor | | 353.0 | day | 80 | 28,240 | — | 28,240 |
| Total | | | | | | 2,308,462 | 534,061 | 1,774,401 |
| 2. Drainage | | | | | | | |
| Concrete pipe | 240.0 m | 60.0 | pcs | 5,703 | 342,216 | 205,330 | 136,886 |
| Cement | | 1,650.0 | kg | 1. ⁷⁴ | 2,871 | 1,723 | 1,148 |
| Sand | | 50.8 | m ³ | 60 | 3,048 | — | 3,048 |
| Ballast | | 3.9 | " | 180 | 702 | — | 702 |
| Cobble | | 1.5 | " | 220 | 330 | — | 330 |
| Steel bar | | 550.0 | kg | 9. ⁸ | 5,390 | 3,773 | 1,617 |
| Backhoe | | 154.0 | hr | 266. ⁵ | 41,041 | 27,042 | 13,999 |
| Labor | | 193.0 | day | 80 | 15,440 | — | 15,440 |
| Total | | | | | 411,038 | 237,868 | 173,170 |
| 3. Foundation | | | | | | | |
| P.C. pile | | | pcs | | | | |
| Pile driving | | | hr | | | | |
| Total | | | | | | | |
| 4. Pre-engineering works | | | | | | | |
| Survey | 8400 m ² | 5.0 | day | 1,000 | 5,000 | — | 5,000 |
| Soil test | 15 m × 2 | 30.0 | m | 800 | 24,000 | 9,328 | 14,672 |
| Total | | | | | 29,000 | 9,328 | 19,672 |
| TOTAL | | | | | 2,748,500 | 781,257 | 1,967,243 |

C-8 Chiang Mai No.23

| Description | Scale | Quantity | Unit | Rate (฿) | Total Cost (฿) | F/C (฿) | L/C (฿) |
|--------------------------|------------------------------|----------|-----------------|-------------------|----------------|---------|---------|
| 1. Access road | | | | | | | |
| Earth | m m m 700 x 25 x 05 x 12 | 1050 | m ³ | 40 | 4200 | — | 4200 |
| Ballast | 700 x 50 x 03 x 12 | 1260 | " | 180 | 22680 | — | 22680 |
| Bulldozer | | 40 | hr | 329 ⁴ | 1317 | 903 | 414 |
| Labor | | 50 | day | 80 | 400 | — | 400 |
| Total | | | | | 28597 | 903 | 27694 |
| 2. Banking | | | | | | | |
| Earth | m m 6140 x 05 x 12 | 36840 | m ³ | 40 | 147360 | — | 147360 |
| Bulldozer | | 590 | hr | 329 ⁴ | 19434 | 13328 | 6106 |
| Labor | | 740 | day | 80 | 5920 | — | 5920 |
| Total | | | | | 172714 | 13328 | 159386 |
| 3. Drainage | | | | | | | |
| Concrete pipe | 200,0 ^m | 500 | pcs | 5703 | 285150 | 171090 | 114060 |
| Cement | | 5500 | kg ³ | 17 ⁴ | 950 | 574 | 383 |
| Sand | | 430 | m ³ | 60 | 2580 | — | 2580 |
| Ballast | | 39 | " | 180 | 702 | — | 702 |
| Cobble | | 15 | " | 220 | 330 | — | 330 |
| Steel Bar | | 5500 | kg | 9 ⁸ | 5390 | 3773 | 1617 |
| Backhoe | | 1320 | hr | 266 ⁵ | 35178 | 23179 | 11999 |
| Labor | | 1650 | day | 80 | 13200 | — | 13200 |
| Total | | | | | 343487 | 198616 | 144871 |
| 4. Foundation | | | | | | | |
| P.C. pile | | | pcs | | | | |
| Pile driving | | | hr | | | | |
| Total | | | | | | | |
| 5. Siding | | | | | | | |
| Rail | 60 lbs/m l=8m | 380 | pcs | 1666 ⁶ | 63330 | 44331 | 18999 |
| Side plate | | 420 | " | 73 | 3066 | 2146 | 920 |
| Bolts | | 1700 | " | 5 ¹ | 867 | 607 | 260 |
| Fish plate | | 1140 | " | 17 ⁵ | 1995 | 1397 | 598 |
| Spike | | 12000 | " | 7 ⁶ | 9120 | 6384 | 2736 |
| Sleepers | | 2400 | " | 290 | 69600 | 48720 | 20880 |
| Turnpoint sleepers | | 20 | " | 14000 | — | — | — |
| Turnpoint | | 20 | " | 51000 | 102000 | 71400 | 30600 |
| Safety peg | | 100 | " | 360 | 3600 | 2520 | 1080 |
| Ballast | m m m 1500 x 20 x 03 x 12 | 1080 | m ³ | 180 | 19440 | — | 19440 |
| Earth | 1500 x 30 x 05 x 12 | 2700 | " | 40 | 10800 | — | 10800 |
| Bulldozer | 20m/day | 600 | hr | 329 ⁴ | 19764 | 13554 | 6210 |
| Labor | 4 day/m | 6000 | day | 80 | 48000 | — | 48000 |
| Total | | | | | 351582 | 191059 | 160523 |
| 6. Pre-engineering works | | | | | | | |
| Survey | 6,140m ² | 30 | day | 500 | 1500 | — | 1500 |
| Soil test | 15m x 2 | 300 | m | 800 | 24000 | 9328 | 14672 |
| Total | | | | | 25500 | 9328 | 16172 |
| TOTAL | | | | | 921880 | 413234 | 508646 |

C-9 Chieng Rai

| Description | Scale | Quantity | Unit | Rate (฿) | Total Cost (฿) | F/C (฿) | L/C (฿) |
|---------------------------------|--|----------|----------------|------------------|----------------|----------------|----------------|
| 1. Access road | | | | | | | |
| Earth | $200 \text{ m} \times 7.0 \text{ m} \times 1.0 \text{ m} \times 1.2$ | 168.0 | m ³ | 40 | 6,720 | — | 6,720 |
| Ballast | $200 \times 50 \times 0.3 \times 1.2$ | 36.0 | " | 180 | 6,480 | — | 6,480 |
| Bulldozer | | 4.0 | hr | 329 ⁴ | 1,317 | 903 | 414 |
| Labor | | 4.0 | day | 80 | 320 | — | 320 |
| Total | | | | | 14,837 | 903 | 13,934 |
| 2. Banking | | | | | | | |
| Earth | $7500 \text{ m}^2 \times 1.0 \text{ m} \times 1.2$ | 9,000.0 | m ³ | 40 | 360,000 | — | 360,000 |
| Bulldozer | | 144.0 | hr | 329 ⁴ | 47,433 | 32,529 | 14,904 |
| Labor | | 180.0 | day | 80 | 14,400 | — | 14,400 |
| Total | | | | | 421,833 | 32,529 | 389,304 |
| 3. Drainage | | | | | | | |
| Concrete pipe | 230 ^m | 58.0 | pcs | 5,995 | 347,710 | 208,626 | 139,084 |
| Cement | | 1,650.0 | kg | 86 | 3,069 | 1,841 | 1,228 |
| Sand | | 48.8 | m ³ | 60 | 2,928 | — | 2,928 |
| Ballast | | 3.9 | " | 180 | 702 | — | 702 |
| Cobble | | 1.5 | " | 200 | 300 | — | 300 |
| Steel bar | | 550.0 | kg | 10 ⁵ | 5,775 | 4,043 | 1,732 |
| Backhoe | | 149.0 | hr | 266 ⁵ | 39,708 | 26,164 | 13,544 |
| Labor | | 186.0 | day | 80 | 14,880 | — | 14,880 |
| Total | | | | | 415,072 | 240,674 | 174,398 |
| 4. Foundation | | | | | | | |
| P.C. pile | | | pcs | | | | |
| Pile driving | | | hr | | | | |
| Total | | | | | | | |
| 5. Pre-engineering works | | | | | | | |
| Survey | 7500 ^m ² | 3.0 | day | 500 | 1,500 | | 1,500 |
| Soil test | 15 ^m × 2 | 30.0 | m | 800 | 24,000 | 9,328 | 14,672 |
| Total | | | | | 25,500 | 9,328 | 16,172 |
| TOTAL | | | | | 877,242 | 283,434 | 593,808 |

C-10 Nakhon Sawan

| Description | Scale | Quantity | Unit | Rate (฿) | Total Cost (฿) | F/C (฿) | L/C (฿) |
|--------------------------|---|----------|-----------------|--------------------|----------------|-----------|-----------|
| 1. Access road | | | | | | | |
| Earth | 200.0 ^m × 7.0 ^m × 1.0 × 1.2 | 1,680.0 | m ³ | 40 | 67,200 | — | 67,200 |
| Ballast | 200.0 × 5.0 × 0.3 × 1.2 | 360.0 | " | 150 | 54,000 | — | 54,000 |
| Bulldozer | | 33.0 | hr | 329 ⁴ | 10,870 | 7,455 | 3,415 |
| Labor | | 41.0 | day | 80 | 3,280 | — | 3,280 |
| Total | | | | | 135,350 | 7,455 | 127,895 |
| 2. Banking | | | | | | | |
| Earth | 40,950 ^{m²} × 0.5 × 1.2 | 24,570.0 | m ³ | 40 | 982,800 | — | 982,800 |
| Bulldozer | | 393.0 | hr | 329 ⁴ | 129,454 | 88,779 | 40,675 |
| Labor | | 491.0 | day | 80 | 39,280 | — | 39,280 |
| Total | | | | | 1,151,534 | 88,779 | 1,062,755 |
| 3. Drainage | | | | | | | |
| Concrete pipe | 390 ^m | 98.0 | pcs | 5,400 | 529,200 | 317,520 | 211,680 |
| Cement | | 2,640.0 | kg ³ | 1.6 ⁴ | 4,329 | 2,598 | 1,731 |
| Sand | | 82.4 | m ³ | 120 | 9,888 | — | 9,888 |
| Ballast | | 6.2 | " | 200 | 1,240 | — | 1,240 |
| Cobble | | 2.4 | " | 180 | 432 | — | 432 |
| Steel Bar | | 880.0 | kg | 9 ² | 8,096 | 5,667 | 2,429 |
| Backhoe | | 250.0 | hr | 266 ⁵ | 66,625 | 43,900 | 22,725 |
| Labor | | 313.0 | day | 80 | 25,040 | — | 25,040 |
| Total | | | | | 644,850 | 369,685 | 275,165 |
| 4. Foundation | | | | | | | |
| P.C. pile | | 840.0 | pcs | 3,596 | 3,020,640 | 1,812,384 | 1,208,256 |
| Pile driving | | 840.0 | hr | 651 | 546,840 | 399,193 | 147,647 |
| Total | | | | | 3,567,480 | 2,211,577 | 1,355,903 |
| 5. Siding | | | | | | | |
| Rail | L = 400 ^m | 100.0 | pcs | 1,666 ⁶ | 166,660 | 116,662 | 49,998 |
| Side plate | 60 lbs/m, l = 8m | 110.0 | " | 73 | 8,030 | 4,818 | 3,212 |
| Bolts | | 400.0 | " | 5 ¹ | 2,040 | 1,224 | 816 |
| Fish plate | | 1,200.0 | " | 17 ⁵ | 21,000 | 14,700 | 6,300 |
| Spike | | 3,240.0 | " | 7 ⁶ | 24,624 | 17,237 | 7,387 |
| Sleepers | | 640.0 | " | 290 | 185,600 | 129,920 | 55,680 |
| Turnpoint sleepers | | 4.0 | " | 14,000 | 56,000 | 39,200 | 16,800 |
| Turnpoint | | 4.0 | " | 51,000 | 204,000 | 142,800 | 61,200 |
| Safety peg | | 40.0 | " ³ | 360 | 14,400 | 10,080 | 4,320 |
| Ballast | 400.0 × 0.3 × 2.0 × 1.2 | 288.0 | m ³ | 150 | 43,200 | — | 43,200 |
| Earth | 400.0 × 1.0 × 3.0 × 1.2 | 1,440.0 | " | 40 | 57,600 | — | 57,600 |
| Bulldozer | 20 ^m /day | 160.0 | hr | 329 ⁴ | 52,704 | 36,144 | 16,560 |
| Labor | 4 day/m | 1,600.0 | day | 80 | 128,000 | — | 128,000 |
| Total | | | | | 963,858 | 512,785 | 451,073 |
| 6. Pre-engineering works | | | | | | | |
| Survey | 40,950.0 ^{m²} | 7.0 | day | 500 | 3,500 | — | 3,500 |
| Soil test | 15 ^m × 4 | 600 | m | 650 | 39,000 | 18,655 | 20,345 |
| Total | | | | | 42,500 | 18,655 | 23,845 |
| TOTAL | | | | | 6,505,572 | 3,208,936 | 3,296,636 |

C-11 Phismulok

| Description | Scale | Quantity | Unit | Rate (₱) | Total Cost (₱) | F/C (₱) | L/C (₱) |
|---------------------------------|--|----------|----------------|-------------------|------------------|----------------|------------------|
| 1. Access road | | | | | | | |
| Earth | 200.0 ^m × 3.5 ^m × 1.5 ^m × 1.2 | 1,260.0 | m ³ | 50 | 63,000 | — | 63,000 |
| Ballast | 200.0 × 5.0 × 0.3 × 1.2 | 360.0 | " | 200 | 72,000 | — | 72,000 |
| Bulldozer | | 26.0 | hr | 329. ⁴ | 8,564 | 5,873 | 2,691 |
| Labor | | 32.0 | day | 80 | 2,560 | — | 2,560 |
| Total | | | | | 146,124 | 5,873 | 140,251 |
| 2. Banking | | | | | | | |
| Earth | 9,600 ^m × 1.5 ^m × 1.2 | 17,280.0 | m ³ | 50 | 864,000 | — | 864,000 |
| Bulldozer | | 276.0 | hr | 329. ⁴ | 90,914 | 62,348 | 28,566 |
| Labor | | 173.0 | day | 80 | 13,840 | — | 13,840 |
| Total | | | | | 968,754 | 62,348 | 906,406 |
| 3. Drainage | | | | | | | |
| Concrete pipe | 320 ^m | 80.0 | pcs | 5,415 | 433,200 | 259,920 | 173,280 |
| Cement | | 2,310.0 | kg | 1. ⁶ | 3,696 | 2,218 | 1,478 |
| Sand | | 68.0 | m ³ | 120 | 8,160 | — | 8,160 |
| Ballast | | 5.4 | " | 200 | 1,080 | — | 1,080 |
| Cobble | | 2.1 | " | 180 | 378 | — | 378 |
| Steel bar | | 770.0 | kg | 9 | 6,930 | 4,851 | 2,079 |
| Backhoe | | 207.0 | hr | 266. ⁵ | 55,165 | 36,349 | 18,816 |
| Labor | | 174.0 | day | 80 | 13,920 | — | 13,920 |
| Total | | | | | 522,579 | 303,338 | 219,191 |
| 4. Foundation | | | | | | | |
| P.C. pile | ℓ = 15.5 ^m . φ = 350 ^{mm} | 100.0 | pcs | 5,022 | 502,200 | 301,320 | 200,880 |
| Pile driving | | | " | 698 | 69,800 | 50,954 | 18,846 |
| Total | | | | | 572,000 | 352,274 | 219,726 |
| 5. Pre-engineering works | | | | | | | |
| Survey | 9600 ^m × 2 | 5.0 | day | 500 | 2,500 | — | 2,500 |
| Soil test | 20 ^m × 2 | 40.0 | m | 700 | 28,000 | 12,437 | 15,563 |
| Total | | | | | 30,500 | 12,437 | 18,063 |
| TOTAL | | | | | 2,239,907 | 736,270 | 1,503,637 |

C-12 Phichit

| Description | Scale | Quantity | Unit | Rate (฿) | Total Cost (฿) | F/C (฿) | L/C (฿) |
|---------------------------------|---|----------|----------------|-------------------|------------------|----------------|------------------|
| 1. Access road | | | | | | | |
| Earth | $80.0 \times 10.0 \times 1.5 \times 1.2$ m m m | 1,440.0 | m ³ | 30 | 43,200 | — | 43,200 |
| Ballast | $80.0 \times 5.0 \times 0.3 \times 1.2$ | 144.0 | " | 200 | 28,800 | — | 28,800 |
| Bulldozer | | 25.0 | hr | 329. ⁴ | 8,235 | 5,648 | 2,587 |
| Labor | | 32.0 | day | 80 | 2,560 | — | 2,560 |
| Total | | | | | 82,795 | 5,648 | 77,147 |
| 2. Banking | | | | | | | |
| Earth | $9600 \times 1.5 \times 1.2$ m ² m | 17,280.0 | m ³ | 30 | 518,400 | — | 518,400 |
| Bulldozer | | 276.0 | hr | 329. ⁴ | 90,914 | 62,348 | 28,566 |
| Labor | | 173.0 | day | 80 | 13,840 | — | 13,840 |
| Total | | | | | 623,154 | 62,348 | 560,806 |
| 3. Drainage | | | | | | | |
| Concrete pipe | 400 ^m | 100.0 | pcs | 5,415 | 541,500 | 324,900 | 216,600 |
| Cement | | 2,640.0 | kg | 1. ⁶ | 4,224 | 2,534 | 1,690 |
| Sand | | 84.4 | m ³ | 120 | 10,128 | — | 10,128 |
| Ballast | | 6.2 | " | 200 | 1,240 | — | 1,240 |
| Cobble | | 2.4 | " | 180 | 432 | — | 432 |
| Steel bar | | 880.0 | kg | 9 | 7,920 | 5,544 | 2,376 |
| Backhoe | | 256.0 | hr | 266. ⁵ | 68,224 | 44,954 | 23,270 |
| Labor | | 216.0 | day | 80 | 17,280 | — | 17,280 |
| Total | | | | | 650,948 | 377,932 | 273,016 |
| 4. Foundation | | | | | | | |
| P.C. pile | $l=15.5^m \phi=300^{mm}$ | 140.0 | pcs | 3,891 | 544,740 | 326,844 | 217,896 |
| Pile driving | | 140.0 | " | 651 | 91,140 | 66,532 | 24,608 |
| Total | | | | | 635,880 | 393,376 | 242,504 |
| 5. Pre-engineering works | | | | | | | |
| Survey | 9600 ^{m³} | 5.0 | day | 500 | 2,500 | — | 2,500 |
| Soil test | 20 ^m × 2 | 40.0 | m | 700 | 28,000 | 12,437 | 15,563 |
| Total | | | | | 30,500 | 12,437 | 18,063 |
| TOTAL | | | | | 2,023,277 | 851,741 | 1,171,536 |

C-13 Nakhon Ratchasima No.10

| Description | Scale | Quantity | Unit | Rate (฿) | Total Cost (฿) | F/C (฿) | L/C (฿) |
|--------------------------|--|----------|----------------|------------------|----------------|---------|---------|
| 1. Access road | | | | | | | |
| Earth | 20.0 ^m × 7.0 ^m × 2.0 ^m × 12 | 336.0 | m ³ | 60 | 20,160 | — | 20,160 |
| Ballast | 20.0 × 5.0 × 0.3 × 12 | 36.0 | " | 180 | 6,480 | — | 6,480 |
| Bulldozer | | 6.0 | hr | 329 ⁴ | 1,976 | 1,355 | 621 |
| Labor | | 7.0 | day | 80 | 560 | — | 560 |
| Total | | | | | 29,176 | 1,355 | 27,821 |
| 2. Banking | | | | | | | |
| Earth | 28,900 m ² | | m ³ | | — | — | — |
| Bulldozer | Leveling of ground | 50.0 | hr | 329 ⁴ | 16,470 | 11,295 | 5,175 |
| Labor | | 250.0 | day | 80 | 20,000 | — | 20,000 |
| Total | | | | | 36,470 | 11,295 | 25,175 |
| 3. Drainage | | | | | | | |
| Concrete pipe | 5000 ^m | 125.0 | pcs | 5,180 | 647,500 | 388,500 | 259,000 |
| Cement | | 3,300.0 | kg | 1 ⁵² | 5,016 | 3,010 | 2,006 |
| Sand | | 105.5 | m ³ | 150 | 15,825 | — | 15,825 |
| Ballast | | 7.7 | " | 180 | 1,386 | — | 1,386 |
| Cobble | | 3.0 | " | 240 | 720 | — | 720 |
| Steel bar | | 1,100.0 | kg | 8 ⁶ | 9,460 | — | 9,460 |
| Backhoe | | 300.0 | hr | 266 ⁵ | 79,950 | 52,680 | 27,270 |
| Labor | | 270.0 | day | 80 | 21,600 | — | 21,600 |
| Total | | | | | 781,457 | 444,190 | 337,264 |
| 4. Foundation | | | | | | | |
| P.C. pile | | | pcs | | | | |
| Pile driving | | | hr | | | | |
| Total | | | | | | | |
| 5. Pre-engineering works | | | | | | | |
| Survey | 28,900 m ² | 5.0 | day | 500 | 2,500 | — | 2,500 |
| Soil test | 15 ^m × 2 | 30.0 | m | 650 | 19,500 | 6,928 | 12,572 |
| Total | | | | | 22,000 | 6,928 | 15,072 |
| TOTAL | | | | | 869,103 | 463,768 | 405,335 |

C-14 Nakhon Ratchasima No.11

| Description | Scale | Quantity | Unit | Rate (฿) | Total Cost (฿) | F/C (฿) | L/C (฿) |
|---------------------------------|----------------------------------|----------|----------------|------------------|----------------|----------------|----------------|
| 1. Access road | | | | | | | |
| Earth | | | m ³ | | — | — | — |
| Ballast | m m m 147.0 x 0.3 x 5.0 x 1.2 | 264.6 | " | 180 | 47,628 | — | 47,628 |
| Bulldozer | Leveling of ground | 56.0 | hr | 329 ⁴ | 18,446 | 12,650 | 5,796 |
| Labor | | 70.0 | day | 80 | 5,600 | — | 5,600 |
| Total | | | | | 71,674 | 12,650 | 59,024 |
| 2. Banking | | | | | | | |
| Earth | 24,500m ² | | m ³ | | — | — | — |
| Bulldozer | Leveling of ground | 80.0 | hr | 329 ⁴ | 26,352 | 18,072 | 8,280 |
| Labor | | 50.0 | day | 80 | 4,000 | — | 4,000 |
| Total | | | | | 30,352 | 18,072 | 12,280 |
| 3. Drainage | | | | | | | |
| Concrete pipe | 400m | 100.0 | pcs | 5180 | 518,000 | 318,000 | 207,200 |
| Cement | | 2640.0 | kg | 1 ⁵² | 4,012 | 2,407 | 1,605 |
| Sand | | 84.4 | m ³ | 150 | 12,660 | — | 12,660 |
| Ballast | | 6.2 | " | 180 | 1,116 | — | 1,116 |
| Cobble | | 2.4 | " | 240 | 576 | — | 576 |
| Steel bar | | 880.0 | kg | 8 ⁶ | 7,568 | 5,298 | 2,270 |
| Backhoe | | 256.0 | hr | 266 ⁵ | 68,224 | 44,954 | 23,270 |
| Labor | | 216.0 | day | 80 | 17,280 | — | 17,280 |
| Total | | | | | 629,436 | 363,459 | 265,977 |
| 4. Foundation | | | | | | | |
| P.C.pile | | | pcs | | | | |
| Pile driving | | | hr | | | | |
| Total | | | | | | | |
| 5. Pre-engineering works | | | | | | | |
| Survey | 24,500m ² | 50 | day | 500 | 2,500 | — | 2,500 |
| Soil test | 15m x 2 | 300 | m | 650 | 19,500 | 9,328 | 10,172 |
| Total | | | | | 22,000 | 9,328 | 12,672 |
| TOTAL | | | | | 753,462 | 403,509 | 349,953 |

C-15 Nakhon Ratchasima No.12

| Description | Scale | Quantity | Unit | Rate (฿) | Total Cost (฿) | F/C (฿) | L/C (฿) |
|--------------------------|--|----------|-----------------|---------------------|------------------|----------------|------------------|
| 1. Access road | | | | | | | |
| Earth | $50.0 \times 7.0 \times 1.5 \times 1.2$ | 6300 | m ³ | 60 | 37800 | — | 37,880 |
| Ballast | $50.0 \times 5.0 \times 0.3 \times 1.2$ | 900 | " | 180 | 16200 | — | 16,200 |
| Bulldozer | | 120 | hr | 329. ⁴ | 3,952 | 2,710 | 1,242 |
| Labor | | 140 | day | 80 | 1,120 | — | 1,120 |
| Total | | | | | 59,072 | 2,710 | 56,362 |
| 2. Banking | | | | | | | |
| Earth | $23,800 \times 0.5 \times 1.2$ | 14,280.0 | m ³ | 60 | 856,800 | — | 856,800 |
| Bulldozer | | 2280 | hr | 329. ⁴ | 75,103 | 51,505 | 23,598 |
| Labor | | 1430 | day | 80 | 11,440 | — | 11,440 |
| Total | | | | | 943,343 | 51,505 | 891,838 |
| 3. Drainage | | | | | | | |
| Concrete pipe | 400 ^m | 100.0 | pcs | 5,180 | 518,000 | 310,800 | 207,200 |
| Cement | | 2640.0 | kg ³ | 1. ⁵⁴ | 4,012 | 2,407 | 1,605 |
| Sand | | 84.4 | m ³ | 150 | 12,660 | — | 12,660 |
| Ballast | | 6.2 | " | 180 | 1,116 | — | 1,116 |
| Cobble | | 2.4 | " | 240. ⁶ | 576 | — | 576 |
| Steel Bar | | 8800 | kg | 8. ⁶ | 7,568 | 5,298 | 2,270 |
| Backhoe | | 256.0 | hr | 266. ⁵ | 68,224 | 44,954 | 23,270 |
| Labor | | 216.0 | day | 80 | 17,280 | — | 17,280 |
| Total | | | | | 629,436 | 363,459 | 265,977 |
| 4. Foundation | | | | | | | |
| P.C. pile | | | pcs | | | | |
| Pile driving | | | hr | | | | |
| Total | | | | | | | |
| 5. Siding | | | | | | | |
| Rail | 200 ^m | 50.0 | pcs | 1,666. ⁶ | 83,330 | 58,331 | 24,999 |
| Side plate | 60 lbs/m l=8m | 56.0 | " | 73 | 4,088 | 2,862 | 1,226 |
| Bolts | | 224.0 | " | 5. ¹ | 1,142 | 799 | 343 |
| Fish plate | | 150.0 | " | 17. ⁵ | 2,625 | 1,838 | 787 |
| Spike | | 16,200 | " | 7. ⁶ | 123,12 | 8,618 | 3,694 |
| Sleepers | | 3,200 | " | 290 | 92,800 | 64,960 | 27,840 |
| Turnpoint sleepers | | 40 | " | 14,000 | 56,000 | 39,200 | 16,800 |
| Turnpoint | | 40 | " | 5,000 | 204,000 | 142,800 | 61,200 |
| Safety peg | | 200 | " | 360 | 7,200 | 5,040 | 2,160 |
| Ballast | $200.0 \times 0.3 \times 2.0 \times 1.2$ | 144.0 | m ³ | 180 | 25,920 | — | 25,920 |
| Earth | $200.0 \times 0.5 \times 3.0 \times 1.2$ | 360.0 | " | 60 | 21,600 | — | 21,600 |
| Bulldozer | $200 \text{ m}^2 \div 20 \text{ m}^2/\text{day} \times 8 \text{ hr}$ | 800 | hr | 329. ⁴ | 26,352 | 18,072 | 8,280 |
| Labor | 5 day/m | 1,000.0 | day | 80 | 80,000 | — | 80,000 |
| Total | | | | | 617,369 | 342,520 | 274,849 |
| 6. Pre-engineering works | | | | | | | |
| Survey | 23,800 ^m ² | 70 | day | 500 | 3,500 | — | 3,500 |
| Soil test | 15 ^m ² | 300 | m | 650 | 19,500 | 9,328 | 10,172 |
| Total | | | | | 23,000 | 9,328 | 13,672 |
| TOTAL | | | | | 2,272,220 | 769,522 | 1,502,698 |

3-16 Surin

| Description | Scale | Quantity | Unit | Rate (฿) | Total Cost (฿) | F/C (฿) | L/C (฿) |
|--------------------------|---------------------------|----------|----------------|----------|----------------|---------|---------|
| 1. Access road | | | | | | | |
| Earth | m m 1000×3.5×1.0×12 | 4,200.0 | m ³ | 50 | 210,000 | — | 210,000 |
| Ballast | 1000×5.0×0.3×12 | 1,800.0 | " | 210 | 378,000 | — | 378,000 |
| Bulldozer | | 96.0 | hr | 329 | 31,584 | 21,686 | 9,898 |
| Labor | | 120.0 | day | 80 | 9,600 | — | 9,600 |
| Total | | | | | 629,184 | 21,686 | 607,498 |
| 2. Banking | | | | | | | |
| Earth | 7200m ² | | m ³ | | — | — | — |
| Bulldozer | Leveling of ground | 40.0 | hr | 329 | 13,160 | 9,036 | 4,124 |
| Labor | | 25.0 | day | 80 | 2,000 | — | 2,000 |
| Total | | | | | 15,160 | 9,036 | 6,124 |
| 3. Drainage | | | | | | | |
| Concrete pipe | 160.0m | 40.0 | pcs | 5230 | 209,200 | 125,520 | 83,680 |
| Cement | | 1320.0 | kg | 1.61 | 2,164 | 1,299 | 865 |
| Sand | | 34.2 | m ³ | 85 | 2,907 | — | 2,907 |
| Ballast | | 3.1 | " | 210 | 651 | — | 651 |
| Cobble | | 1.2 | " | 190 | 228 | — | 228 |
| Steel Bar | | 440.0 | kg | 9.2 | 4,048 | 2,833 | 1,214 |
| Backhoe | | 106.0 | hr | 266.5 | 28,249 | 18,614 | 9,635 |
| Labor | | 88.0 | day | 80 | 7,040 | — | 7,040 |
| Total | | | | | 254,487 | 149,267 | 106,220 |
| 4. Foundation | | | | | | | |
| P.C. pile | | | pcs | | | | |
| Pile driving | | | hr | | | | |
| Total | | | | | | | |
| 5. Siding | | | | | | | |
| Rail | L=150.0m | 38.0 | pcs | 1,666.6 | 63,331 | 44,332 | 18,999 |
| Side plate | 60 lbs/m, L=8m | 42.0 | " | 73 | 3,066 | 2,146 | 920 |
| Bolts | | 165.0 | " | 5.1 | 841 | 589 | 252 |
| Fish plate | | 114.0 | " | 17.5 | 1,995 | 1,396 | 599 |
| Spike | | 1,215.0 | " | 7.6 | 9,234 | 6,464 | 2,770 |
| Sleepers | | 240.0 | " | 290 | 69,600 | 48,720 | 20,880 |
| Turnpoint sleepers | | 2.0 | " | 14,000 | 28,000 | 19,600 | 8,400 |
| Turnpoint | | 2.0 | " | 5,100 | 10,200 | 7,140 | 3,060 |
| Safety peg | | 10.0 | " | 360 | 3,600 | 2,520 | 1,080 |
| Ballast | m m m 150.0×0.3×2.0×12 | 108.0 | m ³ | 210 | 22,680 | — | 22,680 |
| Earth | 150.0×0.5×3.0×12 | 270.0 | " | 50 | 13,500 | — | 13,500 |
| Bulldozer | 150m ÷ 20m/day | 60.0 | hr | 329.4 | 19,764 | 13,554 | 6,210 |
| Labor | 5 day/m × 150m | 750.0 | day | 80 | 60,000 | — | 60,000 |
| Total | | | | | 397,611 | 210,721 | 186,890 |
| 6. Pre-engineering works | | | | | | | |
| Survey | 7,200m ² | 2.0 | day | 500 | 1,000 | — | 1,000 |
| Soil test | 10.0m ² × 1 | 10.0 | m | 850 | 8,500 | 3,109 | 5,391 |
| Total | | | | | 9,500 | 3,109 | 6,391 |
| TOTAL | | | | | 1,305,942 | 392,819 | 913,123 |

C-17 Ubon Ratchatani

| Description | Scale | Quantity | Unit | Rate (฿) | Total Cost (฿) | F/C (฿) | L/C (฿) |
|---------------------------------|---|----------|----------------|------------------|----------------|----------------|----------------|
| 1. Access road | | | | | | | |
| Earth | 400 ^m × 70 ^m × 15 ^m × 12 | 504.0 | m ³ | 50 | 25,200 | — | 25,200 |
| Ballast | 400 × 50 × 03 × 12 | 72.0 | " | 212 | 15,264 | — | 15,264 |
| Bulldozer | | 10.0 | hr | 329 ^d | 3,294 | 2,259 | 1,035 |
| Labor | | 12.0 | day | 80 | 960 | — | 960 |
| Total | | | | | 44,718 | 2,259 | 42,459 |
| 2. Banking | | | | | | | |
| Earth | Leveling of Ground | | m ³ | | — | — | — |
| Bulldozer | | 80.0 | hr | 329 ^d | 26,352 | 18,072 | 8,280 |
| Labor | | 50.0 | day | 80 | 4,000 | — | 4,000 |
| Total | | | | | 30,352 | 18,072 | 12,280 |
| 3. Drainage | | | | | | | |
| Concrete pipe | 2500 ^m | 63.0 | pcs | 5283 | 332,829 | 199,697 | 133,132 |
| Cement | | 1,650.0 | kg | 16 ^d | 2,706 | 1,624 | 1,082 |
| Sand | | 52.8 | m ³ | 86 | 4,540 | — | 4,540 |
| Ballast | | 3.9 | " | 212 | 827 | — | 827 |
| Cobble | | 1.5 | " | 190 | 285 | — | 285 |
| Steel bar | | 550.0 | kg | 9 ^d | 5,060 | 3,542 | 1,518 |
| Backhoe | | 160.0 | hr | 266 ^d | 42,640 | 28,096 | 14,544 |
| Labor | | 135.0 | day | 80 | 10,800 | — | 10,800 |
| Total | | | | | 399,687 | 232,959 | 166,728 |
| 4. Foundation | | | | | | | |
| P.C. pile | | | pcs | | | | |
| Pile driving | | | hr | | | | |
| Total | | | | | | | |
| 5. Pre-engineering works | | | | | | | |
| Survey | 9,600 ^m ² | 3.0 | day | 500 | 1,500 | — | 1,500 |
| Soil test | 10 ^m × 2 | 20.0 | m | 900 | 18,000 | 6,218 | 11,782 |
| Total | | | | | 19,500 | 6,218 | 13,282 |
| TOTAL | | | | | 494,257 | 259,508 | 234,749 |

C-18 Udon Thani No.1

| Description | Scale | Quantity | Unit | Rate (฿) | Total Cost (฿) | F/C (฿) | L/C (฿) |
|---------------------------------|--|----------|----------------|------------------|----------------|----------------|----------------|
| 1. Access road | | | | | | | |
| Earth | 300 ^m × 7.0 ^m × 15 × 12 ^m | 378.0 | m ³ | 30 | 11,340 | — | 11,340 |
| Ballast | 300 × 5.0 × 0.3 × 12 | 54.0 | " | 240 | 12,960 | — | 12,960 |
| Bulldozer | | 7.0 | hr | 329 ⁴ | 2,305 | 1,581 | 724 |
| Labor | | 9.0 | day | 80 | 720 | — | 720 |
| Total | | | | | 27,325 | 1,581 | 25,744 |
| 2. Banking | | | | | | | |
| Earth | 9800 ^{m²} | | m ³ | | — | — | — |
| Bulldozer | Leveling of ground. | 40.0 | hr | 329 ⁴ | 13,176 | 9,036 | 4,140 |
| Labor | | 25.0 | day | 80 | 2,000 | — | 2,000 |
| Total | | | | | 15,176 | 9,036 | 6,140 |
| 3. Drainage | | | | | | | |
| Concrete pipe | 2400 ^m | 60.0 | pcs | 5680 | 340,800 | 204,480 | 136,320 |
| Cement | | 1650.0 | kg | 17 | 2,805 | 1,683 | 1,122 |
| Sand | | 50.8 | m ³ | 180 | 9,144 | — | 9,144 |
| Ballast | | 3.9 | " | 240 | 936 | — | 936 |
| Cobble | | 1.5 | " | 200 | 300 | — | 300 |
| Steel bar | | 550.0 | kg | 9 ⁶ | 5,280 | 3,696 | 1,584 |
| Backhoe | | 154.0 | hr | 266 ⁵ | 41,041 | 27,042 | 13,999 |
| Labor | | 130.0 | day | 80 | 10,400 | — | 10,400 |
| Total | | | | | 410,706 | 236,901 | 173,805 |
| 4. Foundation | | | | | | | |
| P.C. pile | | | pcs | | | | |
| Pile driving | | | hr | | | | |
| Total | | | | | | | |
| 5. Pre-engineering works | | | | | | | |
| Survey | 9800 ^{m²} | 2.0 | day | 500 | 1,000 | | 1,000 |
| Soil test | 10.0 ^m × 2 | 20.0 | m | 900 | 18,000 | 6,218 | 11,782 |
| Total | | | | | 19,000 | 6,218 | 12,782 |
| TOTAL | | | | | 472,207 | 253,736 | 218,471 |

3-19 Udon Thani No.2

| Description | Scale | Quantity | Unit | Rate (฿) | Total Cost (฿) | F/C (฿) | L/C (฿) |
|--------------------------|--------------------------|----------|----------------|--------------------|----------------|---------|---------|
| 1. Access road | | | | | | | |
| Earth | 7800 m × 3.5 m × 1.5 m | 4,095.0 | m ³ | 100 | 409,500 | 122,650 | 286,650 |
| Ballast | 7800 × 0.3 × 5.0 | 1,170.0 | " | 240 | 280,800 | — | 280,800 |
| Bulldozer | | 120.0 | hr | 329 ⁴ | 39,552 | 27,108 | 12,444 |
| Labor | | 150.0 | day | 80 | 12,000 | — | 12,000 |
| Total | | | | | 741,852 | 149,958 | 591,694 |
| 2. Banking | | | | | | | |
| Earth | 6,500 m ² | | m ³ | | — | — | — |
| Bulldozer | Leveling of ground | 40.0 | hr | 329 ⁴ | 13,176 | 9,036 | 4,140 |
| Labor | | 25.0 | day | 80 | 2,000 | — | 2,000 |
| Total | | | | | 15,176 | 9,036 | 6,140 |
| 3. Drainage | | | | | | | |
| Concrete pipe | 100.0 m | 25.0 | pcs | 5,680 ⁷ | 142,000 | 85,200 | 56,800 |
| Cement | | 660.0 | kg | 1.7 | 1,122 | 673 | 449 |
| Sand | | 41.1 | m ³ | 180 | 7,398 | — | 7,398 |
| Ballast | | 1.5 | " | 240 | 360 | — | 360 |
| Cobble | | 0.6 | " | 160 | 96 | — | 96 |
| Steel Bar | | 220.0 | kg | 9 ⁶ | 2,112 | 1,478 | 634 |
| Backhoe | | 120.0 | hr | 266 ⁵ | 31,980 | 21,072 | 10,908 |
| Labor | | 105.0 | day | 80 | 8,400 | — | 8,400 |
| Total | | | | | 193,468 | 108,423 | 85,045 |
| 4. Foundation | | | | | | | |
| P.C. pile | | | pcs | | | | |
| Pile driving | | | hr | | | | |
| Total | | | | | | | |
| 5. Siding | | | | | | | |
| Rail | Repair existing rail way | | pcs | | | | |
| Side plate | | | " | | | | |
| Bolts | | | " | | | | |
| Fish plate | | | " | | | | |
| Spike | | | " | | | | |
| Sleepers | | | " | | | | |
| Turnpoint sleepers | | | " | | 100,000 | 30,000 | 70,000 |
| Turnpoint | | | " | | | | |
| Safety peg | | | " | | | | |
| Ballast | | | m ³ | | | | |
| Earth | | | " | | | | |
| Bulldozer | | | hr | | | | |
| Labor | | | day | | | | |
| Total | | | | | 100,000 | 30,000 | 70,000 |
| 6. Pre-engineering works | | | | | | | |
| Survey | 6,500 m ² | 7.0 | day | 500 | 3,500 | — | 3,500 |
| Soil test | 15 m × 2 | 30.0 | m | 900 | 27,000 | 9,328 | 17,672 |
| Total | | | | | 30,500 | 9,328 | 21,172 |
| TOTAL | | | | | 1,080,996 | 306,745 | 774,251 |

C-20 Surat Thani

| Description | Scale | Quantity | Unit | Rate (฿) | Total Cost (฿) | F/C (฿) | L/C (฿) | |
|--------------------------|---|-------------------------------|----------------|---------------------|-------------------|---------|---------|---------|
| 1. Access road | | | | | | | | |
| Earth | 5.0 m × 5.0 m × 0.5 m × 1.2 | 15.0 | m ³ | 220 | 3,300 | — | 3,300 | |
| Ballast | | 8.0 | " | 329. ⁴ | 2,635 | 1,807 | 828 | |
| Bulldozer | | 10.0 | hr | 80 | 800 | — | 800 | |
| Labor | | | day | | | | | |
| Total | | | | | | 6,735 | 1,807 | 4,928 |
| 2. Banking | | | | | | | | |
| Earth | 3600 m ² Leveling of ground | 16.0 | m ³ | 329. ⁴ | 5,270 | 3,614 | 1,656 | |
| Bulldozer | | 10.0 | hr | 80 | 800 | — | 800 | |
| Labor | | | day | | | 6,070 | 3,614 | 2,456 |
| Total | | | | | | | | |
| 3. Drainage | | | | | | | | |
| Concrete pipe | 100.0 m | 25.0 | pcs | 5,315 | 13,288 | 7,973 | 5,315 | |
| Cement | | 6600 | kg | 166 | 1,095 | 657 | 438 | |
| Sand | | 41.1 | m ³ | 50 | 2,055 | — | 2,055 | |
| Ballast | | 1.5 | " | 220 | 330 | — | 330 | |
| Cobble | | 0.6 | " | 160 | 96 | — | 96 | |
| Steel Bar | | 220.0 | kg | 9. ³ | 2,046 | 1,432 | 614 | |
| Backhoe | | 120.0 | hr | 266. ⁵ | 31,980 | 21,072 | 10,908 | |
| Labor | | 105.0 | day | 80 | 8,400 | — | 8,400 | |
| Total | | | | | | 59,290 | 31,134 | 28,156 |
| 4. Foundation | | | | | | | | |
| P.C. pile | | | pcs | | | | | |
| Pile driving | | | hr | | | | | |
| Total | | | | | | | | |
| 5. Siding | | | | | | | | |
| Rail | L = 100.0 m | 25.0 | pcs | 1,666. ⁶ | 41,665 | 29,165 | 12,500 | |
| Side plate | | 28.0 | " | 73 | 2,044 | 1,431 | 613 | |
| Bolts | | 100.0 | " | 5. ¹ | 510 | 357 | 153 | |
| Fish plate | | 75.0 | " | 17. ⁵ | 1,312 | 919 | 393 | |
| Spike | | 810.0 | " | 7. ⁶ | 6,156 | 4,309 | 1,847 | |
| Sleepers | | 160.0 | " | 290 | 46,400 | 32,480 | 13,920 | |
| Turnpoint sleepers | | 3.0 | " | 14,000 | 42,000 | 29,400 | 12,600 | |
| Turnpoint | | 3.0 | " | 51,000 | 153,000 | 107,100 | 45,900 | |
| Safety peg | | 10.0 | " | 360 | 3,600 | 2,520 | 1,080 | |
| Ballast | | 100.0 m × 2.0 m × 0.5 m × 1.2 | 120.0 | m ³ | 220 | 26,400 | — | 26,400 |
| Earth | — | | " | 25 | — | — | — | |
| Bulldozer | 100 ÷ 20 = 5 day | | 40.0 | hr | 329. ⁴ | 13,176 | — | 13,176 |
| Labor | 100 ÷ 5 = 500 | | 500.0 | day | 80 | 40,000 | — | 40,000 |
| Total | | | | | | 376,263 | 207,681 | 168,582 |
| 6. Pre-engineering works | | | | | | | | |
| Survey | 3600 m ² 10 m × 2 | 2.0 | day | 500 | 1,000 | — | 1,000 | |
| Soil test | | 20.0 | m | 1,000 | 20,000 | 6,218 | 13,782 | |
| Total | | | | | | 21,000 | 6,218 | 14,782 |
| TOTAL | | | | | 469,358 | 250,454 | 218,903 | |

C-21 River Port (Nonthaburi-1)

| Description | Scale | Quantity | Unit | Rate (฿) | Total Cost (฿) | F/C (฿) | L/C (฿) |
|--------------------------|---|----------|----------------|------------------|----------------|-----------|-----------|
| 1. Access road | | | | | | | |
| R.C.Pile | L=10 ^m Φ=250 ^{mm} , L=100 ^m | 17.0 | pcs | 1,950 | 33,150 | 18,145 | 14,705 |
| Concrete pipe | Φ=1.0 ^m | 9.0 | " | 11,539 | 103,851 | 62,310 | 41,541 |
| Cement | 300 kg/m ³ | 6,222.0 | kg | 1 ^b | 9,955 | 5,973 | 3,982 |
| Steel bar | 100 kg/m ³ | 2,074.0 | " | 9 | 55,998 | 39,198 | 16,800 |
| Sand | 0.5 m ³ /m ³ | 10.4 | m ³ | 185 | 1,924 | — | 1,924 |
| Ballast | | 32.5 | " | 190 | 6,175 | — | 6,175 |
| Earth | | 132.6 | " | 110 | 14,586 | — | 14,586 |
| Slope protection | | 45.0 | m ² | 100 | 4,500 | — | 4,500 |
| Bulldozer | | 28.0 | hr | 329 ⁴ | 9,223 | 6,325 | 2,898 |
| Backhoe | | 12.0 | " | 266 ⁵ | 3,198 | 2,107 | 1,091 |
| Labor | | 40.0 | day | 80 | 3,200 | — | 3,200 |
| Total | | | | | 245,760 | 134,358 | 111,402 |
| 2. Foundation | | | | | | | |
| Warehouse | R.C. pile L=24.0 ^m Φ=350 | 1,340.0 | pcs | 7,920 | 10,612,800 | 6,555,816 | 4,056,984 |
| Warehouse | | | " | | — | — | — |
| Packing F | Φ=350 | 90.0 | " | " | 712,800 | 440,316 | 272,484 |
| Export processing F | Φ=350 | 280.0 | " | " | 2,217,600 | 1,369,872 | 847,728 |
| Conditioned warehouse | Φ=350 | 50.0 | " | " | 396,000 | 244,620 | 151,380 |
| Fumigation F | Φ=350 | 30.0 | " | " | 237,600 | 146,772 | 90,828 |
| C.A. Warehouse | Φ=350 | 40.0 | " | " | 316,800 | 195,696 | 121,104 |
| Training Centre | Φ=350 | 170.0 | " | " | 1,346,400 | 831,708 | 514,692 |
| Rice Processing & office | | | " | | — | — | — |
| Pilot Paddy Storage | | | " | | — | — | — |
| Total | | | | | 15,840,000 | 9,784,800 | 6,055,200 |
| 3. Drainage | | | | | | | |
| Concrete pipe | 600 ^{mm} Φ=400 ^{mm} | 150.0 | pcs | 5,295 | 786,750 | 472,050 | 314,700 |
| Cement | | 3,960.0 | kg | 1 ^b | 6,336 | 4,435 | 1,901 |
| Sand | | 126.6 | m ³ | 185 | 23,421 | — | 23,421 |
| Ballast | | 9.2 | " | 190 | 1,748 | — | 1,748 |
| Cobble | | 3.6 | " | 120 | 432 | — | 432 |
| Steel bar | | 1,320.0 | kg | 9 | 11,880 | 8,316 | 3,564 |
| Backhoe | | 384.0 | hr | 266 ⁵ | 102,336 | 67,430 | 34,906 |
| Labor | | 324.0 | day | 80 | 25,920 | — | 25,920 |
| Total | | | | | 958,823 | 552,231 | 406,592 |

| Description | Scale | Quantity | Unit | Rate (₱) | Total Cost (₱) | F/C (₱) | L/C (₱) |
|--------------------------|------------------------------|-----------|----------------|-------------------|----------------|------------|-----------|
| 4. Wharf | | | | | | | |
| Steel pile | $l = 26^m$ $\phi = 500^{mm}$ | 60.0 | pcs | 59.266 | 3,495,960 | 3,495,960 | — |
| Steel etc. | | | LS | | 500,000 | 500,000 | — |
| Steel bar | | 100,000.0 | kg | 9 | 900,000 | 630,000 | 270,000 |
| Cement | includ mold | 300,000.0 | " | 2 | 600,000 | 288,000 | 312,000 |
| Sand | | 500.0 | m ³ | 185 | 92,500 | — | 92,500 |
| Ballast | | 700.0 | " | 190 | 133,000 | — | 133,000 |
| Cobble | | 3,600.0 | " | 120 | 432,000 | — | 432,000 |
| Pavement | | 2,000.0 | m ² | 200 | 400,000 | 252,000 | 148,000 |
| Fender beam | | 20.0 | pcs | 35,000 | 700,000 | 700,000 | — |
| Mooring Post | | 3.0 | " | 100,000 | 300,000 | 300,000 | — |
| Pile driving | | 60.0 | " | 15,000 | 900,000 | 450,000 | 450,000 |
| Dredging | | 5,250.0 | m ³ | 13 | 68,250 | — | 68,250 |
| Labor | | 500.0 | day | 80 | 40,000 | — | 40,000 |
| Operator | | 100.0 | " | 200 | 20,000 | — | 20,000 |
| Carpenter | | 130.0 | " | 150 | 19,500 | — | 19,500 |
| Steel worker | | 310.0 | " | 150 | 46,500 | — | 46,500 |
| Crane | 45 day x 8hr | 360.0 | hr | 313. ⁴ | 112,824 | 75,744 | 37,080 |
| Bulldozer | 30 day x 8hr | 240.0 | " | 327. ⁴ | 79,056 | 54,216 | 24,840 |
| Dump truck | 30 day x 8hr x 2 | 480.0 | " | 259. ⁶ | 124,608 | 91,584 | 33,024 |
| Buckhoe | 30 day x 8hr | 240.0 | " | 266. ⁵ | 63,960 | 42,144 | 21,816 |
| Total | | | | | 9,028,158 | 6,879,648 | 2,148,510 |
| 5. Pre-engineering works | | | | | | | |
| Survey | Plain 7.406^{m^2} | 10.0 | day | 1,000 | 10,000 | — | 10,000 |
| | Depth $L = 200^m$ | 5.0 | " | 2,000 | 10,000 | — | 10,000 |
| Soil test | Land $40^m \times 6$ | 240.0 | m | 500 | 120,000 | 37,310 | 82,690 |
| | River $40^m \times 3$ | 120.0 | " | 750 | 90,000 | 37,310 | 52,690 |
| Total | | | | | 230,000 | 74,620 | 155,380 |
| TOTAL | | | | | 26,302,741 | 17,425,657 | 8,877,084 |

C-22 River Port (Nonthaburi-2)

| Description | Scale | Quantity | Unit | Rate (฿) | Total Cost (฿) | F/C (฿) | L/C (฿) |
|--------------------------|--|----------|----------------|----------|----------------|------------|------------|
| 1. Access road | | | | | | | |
| R.C.Pile | L=10 ^m x 2 φ=250 ^{mm} l=10 ^m | 34.0 | pcs | 1950 | 66,300 | 39,780 | 26,520 |
| Concrete pipe | φ=1.0 ^m | 18.0 | " | 11,539 | 207,702 | 124,621 | 83,081 |
| Cement | 300kg/m ³ | 12,444.0 | kg | 1.6 | 19,910 | 11,946 | 7,964 |
| Steel bar | 100kg/m ³ | 4,148.0 | " | 9 | 37,332 | 26,132 | 11,200 |
| Sand | 0.5 m ³ /m ³ | 20.4 | m ³ | 185 | 3,774 | — | 3,774 |
| Ballast | | 65.0 | " | 190 | 12,350 | — | 12,350 |
| Earth | | 265.2 | " | 110 | 29,172 | — | 29,172 |
| Slope protection | | 90.0 | m ² | 100 | 9,000 | — | 9,000 |
| Bulldozer | | 56.0 | hr | 329.4 | 18,446 | 12,650 | 5,796 |
| Backhoe | | 24.0 | " | 266.5 | 6,396 | 4,214 | 2,182 |
| Labor | | 80.0 | day | 80 | 6,400 | — | 6,400 |
| Total | | | | | 416,782 | 219,343 | 197,439 |
| 2. Foundation | | | | | | | |
| Warehouse | R.C. pile 1F l=24.0 ^m φ=350 ^{mm} | 780.0 | pcs | 7,920 | 6,177,600 | 3,830,112 | 2,347,488 |
| Warehouse | 2F " " | 3,480.0 | " | " | 27,561,600 | 17,088,192 | 10,473,408 |
| Packing F | " " | 10.0 | " | " | 79,200 | 49,104 | 30,096 |
| Export processing F | " " | 40.0 | " | " | 316,800 | 196,416 | 120,384 |
| Conditioned warehouse | " " | 30.0 | " | " | 237,600 | 147,312 | 90,288 |
| Fumigation F | " " | 30.0 | " | " | 237,600 | 147,312 | 90,288 |
| C.A. Warehouse | " " | 30.0 | " | " | 237,600 | 147,312 | 90,288 |
| Training Centre | " " | 130.0 | " | " | 1,029,600 | 638,352 | 391,248 |
| Rice Processing & office | " " | 410.0 | " | " | 3,247,200 | 2,013,264 | 1,233,936 |
| Pilot Paddy Storage | " " | 10.0 | " | " | 79,200 | 49,104 | 30,096 |
| Total | | | | | 39,204,000 | 24,306,480 | 14,897,520 |
| 3. Drainage | | | | | | | |
| Concrete pipe | 900 ^{mm} φ=400 ^{mm} | 225.0 | pcs | 5,245 | 1,180,125 | 708,075 | 472,050 |
| Cement | | 5,940.0 | kg | 1.6 | 9,504 | 5,702 | 3,802 |
| Sand | | 189.9 | m ³ | 185 | 35,131 | — | 35,131 |
| Ballast | | 13.8 | " | 190 | 2,622 | — | 2,622 |
| Cobble | | 5.4 | " | 120 | 648 | — | 648 |
| Steel bar | | 1,980.0 | kg | 9 | 17,820 | 12,474 | 5,346 |
| Backhoe | | 576.0 | hr | 266.5 | 153,504 | 101,145 | 52,359 |
| Labor | | 486.0 | day | 80 | 38,880 | — | 38,880 |
| Total | | | | | 1,438,234 | 827,396 | 610,838 |

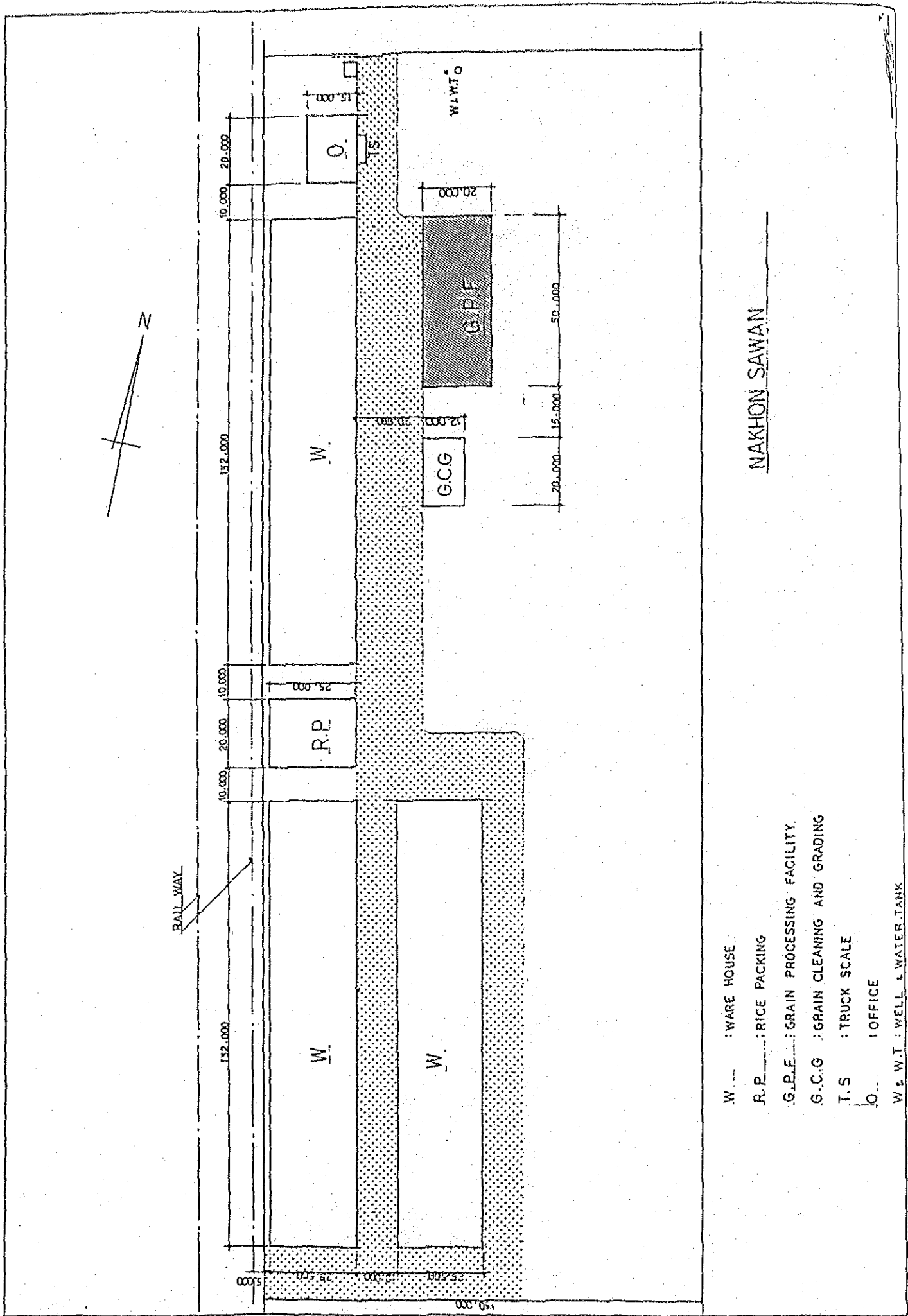
| Description | Scale | Quantity | Unit | Rate (₱) | Total Cost (₱) | F/C (₱) | L/C (₱) |
|--------------------------|---------------------------------------|-----------|----------------|-------------------|----------------|------------|------------|
| 4. Wharf | | | | | | | |
| Steel pile | $\ell = 26^m, \phi = 500^{mm}$ | 60.0 | pcs | 58,266 | 3,495,960 | 3,495,960 | — |
| Steel etc. | | | LS | | 500,000 | 500,000 | — |
| Steel bar | | 100,000.0 | kg | 9 | 900,000 | 630,000 | 270,000 |
| Cement | includ mold | 300,000.0 | " | 2 | 600,000 | 288,000 | 312,000 |
| Sand | | 500.0 | m ³ | 185 | 92,500 | — | 92,500 |
| Ballast | | 700.0 | " | 190 | 133,000 | — | 133,000 |
| Cobble | | 3,600.0 | " | 120 | 432,000 | — | 432,000 |
| Pavement | | 2,000.0 | m ² | 200 | 400,000 | 252,000 | 148,000 |
| Fender beam | | 20.0 | pcs | 35,000 | 700,000 | 700,000 | — |
| Mooring Post | | 3.0 | " | 100,000 | 300,000 | 300,000 | — |
| Pile driving | | 60.0 | " | 15,000 | 900,000 | 450,000 | 450,000 |
| Dredging | | 5,250.0 | m ³ | 13 | 68,250 | — | 68,250 |
| Labor | | 500.0 | day | 80 | 40,000 | — | 40,000 |
| Operator | | 100.0 | " | 200 | 20,000 | — | 20,000 |
| Carpentor | | 130.0 | " | 150 | 19,500 | — | 19,500 |
| Steel worker | | 310.0 | " | 150 | 46,500 | — | 46,500 |
| Crane | 45 day x 8hr | 360.0 | hr | 313. ⁴ | 112,824 | 75,744 | 37,080 |
| Bulldozer | 30 day x 8hr | 240.0 | " | 329. ⁴ | 79,056 | 54,216 | 24,840 |
| Dump truck | 30 day x 8hr x 2 | 480.0 | " | 259.6 | 124,608 | 91,584 | 33,024 |
| Buckhoe | 30 day x 8hr | 240.0 | " | 266.5 | 63,960 | 42,144 | 21,816 |
| Total | | | | | 9,028,158 | 6,879,648 | 2,148,510 |
| 5. Pre-engineering works | | | | | | | |
| Survey | Plain 77,400 ^{m²} | 12.0 | day | 1,000 | 12,000 | — | 12,000 |
| | Depth $L = 200^m$ | 5.0 | " | 2,000 | 10,000 | — | 10,000 |
| Soil test | Land 40 ^m x 10 | 400.0 | m | 500 | 200,000 | 62,184 | 137,816 |
| | River 40 ^m x 4 | 160.0 | " | 750 | 120,000 | 24,873 | 95,127 |
| Total | | | | | 342,000 | 87,057 | 254,943 |
| TOTAL | | | | | 50,429,174 | 32,319,924 | 18,109,250 |

C-23 Laem Chabang

| Description | Scale | Quantity | Unit | Rate (฿) | Total Cost (฿) | F/C (฿) | I/C (฿) |
|--------------------------|------------------------------------|----------|------|----------|-----------------|------------------|------------------|
| 1. Foundation | R.C. pile | | | | | | |
| Warehouse | 1F l=12m ϕ =350 ^{mm} | 5400 | pcs | 3996 | 2157840 | 1332612 | 825228 |
| Warehouse | 2F l=12m ϕ =400 ^{mm} | 12800 | " | 5232 | 6696960 | 4122009 | 2574951 |
| Export Processing F | | 1400 | " | 5232 | 732480 | 450845 | 281635 |
| | | 600 | " | 3996 | 239760 | 148068 | 91692 |
| Total | | | | | <u>9827040</u> | <u>6053534</u> | <u>3773506</u> |
| 2. Pre-engineering works | | | | | | | |
| Survey | 6,730 ^m ² | 30 | day | 1,000 | 3,000 | | 3,000 |
| Soil test | 20 ^m x 2 | 400 | m | 500 | 20,000 | 7,773 | 12,227 |
| Total | | | | | <u>23,000</u> | <u>7,773</u> | <u>15,227</u> |
| TOTAL | | | | | <u>9850,040</u> | <u>6,061,307</u> | <u>3,788,733</u> |

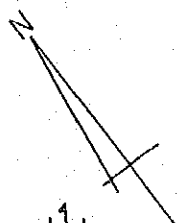
13. Site Plan

- (1) Nakhon Sawan
- (2) Lampang
- (3) Nakhon Ratchasima
- (4) Surat Thani
- (5) Suphan Buri
- (6) Chai Nat
- (7) Saraburi
- (8) Phitsanulok
- (9) Phichit
- (10) Chiang Mai
- (11) Chiang Rai
- (12) Udon Thani
- (13) Surin
- (14) Ubon Ratchathani
- (15) Laem Chabang
- (16) Bukkalo
- (17) Nonthaburi



NAKHON SAWAN

- W. : WARE HOUSE
- R.P. : RICE PACKING
- G.P.F. : GRAIN PROCESSING FACILITY
- G.C.G. : GRAIN CLEANING AND GRADING
- T.S. : TRUCK SCALE
- O. : OFFICE
- W.I.W.T.O. : WELL & WATER TANK



LAMPANG

ROAD NO. 1

12,000

R.P.

G.C.G.

O

W.W.T.

W

W

FENCE

W : WAREHOUSE

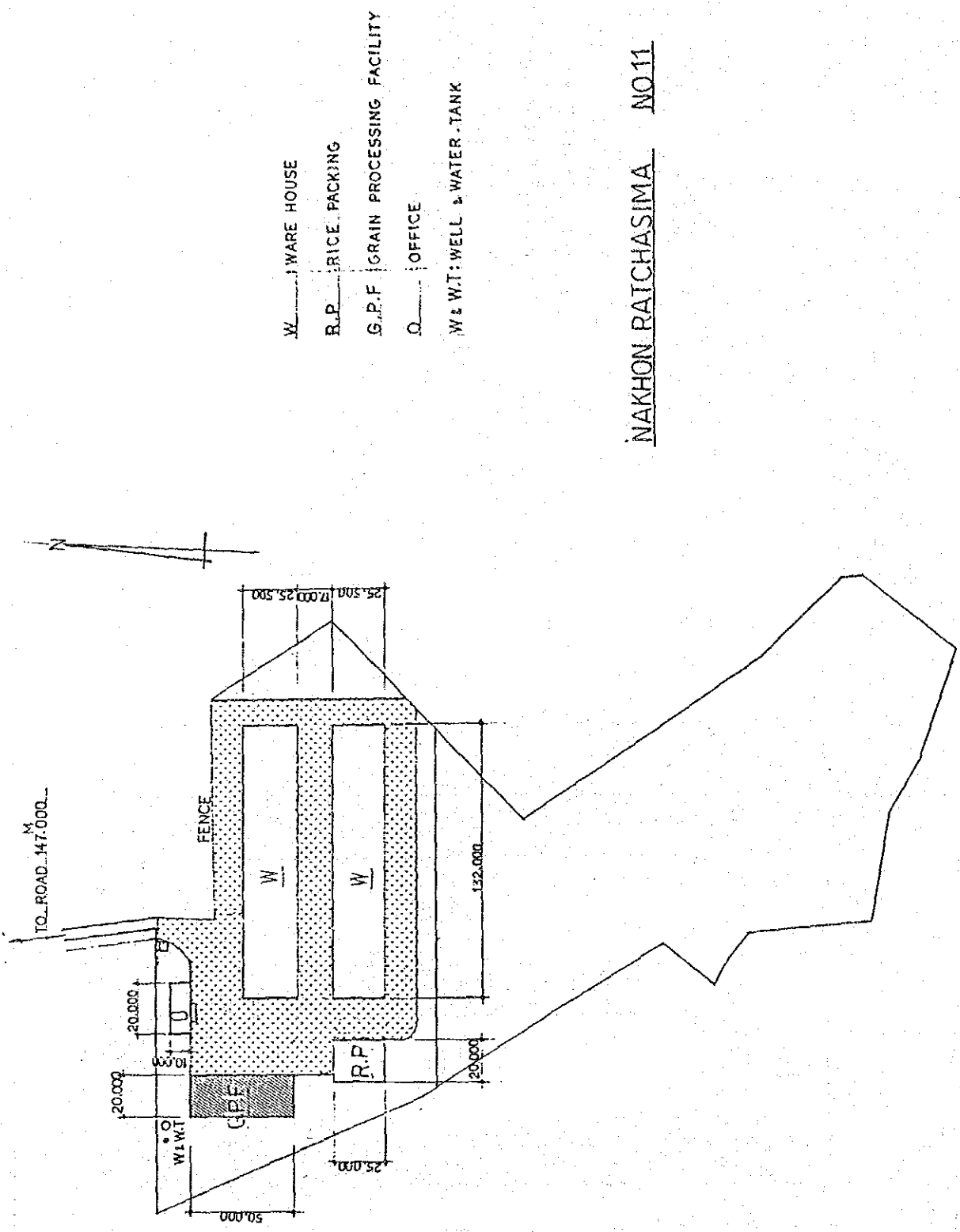
R.P : RICE PACKING

G.C.G : GRAIN CLEANING AND GRADING

O : OFFICE

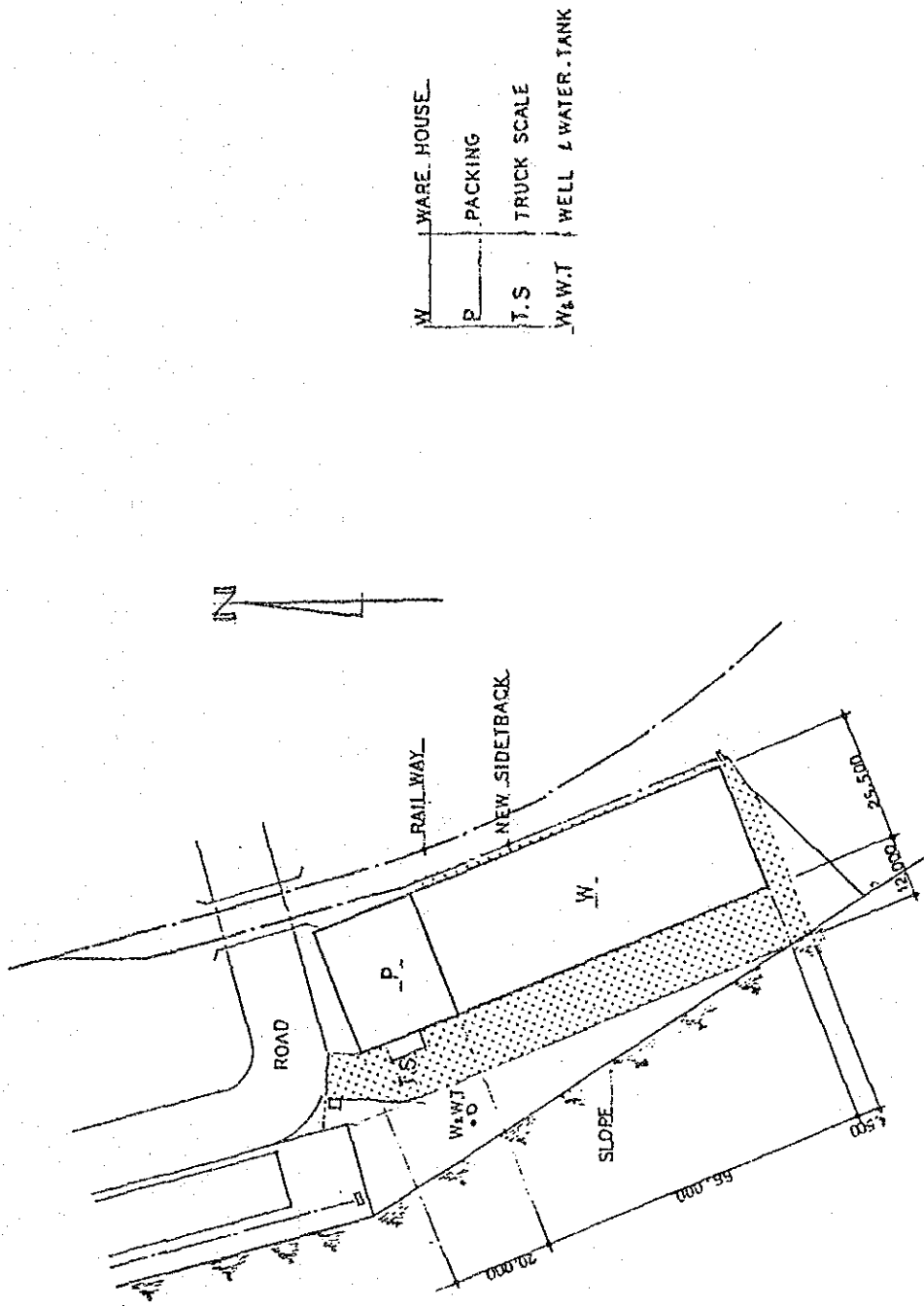
W.W.T : WELL & WATER TANK

LAMPANG NO 18

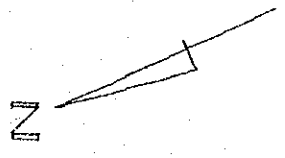
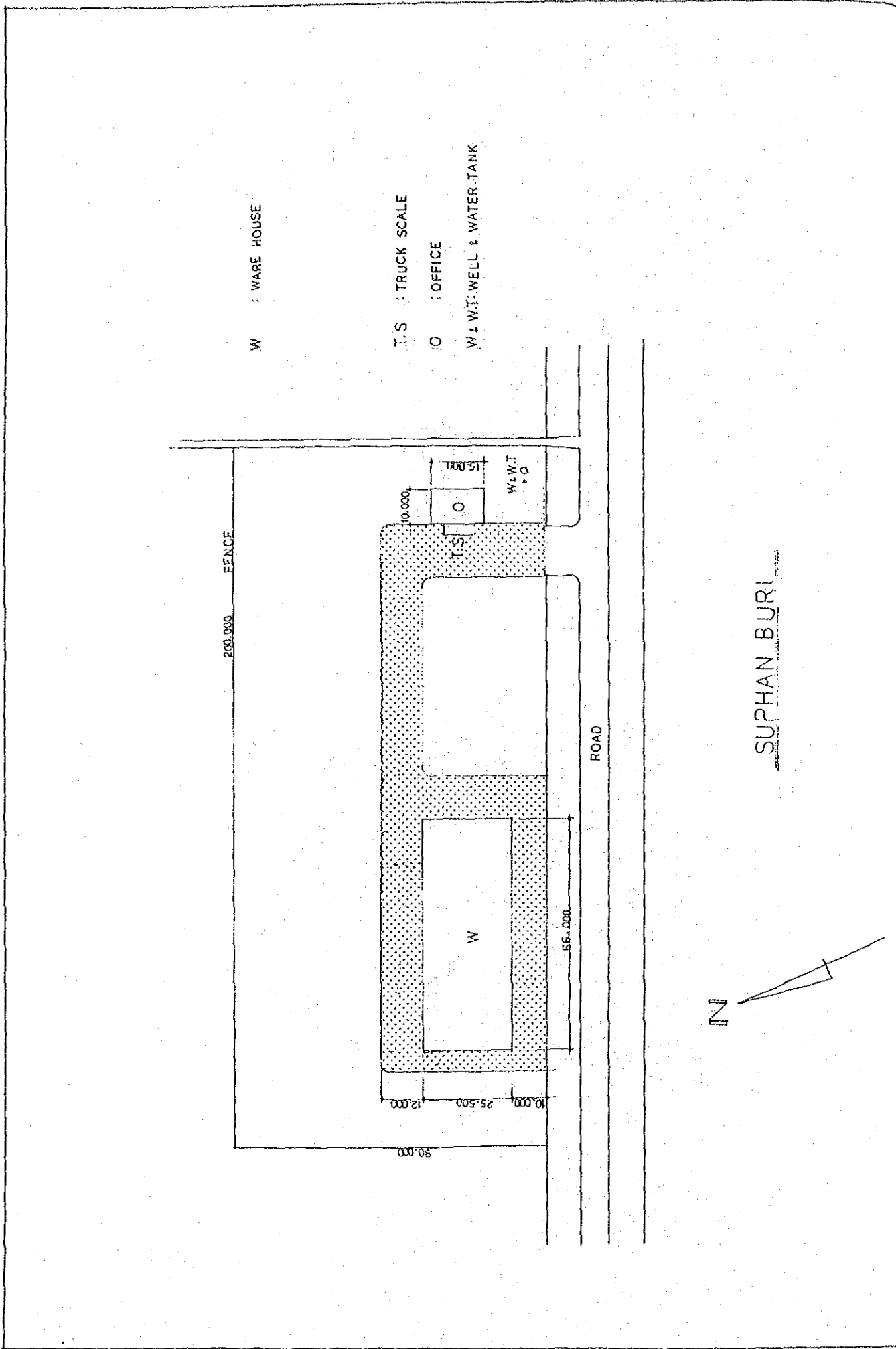


- W WARE HOUSE
- R.P. RICE PACKING
- G.P.F. GRAIN PROCESSING FACILITY
- O OFFICE
- W & W.T. WELL & WATER TANK

NAKHON RAICHASIMA NO11



SUBAT THANI

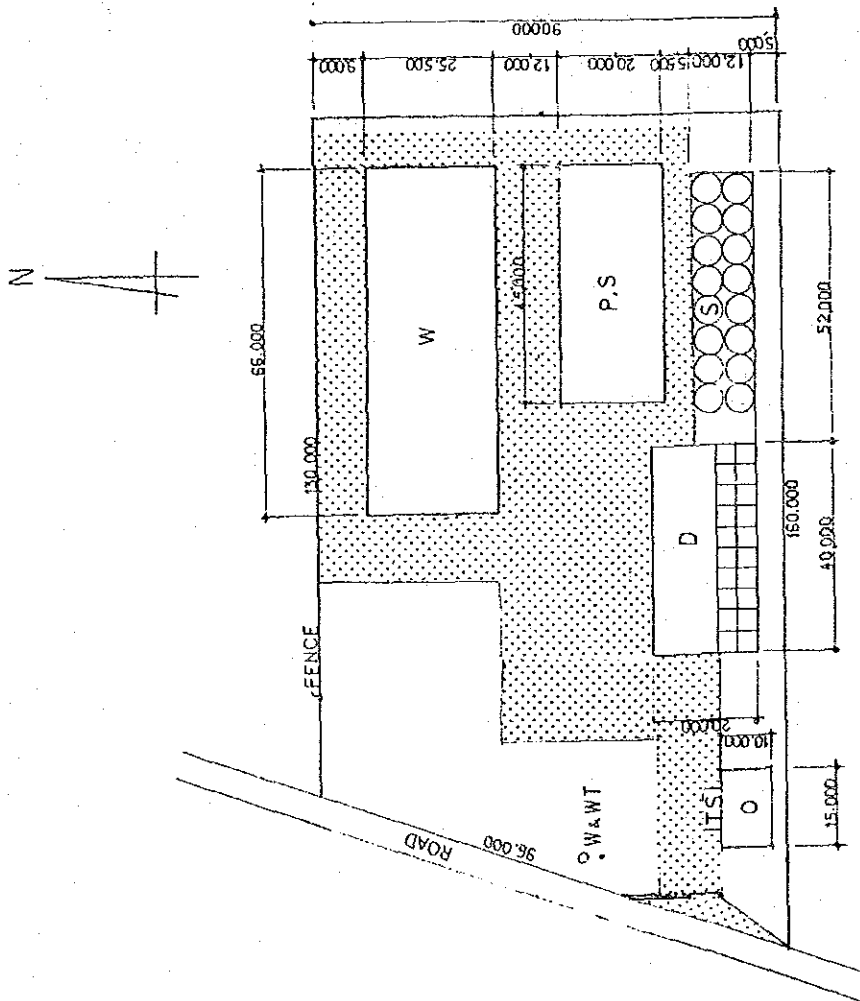


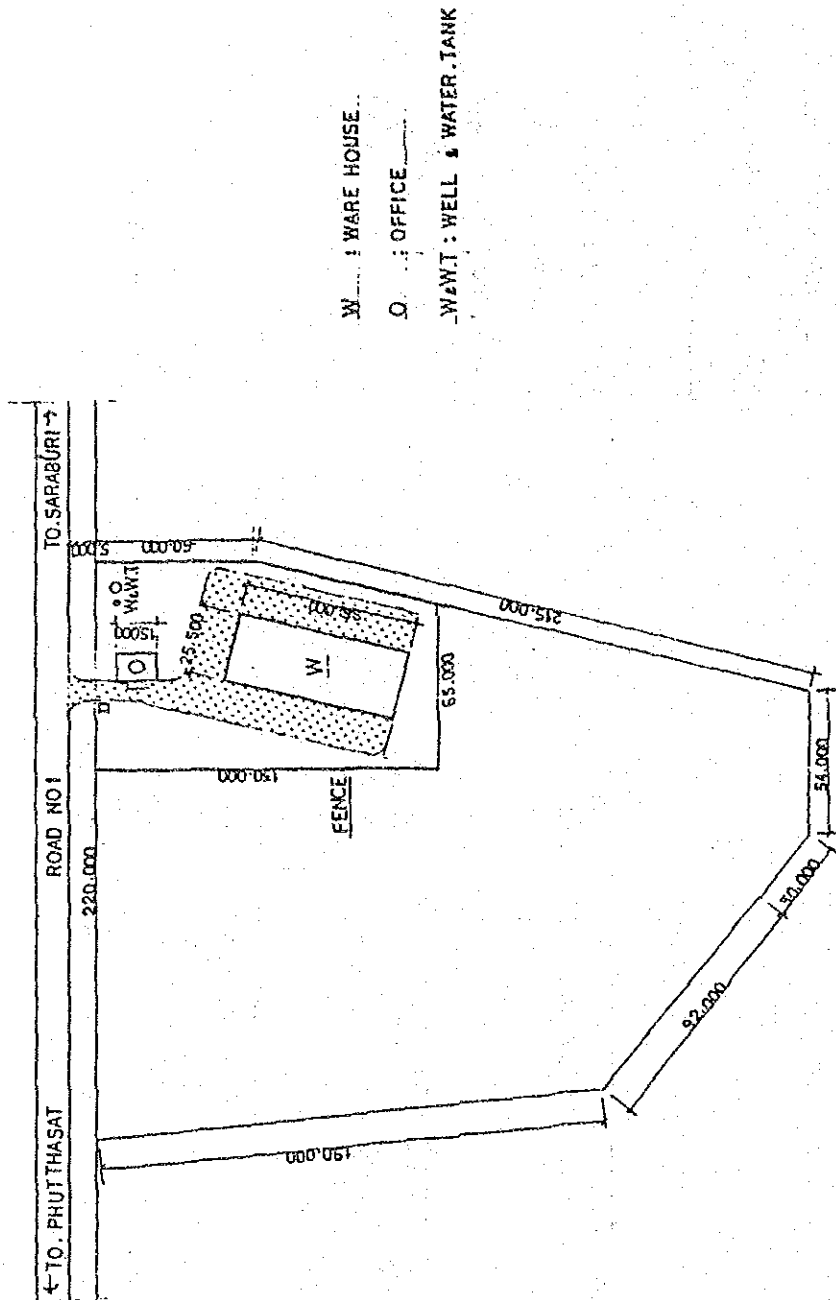
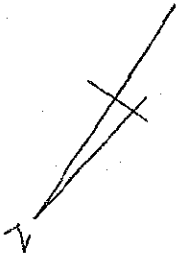
SUPHAN BURI

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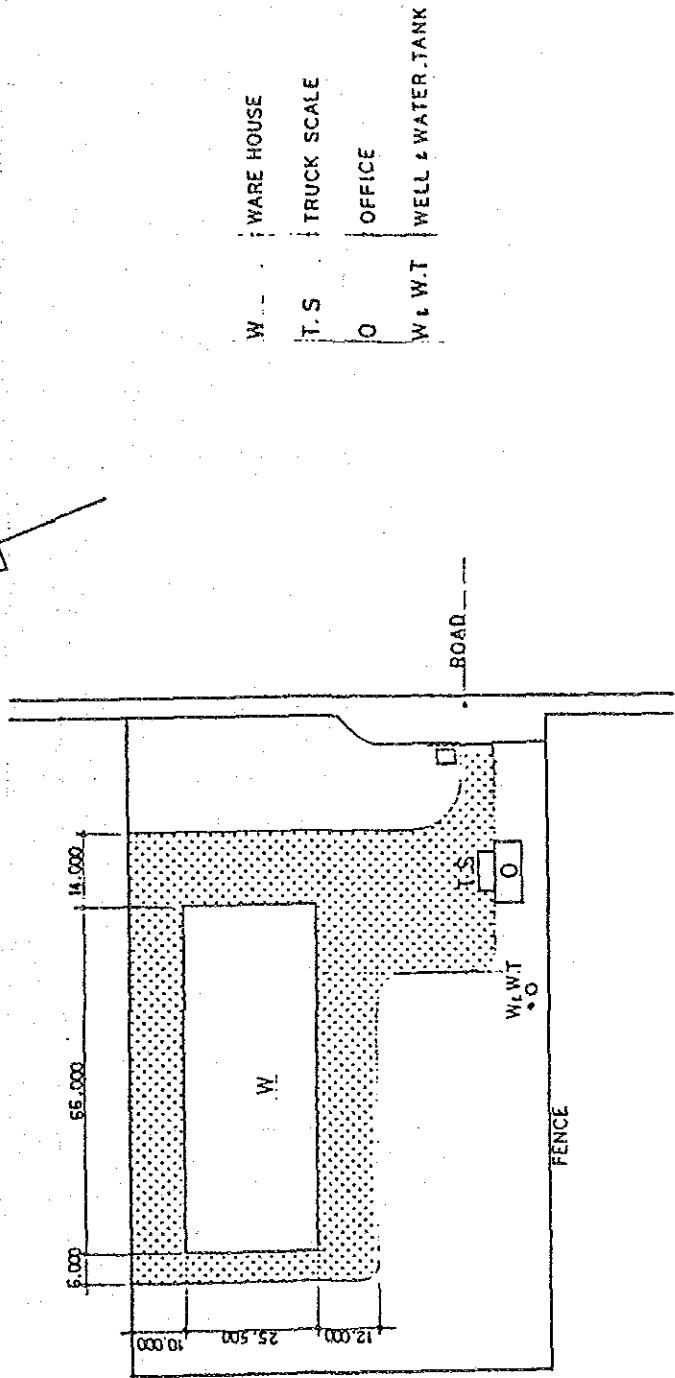
- W : WARE HOUSE
- P.S : PADDY STORAGE
- D : DRYING
- S : SILO
- T.S : TRUCK SCALE
- O : OFFICE
- W&WT: WELL & WATER TANK

CHAI NAT



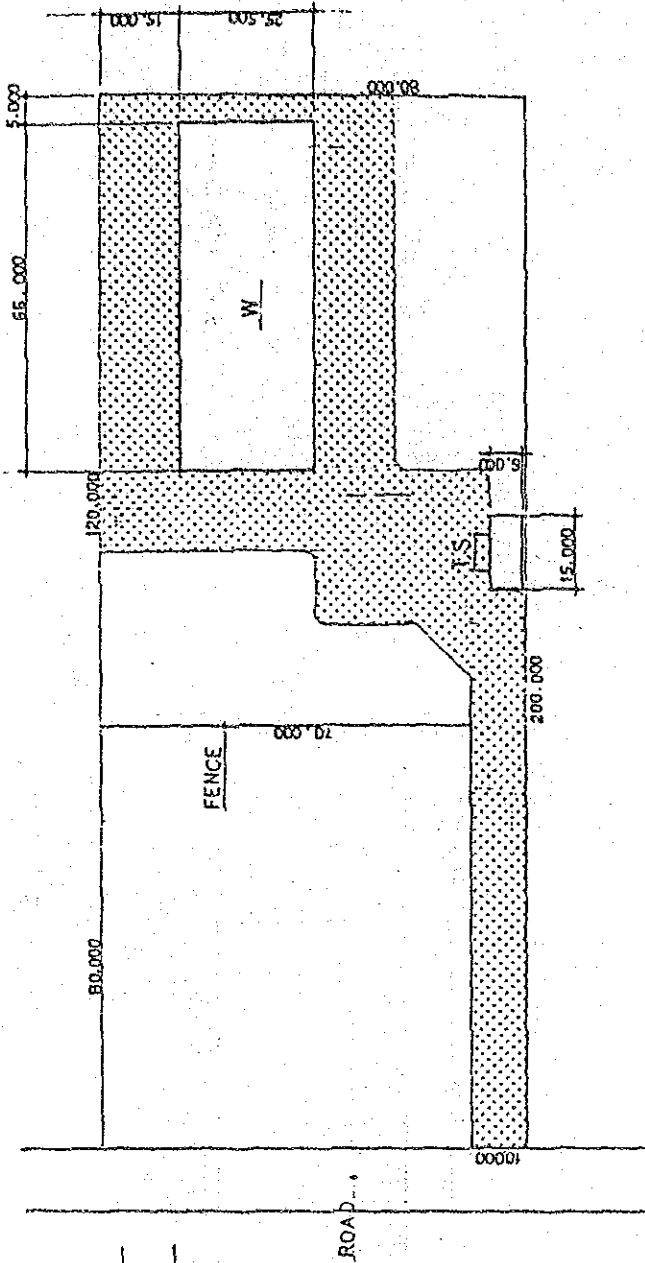
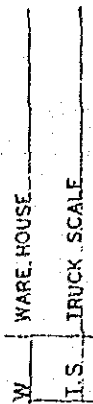
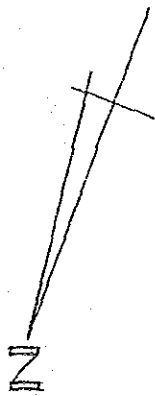


SARABURI



W . . . WARE HOUSE
T . S . . TRUCK SCALE
O . . . OFFICE
W . W . T . . WELL & WATER TANK

PHITSANULOK No.25

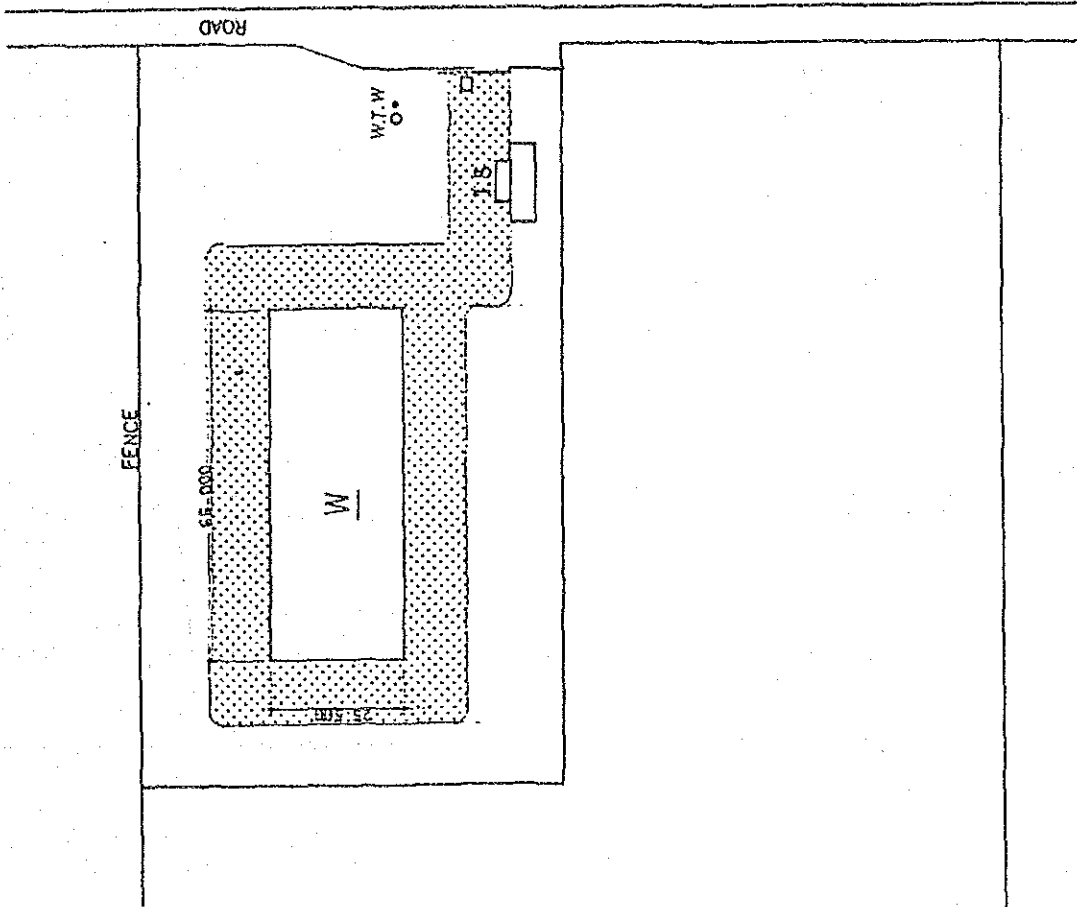


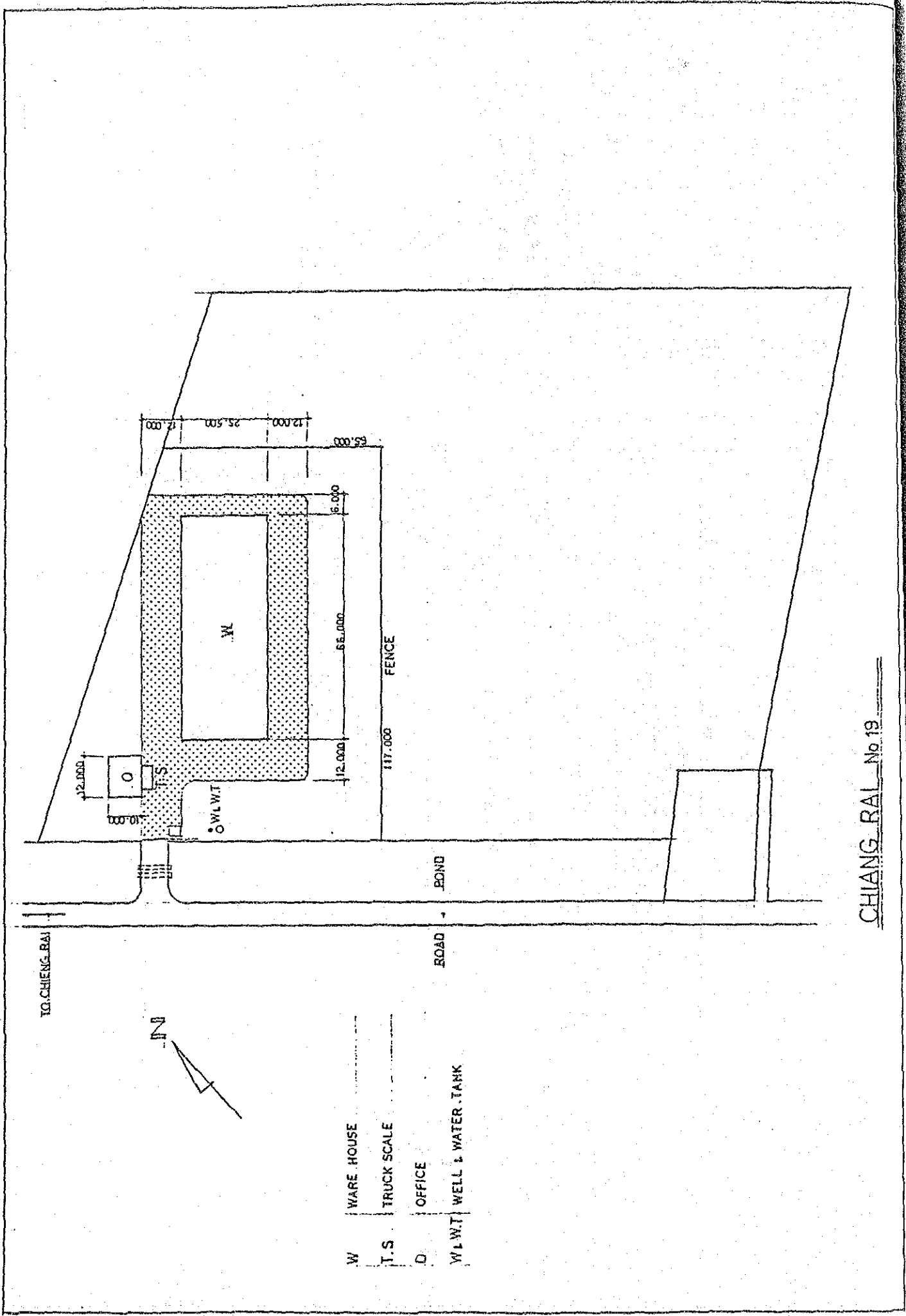
PHICHT



W : WARE HOUSE
I.S : TRUCK SCALE
W.T.W : WATER TANK & WELL

CHIANG MAI NO 22





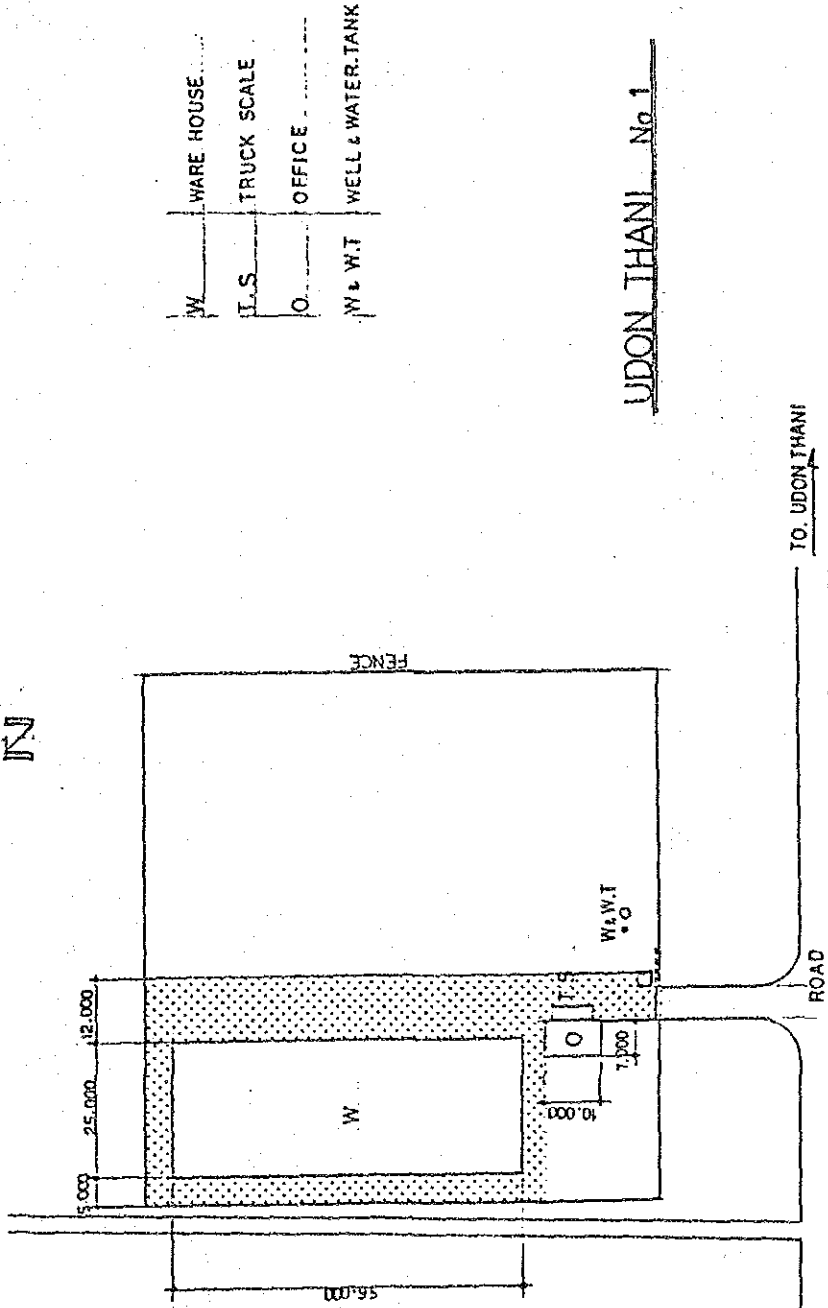
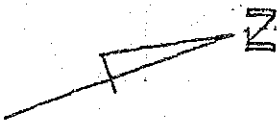
CHIANG RAI No. 19

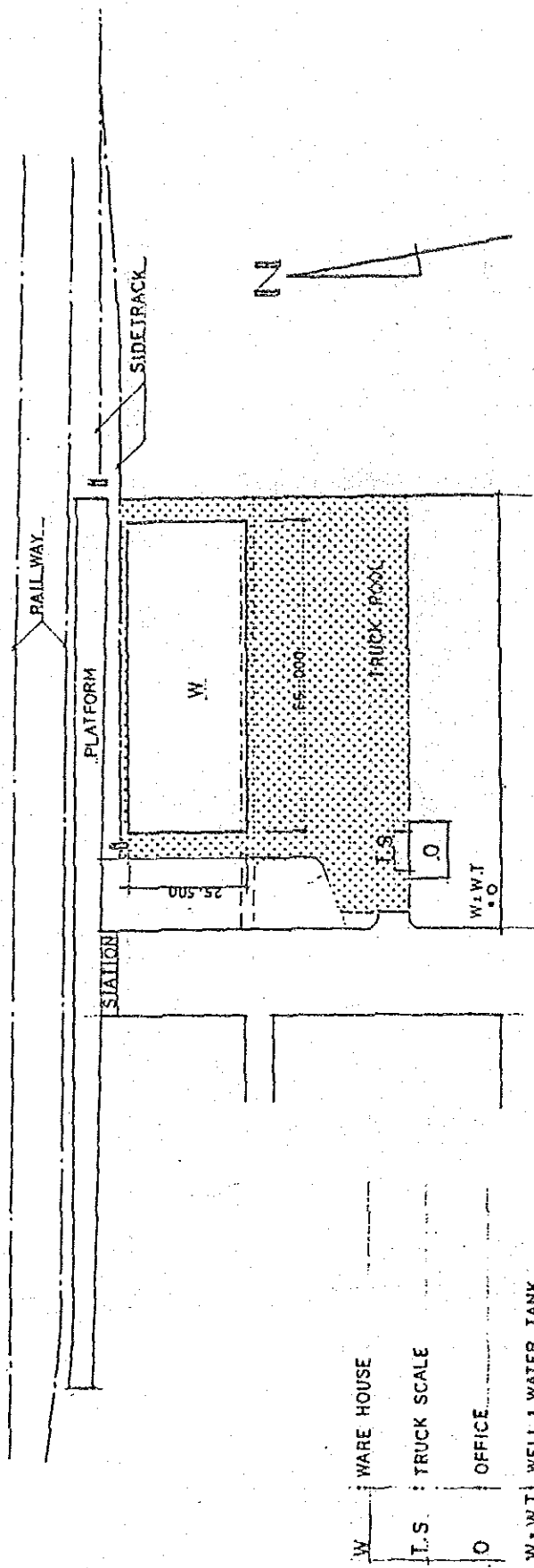
TO CHIANG RAI



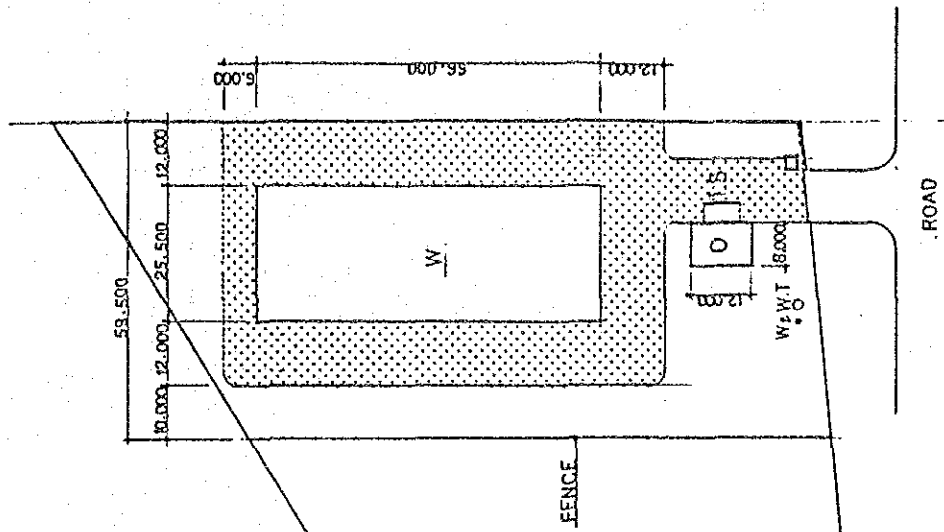
- W WARE HOUSE
- T.S. TRUCK SCALE
- D OFFICE
- W.L.W.T. WELL & WATER TANK

ROAD POND



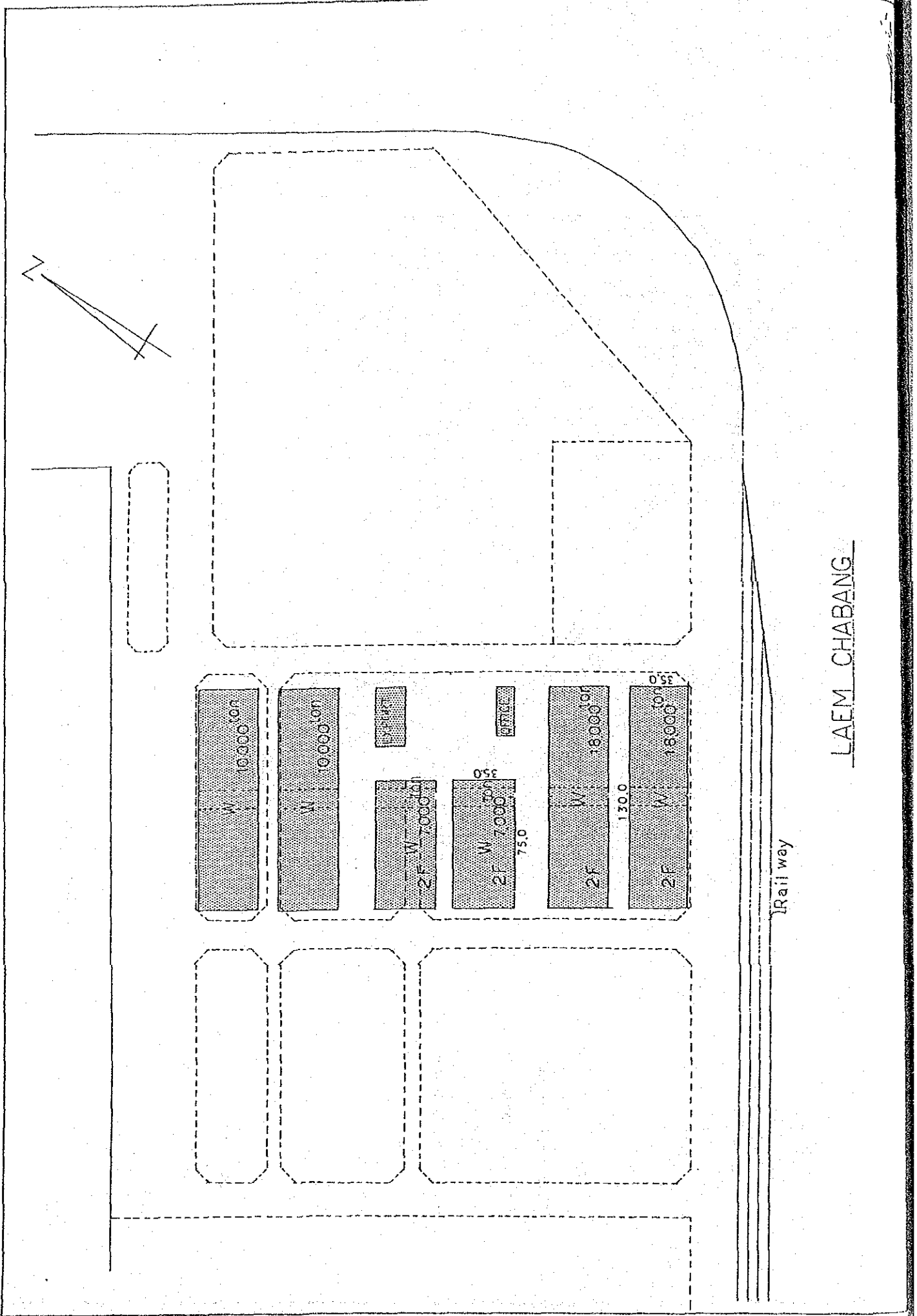


SURIN No. 9

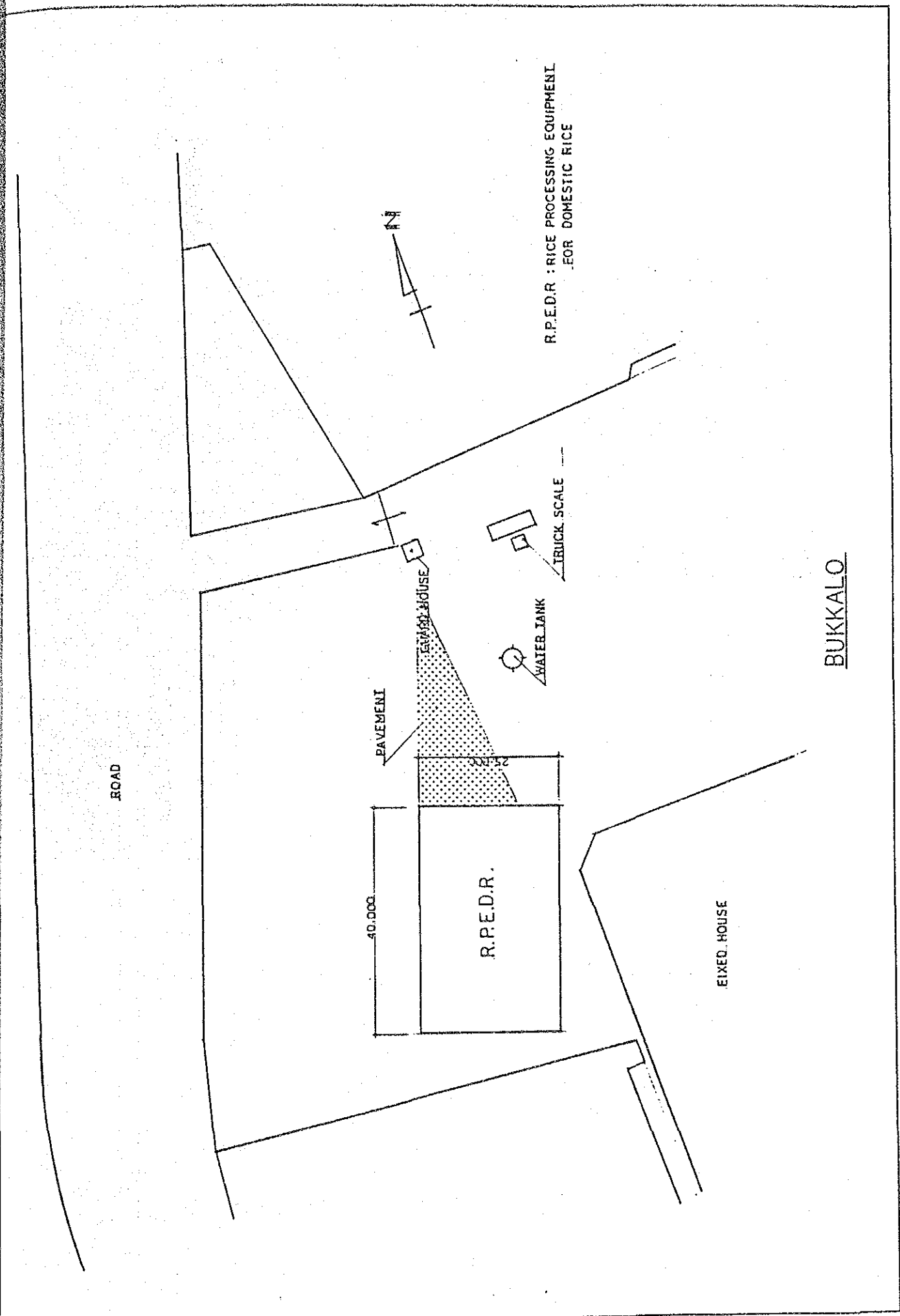


- W. WARE HOUSE
- T.S. TRUCK SCALE
- O. OFFICE
- W & W.T. WELL & WATER TANK

UBON RAICHATHANI No 6



LAEM CHABANG



ROAD

40.000

PAVEMENT

WATER TANK

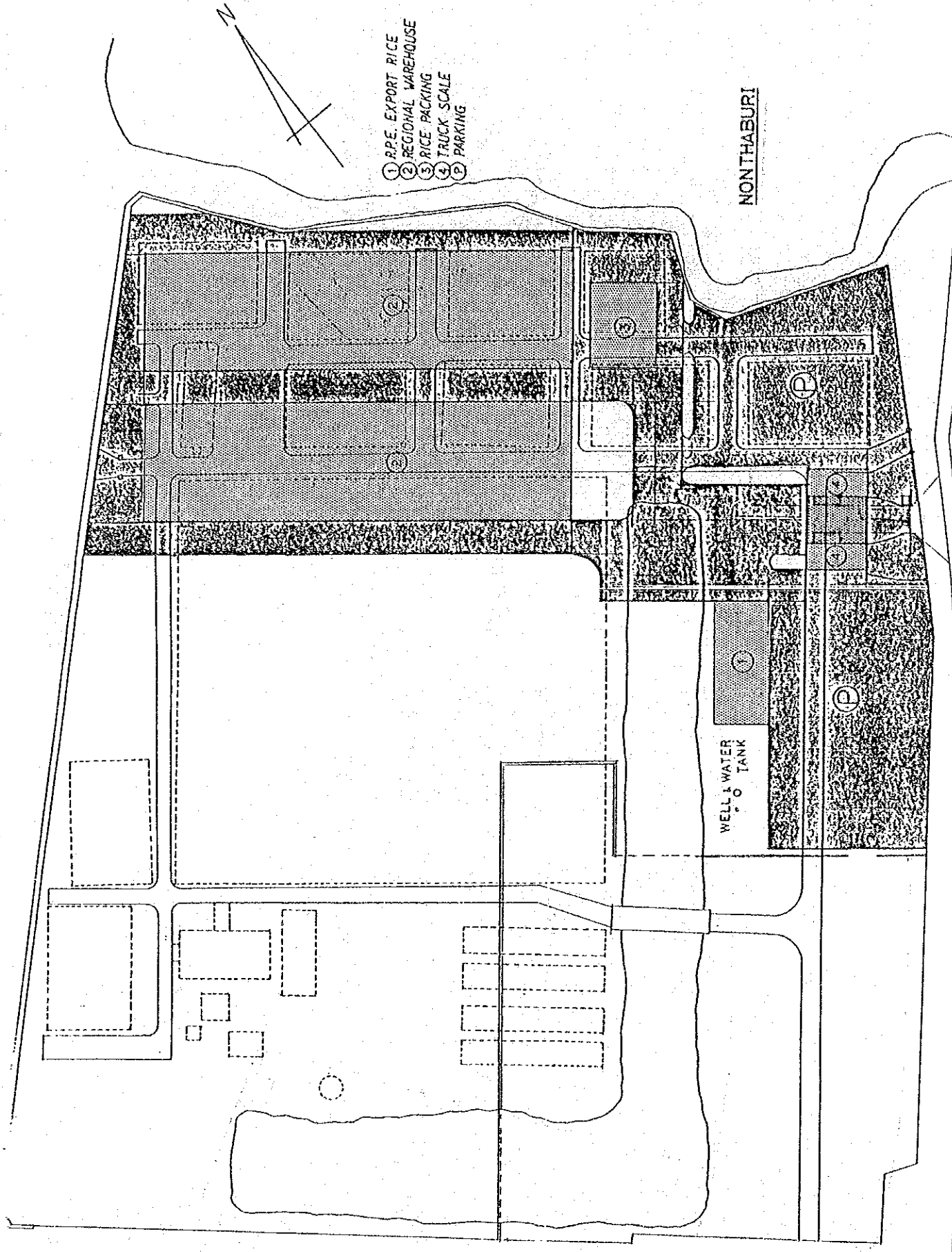
TRUCK SCALE

R.P.E.D.R.

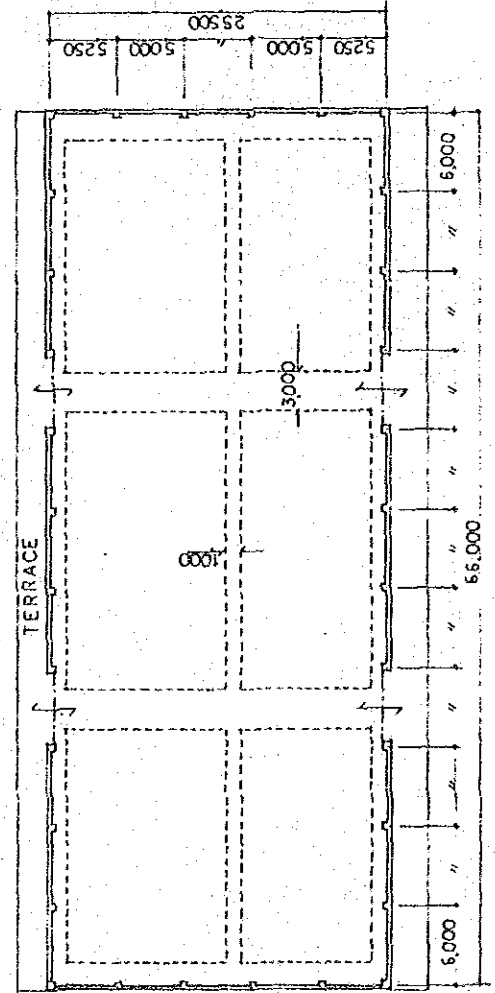
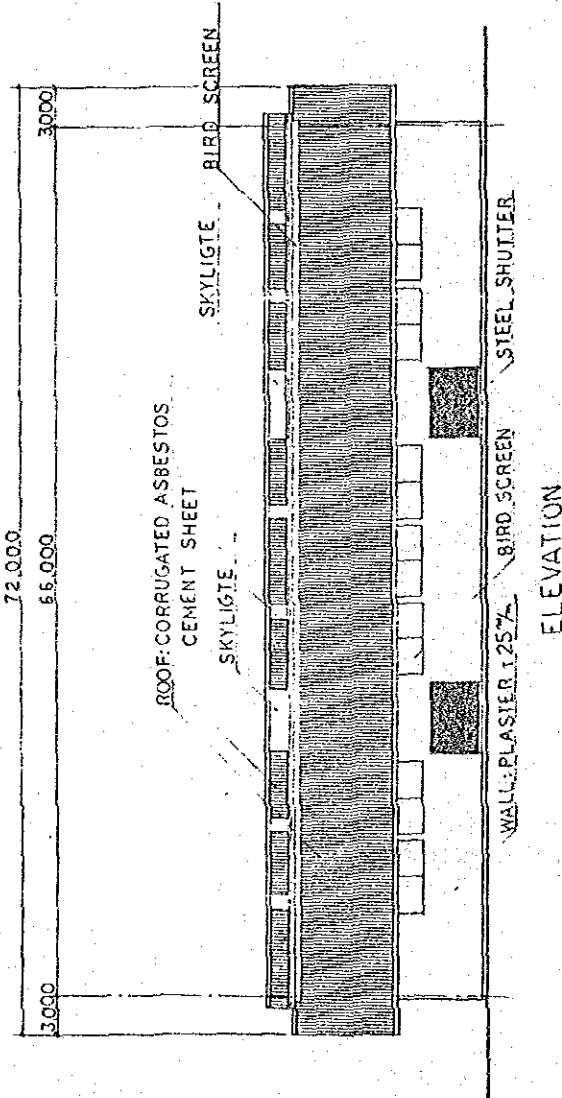
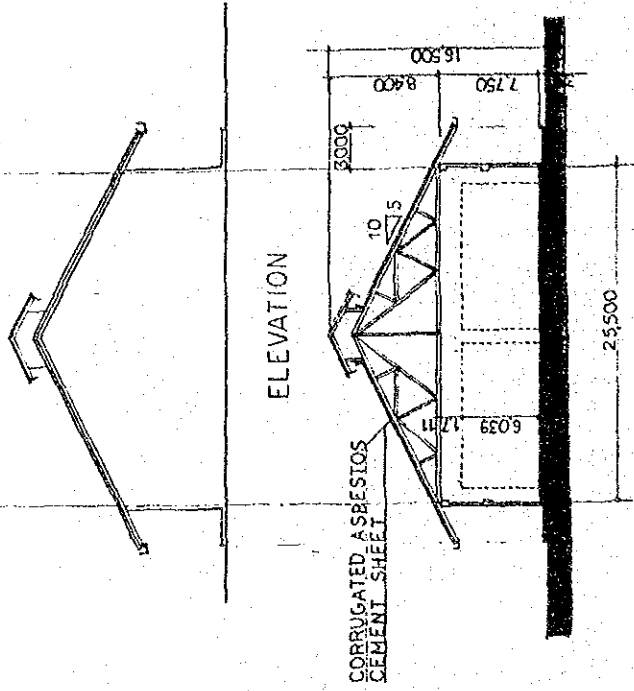
FIXED HOUSE

R.P.E.D.R. : RICE PROCESSING EQUIPMENT
FOR DOMESTIC RICE

BUKKALO



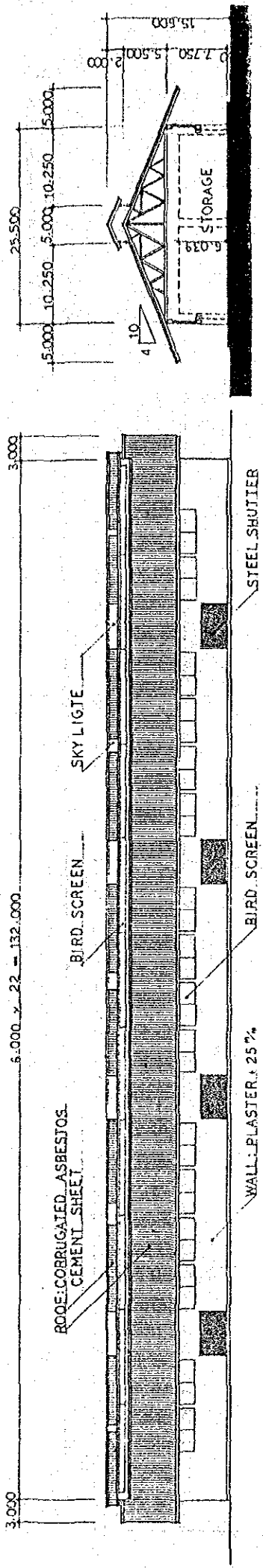
14. Design of Warehouse



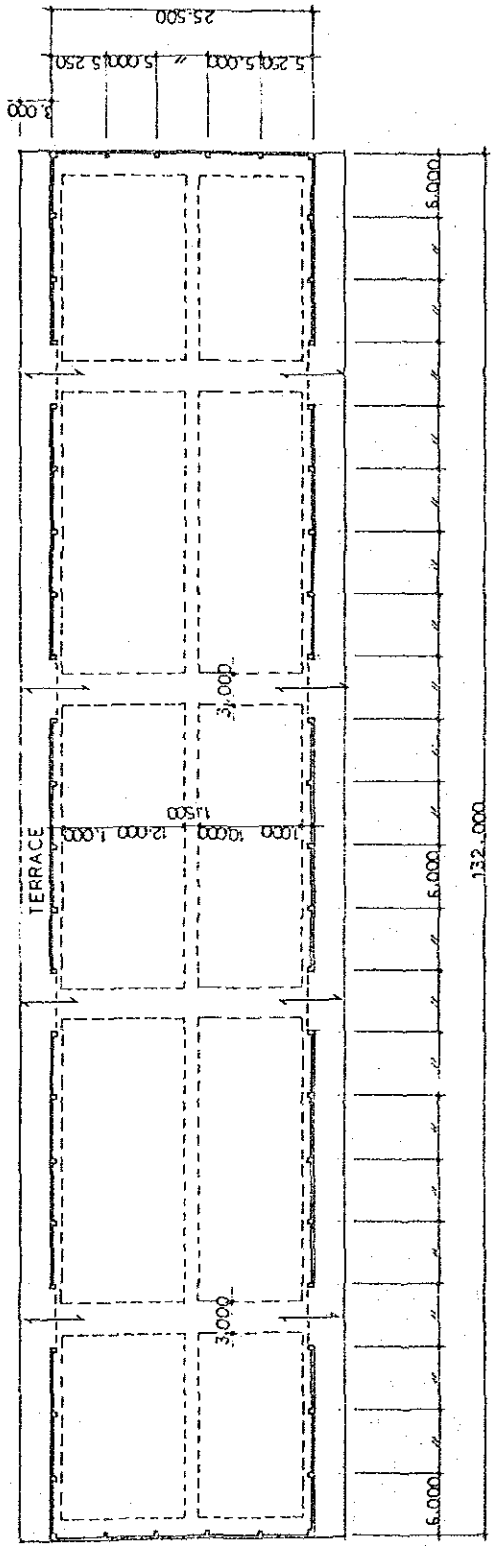
SCALE

01 5 10 20

5000^{10m} WAERHOUSE

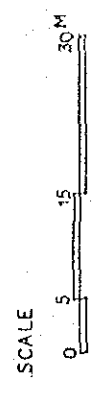


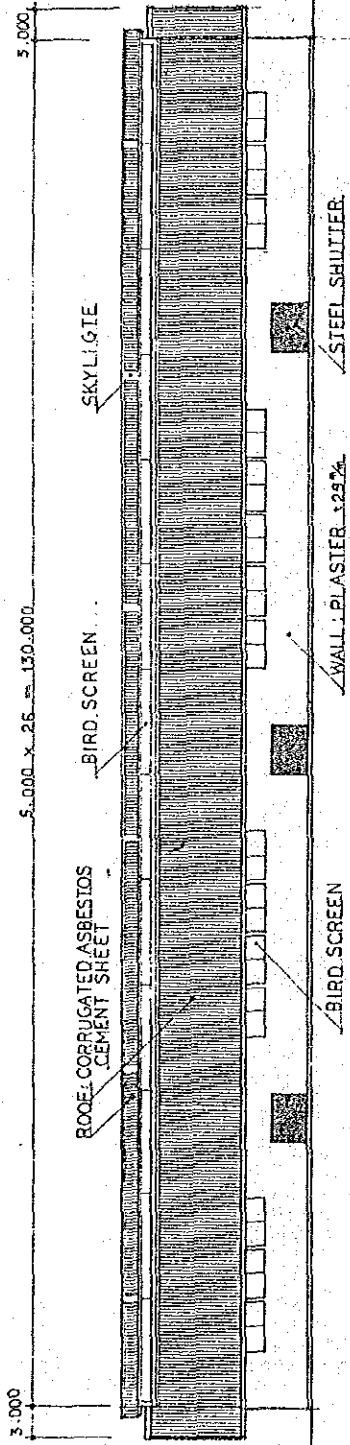
ELEVATION



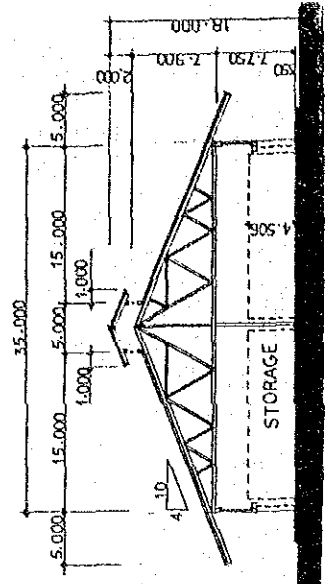
PLAN

10,000 TON WAREHOUSE

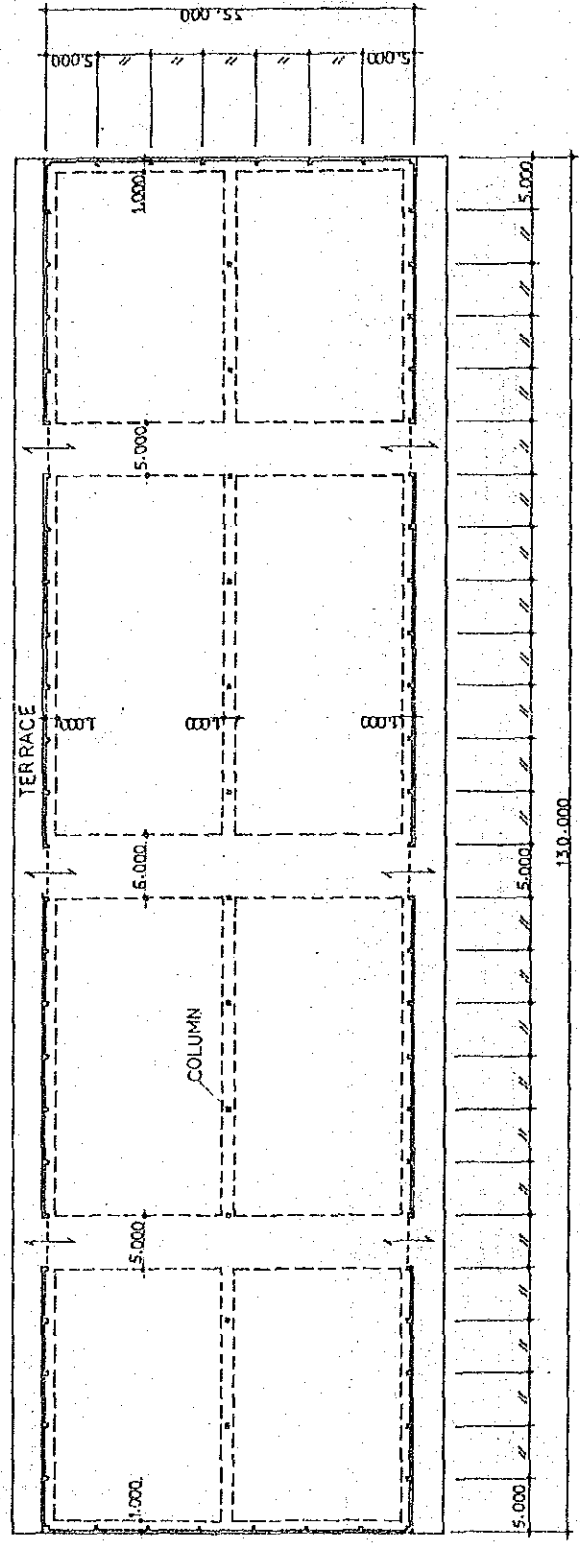




ELEVATION



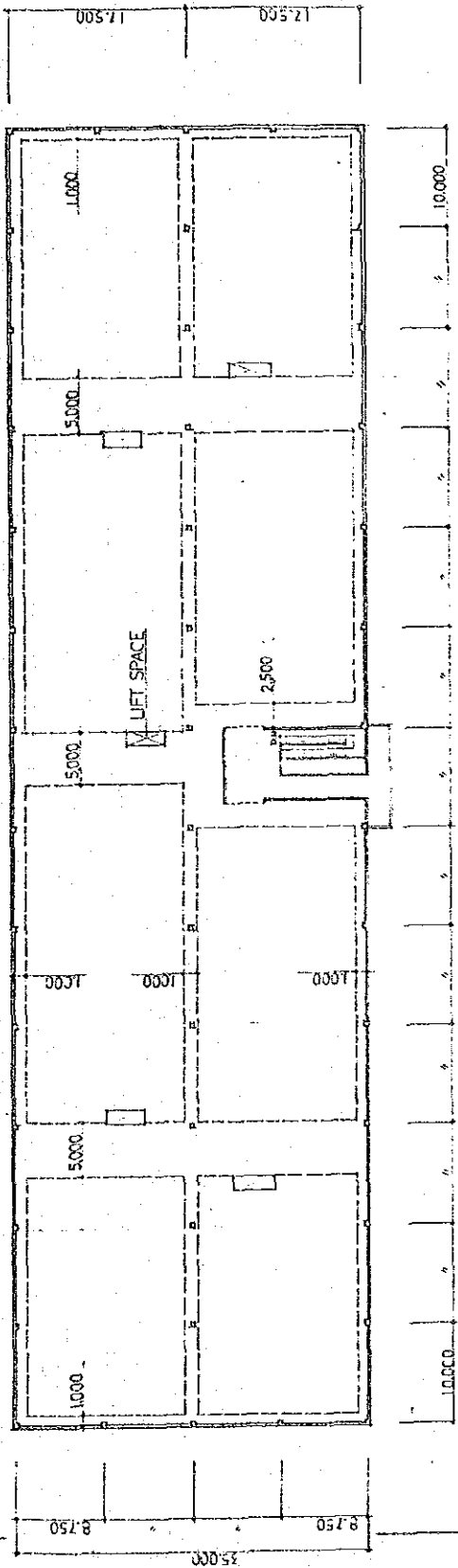
SECTION



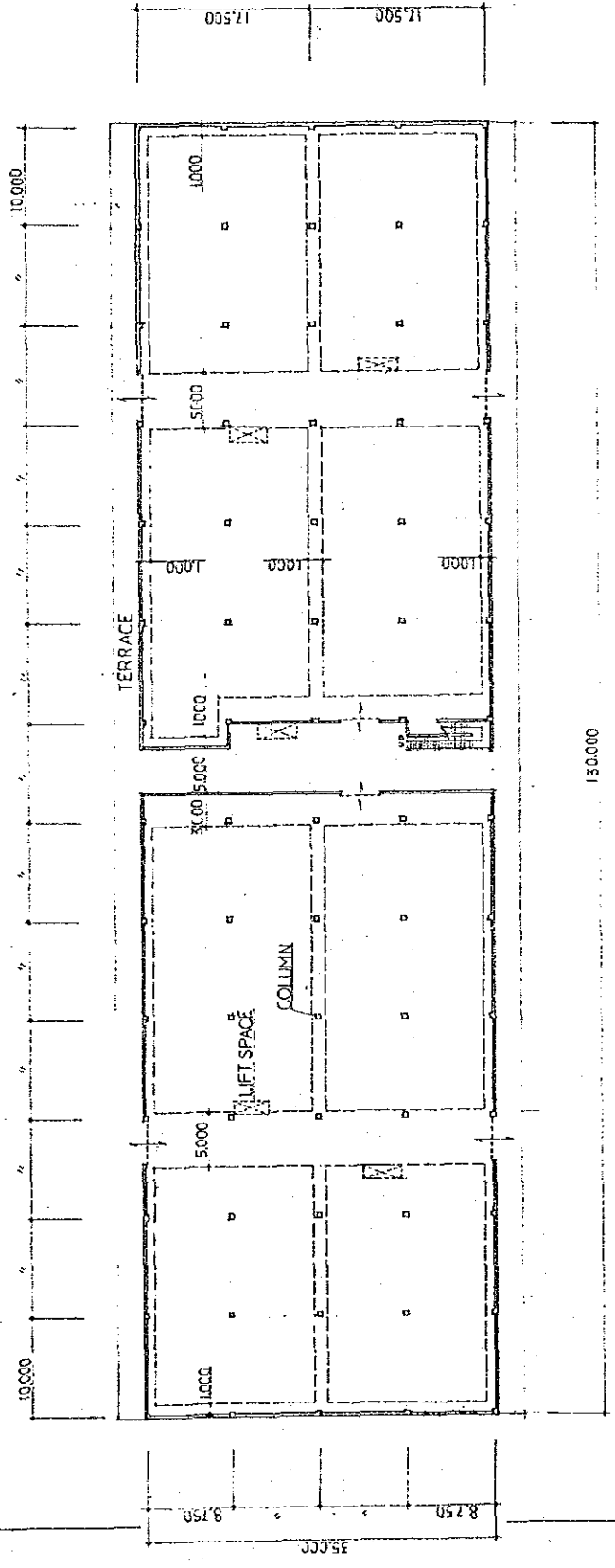
PLAN



10,000 TON WARE HOUSE



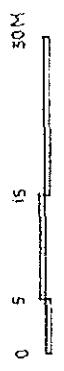
2 F PLAN

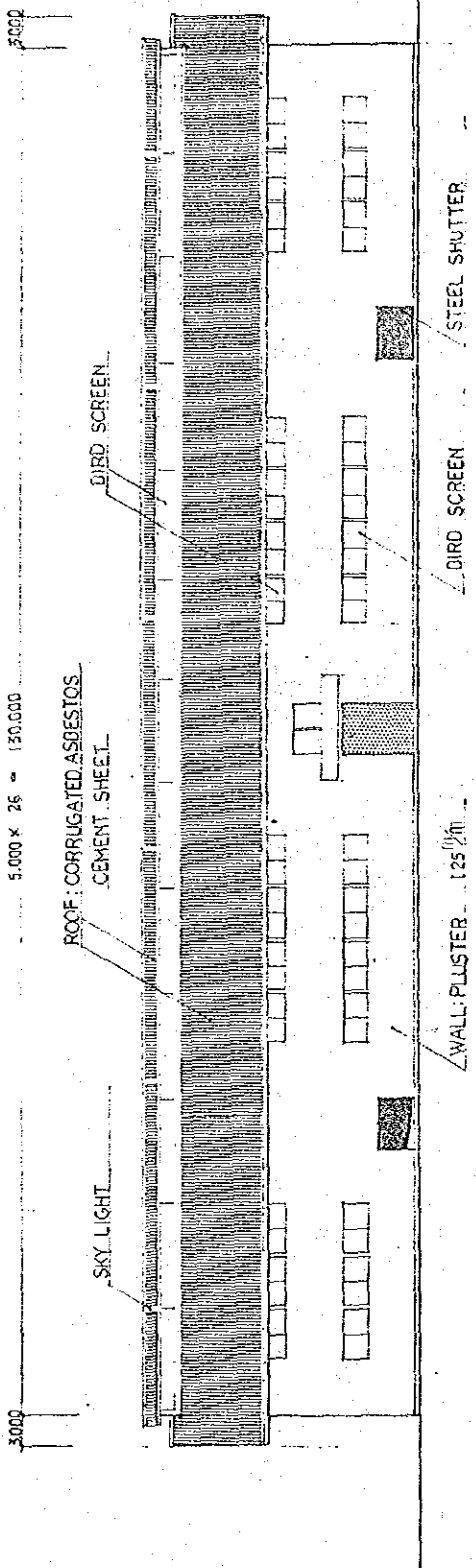


1 F PLAN

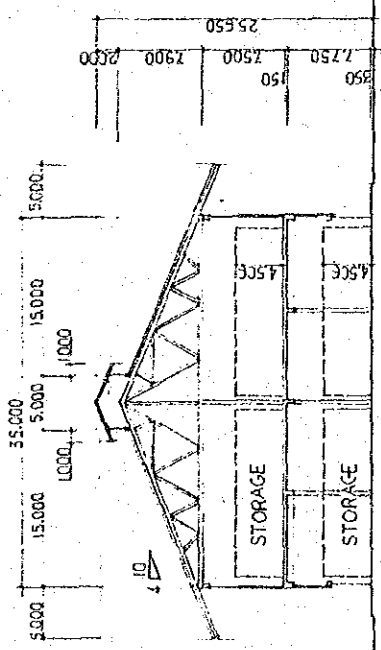
1,800 TON WAREHOUSE

SCALE





ELEVATION



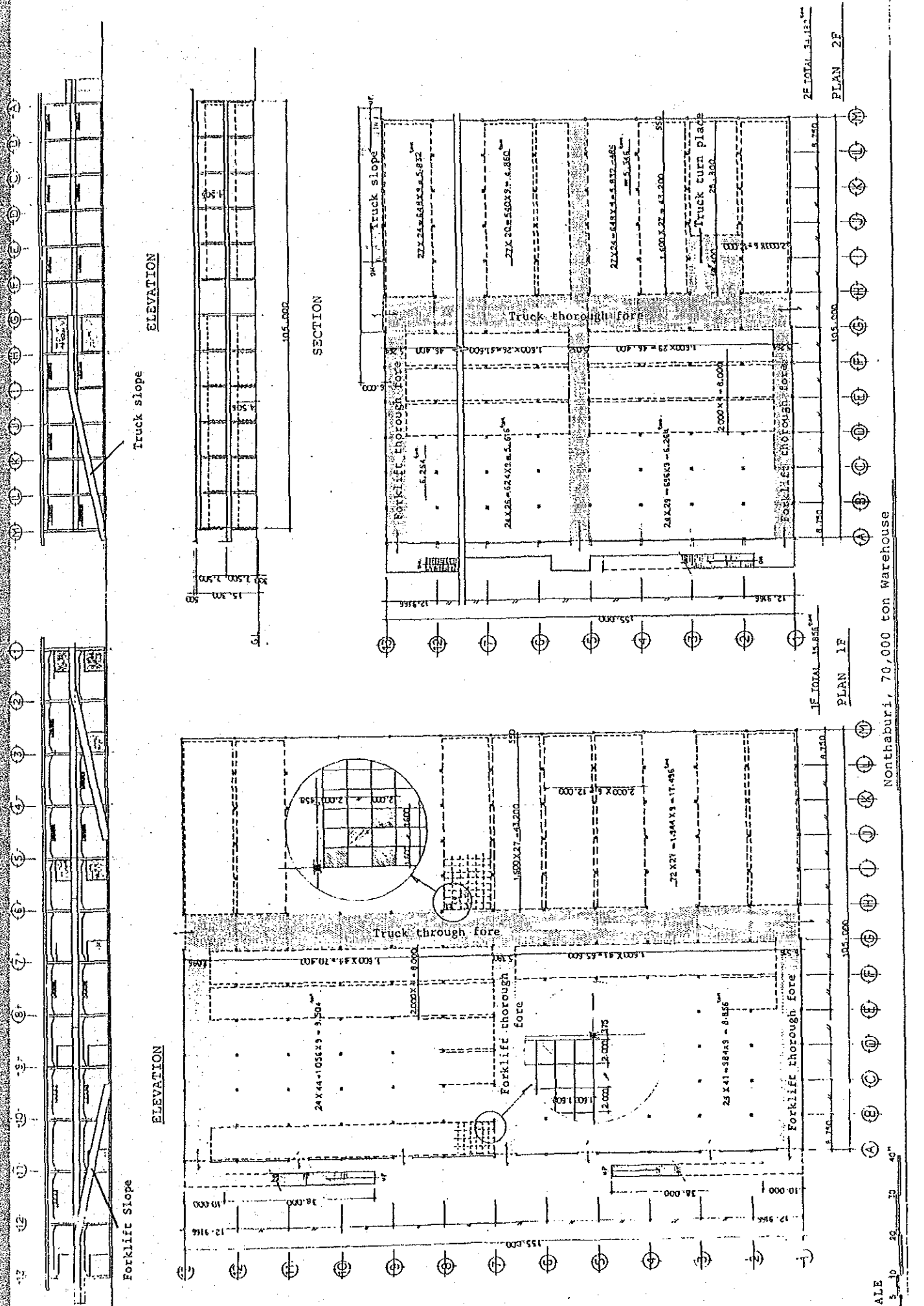
SECTION

ELEVATION

SCALE



1800 TON WARE HOUSE



Nonthaburi, 70,000 ton Warehouse

SCALE
0 5 10 20 30 40"

PLAN 1F

PLAN 2F

2F TOTAL 34,115.000

1F TOTAL 15,855.000

APPENDIX H

| <u>No.</u> | | <u>Page</u> |
|------------|--|-------------|
| 1. | Result of Experiment on Rice Bags Arrangement for Palletization | 1 |

i. Result of Experiment on Rice Bags Arrangement for Palletization

(100 kg Gunny Bag)

Size of Bag: 108.7 x 74.3 cm
Weight of Bag: 1.1 kg

| Arrangement form of rice bags for each layer | Size of one layer (m) | Number of layers on a pallet | Height of layers (cm) | Total number of rice bags on a pallet | Total Weight (ton) |
|--|-----------------------|------------------------------|-----------------------|---------------------------------------|--------------------|
| Square-Four | 1.67 x 1.65 | 5 | 105.7 | 20 | 2.0 |
| Tsugaru-Five | 2.0 x 1.6 | 4 | 87.6 | 20 | 2.0 |
| | | 5 | 105.7 | 25 | 2.5 |
| | | 6 | 128.3 | 30 | 3.0 |

(50 kg Gunny Bag)

Size of Bag: 88.2 x 55.3 cm (Old)
86.7 x 57.1 cm (New)

Weight of Bag: 589g (Old)
550g (New)

| Arrangement form of rice bags for each layer | Size of one layer (m) | Number of layers on a pallet | Height of layers (cm) | Total number of rice bags on a pallet | Total Weight (ton) |
|--|-----------------------|------------------------------|-----------------------|---------------------------------------|--------------------|
| Goro-8 β | 2.0 x 1.6 | 5 | 93.6 | 40 | 2.0 |
| | | 6 | 112.9 | 48 | 2.4 |

APPENDIX I

| <u>No.</u> | | <u>Page</u> |
|------------|---|-------------|
| 1. | Expected Activities to be Performed by the Storage Technology Improvement and Training Center | 1 |
| 2. | The Sizes of Storage Technology Improvement and Training Centers, and Attached Facilities | 7 |
| 3. | Annual Budget of Storage Technology Improvement and Training Center | 9 |
| 4. | Breakdown of Storage Technology Improvement and Training Center Construction Costs | 10 |
| 5. | Storage Technology Development Facilities | 11 |

1. Expected Activities to be Performed by the Storage
Technology Improvement and Training Center

(1) Each Technology Improvement Section

1) Warehousing Control Section

- a. To investigate the status quo of storage
 - (a) The overall investigation of marketing relative to transportation (including movement, transportation routes, times, terms, handling methods, etc.)
 - (b) To investigate the status quo of storage and to research storage improving methods in the high-temperature and high-humid areas
 - (c) To investigate damage during storage and to research improvement methods (This process should be studied for each storage time, term and handling method.)
- b. To standarize storage management
 - (a) To standarize work for bringing products to storage and taking them from storage (that is, to standarize various types of work such as entry, conveyance, arrangement, analysis, communication, etc.)
 - (b) To uniformly carry out work relating to inspection, number and quantity checking
 - (c) To improve the arrangement of rice bags and labelling
 - (d) To form a functional managerial organization
- c. Planning arrangement and expansion of rice storage

- (a) To propose the proper warehouse size, structure and storage method at the producers' level (farmers, agricultural cooperation, etc.), at the marketing level (warehouse employees, various public corporations) and at the export level (exporters, forwarders at ports)
- (b) To improve the warehouse structure and working method of each product and their state (such as bags and bulk)

2) Quality Control Section

a. Quality investigation and research

- (a) To grasp the quality of export rice (such as class, grade, etc.) at the domestic market level and at the farmers' level
- (b) To grasp the quality of paddy and milled rice for each producing area and production year
- (c) To extract the elements to be improved with regard to rice to be consumed domestically and export rice

b. To establish a grading method performed by PWO

- (a) Planning to improve the grading method of purchased rice; planning to procure the instruments necessary for inspection and improvement
- (b) To educate workers to improve the quality inspecting method; to cooperate with each section concerned
- (c) Improvements in the grading method, study on the execution of the method, preparing samples and distributing samples

c. Improving the quality of export rice

- (a) To grasp technical problems concerning rice cleaning, mixing, sieving and remilling; to research improvement methods

(b) To take necessary steps toward improving the quality of export rice

d. To investigate damage during storage

(a) To classify the types of pests and be aware of the type of damage

(b) To investigate the preventive measures taken by farmers, distributing markets and export port warehouses

(c) Investigating damage due to pests, microorganisms, birds and rats

e. Improving preventive measures

(a) Introduction of various types of chemicals (such as preventive agents and insecticides)

(b) To identify economical and safe preventive measures and to share the measures among farmers, distributing markets and export port warehouses

f. Planning preventive measures against damage due to microorganisms, birds and rats

3) Machinery Engineering Section

a. Improvement of machines attached to warehouses and machines to be used for controlling quality

(a) Planning to introduce efficient and economical machines to be used in warehouses

(b) To establish the maintaining and controlling method of machines and to study concrete measures to be taken for this purpose

(c) To introduce machines for controlling the quality of export rice and special brand rice; to plan enhancement techniques for using these machines

- b. To introduce machines necessary for controlling the inner environment of warehouses
 - (a) Planning to store rice by controlling natural temperature and humidity
 - (b) To introduce economical machines for ventilation, maintaining a fixed temperature and removing moisture; planning to use these machines and to give knowledge of these machines to workers
- c. To improve the handling method of bulk agricultural products and unhulled rice
 - (a) To study the simple utilization of ordinary warehouses, etc.
 - (b) Research on facilities and systems in which bulk products are handled in an up-to-date manner
- d. Duty on packages and the introduction of new technology
 - (a) To discuss the customers' (for domestic markets or export markets) needs for packages and to study feasibility
 - (b) Study on various weight units, packing materials, packing techniques and handling methods; planning how to introduce these methods
 - (c) Study on functional and economical packing techniques and the introduction of necessary machines
- 4) Training Section
 - a. Basic knowledge
 - (a) Warehouse management
 - (b) Labelling, booking, and inventory by computer operation
 - (c) Sampling theory and grading theory

- (d) Knowledge about types of pests and their extermination
 - (e) Types of chemicals and their uses
 - (f) Knowledge about various packings (for domestic sales and export)
 - (g) Market research
 - (h) Checking various types of damage during storage and taking preventive measures
- b. Training various types of techniques
- (a) Warehouse controlling technique
 - (b) Inventory technique
 - (c) Quality inspection and weighing technique
 - (d) Drying and cleaning technique
 - (e) Technique for exterminating pests
 - (f) Technique for maintaining and controlling machines attached to warehouses
- c. Various activities for spreading technique
- (a) Proper and small storage for farmers and agricultural cooperation
 - (b) Extermination of pests using the proper chemicals
 - (c) Economical and safe storage methods at the marketing stage
 - (d) Grade improvement and various packing methods at the export stage

(2) Attached Warehouses

1) Testing at Low-temperature Warehouses

- a. Test for determining the optimum temperature for storing milled rice in the tropical zones
- b. Testing for determining the correlation between the temperature and the existence of pests
- c. Testing for determining the correlation between storage temperatures and damage by pests

2) Testing at natural temperatures and humidity controlling warehouses

- a. Absorption and maintaining cooled air at night
- b. Radiation of heated air during the day
- c. Adjustment of temperature

3) Testing at fumigation warehouses

- a. Various chemicals (insecticides, pest exterminating agents)
- b. Testing for determining the effect of chemicals on various pests
- c. Safety measures

(3) Testing at Model Facilities for Handling Bulk Paddy

- 1) Research on the paddy handling system
- 2) Technique for drying and cleaning paddy
- 3) Test research on storing unhulled rice in modern facilities
- 4) Technical study on one story warehouses and silo storage

2. The Sizes of Storage Technology Improvement
and Training Centers, and Attached Facilities

(1) Main Building

| <u>Room Name</u> | <u>Areas per Person</u> | <u>Condition</u> | <u>Calculated Floor Area</u> |
|---------------------------------------|----------------------------------|---|----------------------------------|
| Manager's room | 21 m ² /person | One manager | 21 m ² |
| Meeting room | 3.5 m ² /person | 15 staff members | 52.5 m ² |
| Reception room | 3.5 m ² /person | 12 visitors | 42 m ² |
| Office room | 7 m ² /person | 15 staff members | 105 m ² |
| Exhibition room (and waiting room) | 2 m ² /person | 50 visiting observers | 100 m ² |
| Library | 2 m ² /person | 49 researchers (5,000 books) | 98 m ² |
| Room for outside specialists | 21 m ² /person | 3 to 5 specialists | 62 m ² |
| Lecturing room | 3 m ² /person | 60 students | 180 m ² |
| Computer room | | | 35 m ² |
| Laboratory | | | |
| ◦ Warehousing Control Section | | | 70 m ² |
| ◦ Quality Control Section | | | 70 m ² |
| ◦ Machinery Engineering Section | | | 70 m ² |
| ◦ Training Section | | | 70 m ² |
| Inspecting room (Assessing room) | | | 120 m ² |
| Inspection room (Chemical analysis) | | | 80 m ² |
| Room for various purposes | 4 m ² /person | 3 staff members + 12 m ² (water- boiling room) | 40 m ² |
| Rest room | All researchers, and trainees | staff members | 65 m ² |
| Storage room | 10% | Office room, each laboratory | 57.5 m ² |
| Others | 30% | Total area | 399 + 25 |
| | | | <hr/> 1,762 m ² |

(2) Testing Warehouse

| | | |
|---|------------|--|
| Fixed-temperature warehouse | | 100 m ² |
| Fumigation testing warehouse | 1 building | 200 m ² (100 m ² x 2) |
| Natural temperature controlling warehouse | | 300 m ² |
| Tooling room | | 100 m ² |
| Various test Warehouse Total | | 700 m ² |

| | | |
|--|------------------------|-------------------------------|
| (3) Model Facilities for Handling Bulk Paddy | One set in Suphan Buri | 1,500-ton silo |
| (Drying, controlling and storage) | | 1,500-ton one story warehouse |
| | | Total 3,000 tons |
| Trainees' dormitory | 60 persons | 1,200 m ² |

(4) Mess-room

Mess-room, cooking room, rest room, etc. 1 building 7.0 x 25.0 = 195 m²

(5) Guards' room

Guards' room 1 building 1.8 x 1.8 = 3.24 → 3 m²

(6) Garage

For 4 cars 1 building 5.0 x 12.0 = 60 m²

(7) Manager's dormitory 1 building 120 m²

(8) Staff's dormitory 3 buildings

Divided into three rooms: janitor's room, guards' room and drivers' room
65 + 54 + 37 = 156 m²

(9) Others: Fences, roads, gates, etc.

3. Annual Budget of Storage Technology Improvement
and Training Center

Budget per year Total 3,730,000 Bahts

1. Business Activity Expenses

| | |
|---|--------------|
| 1) Material expenses (book, magazine, film, dictionary, etc.) | 50,000 Bahts |
| 2) Publication & advertisement expenses (monthly, annual) | 100,000 |
| 3) Expenses for training activities (training materials such as pamphlets, etc.) | 600,000 |
| 4) Expenses for research and meeting | 350,000 |
| 5) Expenses for repairing machinery and supplemented parts | 300,000 |
| 6) Chemical and consumed articles for experiment | 150,000 |
| 7) Testing materials, warehousing materials and workshop materials | 350,000 |

Total 1,900,000 Bahts

| | |
|---|---------------|
| 2. Expenses for Ordinary Office Supplies | 100,000 Bahts |
| 3. Utilities and Water Rates (Including Charges of Electricity, Telephone, Water Supply and Fuel) | 600,000 Bahts |
| 4. Expenses for Buildings and Facilities, Repairing Expenses | 450,000 Bahts |
| 5. Insurance (Fire Insurance) | 530,000 Bahts |
| 6. Taxes and Interest | 150,000 Bahts |

4. Breakdown of Storage Technology Improvement
and Training Center Construction Costs

| | <u>Foreign currency</u> | <u>Local currency</u> | Unit: \$1,000 <u>Total</u> |
|--|-----------------------------|---------------------------|-------------------------------|
| I. Building Construction | | | |
| a) Main Building (1,762 m ²) | 16,538 | - | 16,538 |
| b) Low-temperature test warehouse (100 m ²) | 1,366 | - | 1,366 |
| c) Fumigation test warehouse (200 m ²) | 2,070 | - | 2,070 |
| d) Natural temp./humid. controlling warehouse (300 m ²) | 2,335 | - | 2,335 |
| e) Workshop (100 m ²) | 783 | - | 783 |
| f) Model facilities for handling bulk paddy | 11,372 | - | 11,372 |
| g) Trainees' dormitory (1,200 m ²) | 11,745 | - | 11,745 |
| h) Mess-room (195 m ²) | - | 1,268 | 1,268 |
| i) Guards' room (3 m ²) | - | 17 | 17 |
| j) Employees' dormitory (156 m ²) | - | 858 | 858 |
| k) Manager's dormitory (120 m ²) | - | 780 | 780 |
| l) Garage (60 m ²) | - | 180 | 180 |
| m) Land preparation and facilities | - | 4,968 | 4,968 |
| Sub-total | 46,209 | 8,071 | 54,280 |
| II. Material and equipment | | | |
| a) Main Building | 9,922 | - | 9,922 |
| b) Model facilities for handling bulk paddy | 21,182 | - | 21,182 |
| Sub-total | 31,104 | - | 31,104 |
| III. Designing and managing Cost | | | |
| a) Administration expenses | - | 1,708 | 1,708 |
| b) Engineering services | 3,014 | 914 | 3,928 |
| Sub-total | 3,014 | 2,622 | 5,636 |
| IV. Contingency | 7,731 | 807 | 8,538 |
| V. G. Total (I + II + III + IV) | 88,058 | 11,500 | 99,558 |

5. Storage Technology Development FacilitiesEquipment List

| <u>No.</u> | <u>Description</u> | <u>Quantity</u> |
|------------|--|-----------------|
| 1. | Infra-red Moisture Meter | 2 |
| 2. | Precision Moisture Meter | 2 |
| 3. | Portable Moisture Meter | 5 |
| 4. | Constant Temp. Drying Oven with Stand | 2 |
| 5. | Protein Analysis Apparatus (Kjeldahl Distillation and Digestor Appa.) | 1 |
| 6. | Soxhlet Extraction Apparatus | 1 |
| 7. | Muffle Furnace | 1 |
| 8. | Water Purifier | 2 |
| 9. | Grain Crusher | 2 |
| 10. | Dockage Tester (Sieves) | 2 |
| 11. | Sample Divider | 2 |
| 12. | Grain Mixer | 2 |
| 13. | Karton | 100 |
| 14. | Testing Husker | 3 |
| 15. | Testing Whitener, Cone Type | 1 |
| 16. | Testing Whitener, Abrasive type | 1 |
| 17. | Testing Whitener, Friction type | 3 |
| 18. | Testing Grader, Slot type | 1 |
| 19. | Rice Seed Grader | 3 |
| 20. | Whiteness Meter for Rice | 1 |
| 21. | Grain Rigidity Tester | 1 |
| 22. | Grain Size Tester | 5 |
| 23. | Grain Volume-Weight Tester | 1 |
| 24. | Magnifier | 5 |
| 25. | Grain Identification Board | 10 |
| 26. | Incubator | 1 |
| 27. | Microscope | 1 |
| 28. | UV Cabinet | 1 |
| 29. | Centrifuge | 1 |
| 30. | Magnetic Stirrer | 2 |
| 31. | Fume Hood | 2 |
| 32. | Water Bath | 2 |
| 33. | Insect Net | 5 |
| 34. | Specimen Box | 10 |
| 35. | Insect Breeding Box | 10 |
| 36. | Hand Grip Sprayer | 3 |
| 37. | Dissecting Microscope | 3 |
| 38. | Analytical Balance with Table | 2 |
| 39. | Electronic Balance, Top-Pan | 3 |
| 40. | Table Balance | 15 |
| 41. | Balance, Top-Pan | 2 |
| 42. | Refrigerator | 2 |
| 43. | Laboratory Table | 6 |
| 44. | Case for Samples | 5 |
| 45. | Cabinet for Samples | 10 |
| 46. | Shelves for Book Keeping | 30 |
| 47. | Book Classification Card Set | 1 |
| 48. | Copy Machine | 2 |
| 49. | Black Board | 3 |
| 50. | Screen with Tripod Stand | 3 |

| | | |
|-----|---|---|
| 51. | 16mm Sound Projector | 1 |
| 52. | Slide Projector | 3 |
| 53. | Overhead Projector | 3 |
| 54. | TV Set for Video Tape | 2 |
| 55. | Camera with stand & lamp | 1 |
| 56. | Printing Machine Set | 1 |
| 57. | Binding Machine | 1 |
| 58. | Paper Cutter | 1 |
| 59. | Typewriter | 2 |
| 60. | Microphone + Speaker | 2 |
| 61. | Sewing Machine | 1 |
| 62. | Packing & Sealing Mach. | 1 |
| 63. | Tools & Equipment for Work Shop | 2 |
| 64. | Gas Mask | 5 |
| 65. | Gas Detector Set | 1 |
| 66. | Sprayer | 1 |
| 67. | Fumigation Sheet | 2 |
| 68. | Computer Hard Ware | 1 |
| 69. | Computer Soft Ware | 1 |
| 70. | Test Dryer | 2 |
| 71. | Rice Light Piercer | 4 |
| 72. | Model Facilities for Handling Bulk Paddy(Chainat) | 1 |

APPENDIX K

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1. Personnel Plan of New Facilities

| Personnel Location | W/H Administration | | | Engineer | | | W/H Operation & Control | | Inspector | | | Operator | | | Labor | Guard |
|----------------------------|--------------------|-------------|------------|----------|------------|------------|-------------------------|------------------|-------------|-------------------|-------------|----------|-------|----|-------|-------|
| | Manager | Chief Clerk | Accountant | Chief | Mechanical | Electrical | Control | Processing Mach. | Truck Scale | Forklift Conveyor | Truck Crane | Truck | Crane | | | |
| [Central Shipping Complex] | | | | | | | | | | | | | | | | |
| Laem Chabang | 1 | 1 | 4 | 1 | 2 | 1 | 7 | 7 | 28 | 2 | 20 | - | 80 | 15 | | |
| Nonthaburi | - | - | - | 1 | 1 | 1 | - | - | 6 | - | 4 | 1 | 20 | - | | |
| Rajburana | - | - | - | 1 | 1 | 1 | - | - | 10 | - | 12 | 2 | 40 | - | | |
| Ekkalo | - | - | - | 1 | 1 | 1 | - | - | 6 | - | 10 | - | 16 | - | | |
| [Regional Warehouse] | | | | | | | | | | | | | | | | |
| Nonthaburi | 1 | 1 | 1 | - | - | - | 2 | 2 | 1 | 1 | 1 | - | 5 | 6 | | |
| N. Ratchasima | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 7 | 1 | 3 | - | 43 | 6 | | |
| N. Sawan | 1 | 1 | 2 | - | 1 | 1 | 3 | 3 | 8 | 1 | 4 | - | 48 | 9 | | |
| Lampang | 1 | 1 | 1 | - | 1 | - | 2 | 2 | 2 | 1 | 3 | - | 10 | 6 | | |
| Surat Thani | 1 | - | 1 | - | 1 | - | - | - | 1 | - | 2 | - | 5 | 3 | | |
| [Provincial Warehouse] | | | | | | | | | | | | | | | | |
| Suphan Buri | 1 | - | 1 | - | - | - | - | - | - | - | 1 | - | 2 | 3 | | |
| Chainat | 1 | - | 1 | - | - | - | - | - | - | - | 1 | - | 2 | 3 | | |
| Saraburi | 1 | - | 1 | - | - | - | - | - | - | - | 1 | - | 2 | 3 | | |
| Chiang Mai | 1 | - | 1 | - | - | - | - | - | - | - | 1 | - | 2 | 3 | | |
| Chiang Rai | 1 | - | 1 | - | - | - | - | - | - | - | 1 | - | 2 | 3 | | |
| Pritsanulok | 1 | - | 1 | - | - | - | - | - | - | - | 1 | - | 2 | 3 | | |
| Phichit | 1 | - | 1 | - | - | - | - | - | - | - | 1 | - | 2 | 3 | | |
| Surin | 1 | - | 1 | - | - | - | - | - | - | - | 1 | - | 2 | 3 | | |
| U. Ratchathani | 1 | - | 1 | - | - | - | - | - | - | - | 1 | - | 2 | 3 | | |
| U. Thani | 1 | - | 1 | - | - | - | - | - | - | - | 1 | - | 2 | 3 | | |

2. P.W.O. Salary Table

| Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|-----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|
| Managing Director | 17,920 | 19,100 | 20,340 | 21,640 | 23,000 | 24,440 | 25,960 | 27,560 | | | | | | | | | | | |
| Deputy Managing Director | 12,100 | 12,920 | 13,800 | 14,740 | 15,740 | 16,800 | 17,920 | 19,100 | 20,340 | 21,640 | 23,000 | | | | | | | | |
| Chief of Department | 8,730 | 9,320 | 9,940 | 10,610 | 11,330 | 12,100 | 12,920 | 13,800 | 14,740 | 15,740 | 16,800 | 17,920 | | | | | | | |
| Chief of Division | 7,080 | 7,610 | 8,160 | 8,730 | 9,320 | 9,940 | 10,610 | 11,330 | 12,100 | 12,920 | 13,800 | 14,740 | | | | | | | |
| Assistant Chief of Division | 6,090 | 6,570 | 7,080 | 7,610 | 8,160 | 8,730 | 9,320 | 9,940 | 10,610 | 11,330 | 12,100 | 12,920 | 13,800 | | | | | | |
| Chief of Section | 5,220 | 5,640 | 6,090 | 6,570 | 7,080 | 7,610 | 8,160 | 8,730 | 9,320 | 9,940 | 10,610 | 11,330 | 12,100 | | | | | | |
| Class 5 | 4,140 | 4,470 | 4,830 | 5,220 | 5,640 | 6,090 | 6,570 | 7,080 | 7,610 | 8,160 | 8,730 | 9,320 | 9,940 | 10,610 | | | | | |
| Class 4 | 3,020 | 3,270 | 3,540 | 3,830 | 4,140 | 4,470 | 4,830 | 5,220 | 5,640 | 6,090 | 6,570 | 7,080 | 7,610 | 8,160 | 8,730 | 9,320 | 9,940 | | |
| Class 3 | 2,560 | 2,780 | 3,020 | 3,270 | 3,540 | 3,830 | 4,140 | 4,470 | 4,830 | 5,220 | 5,640 | 6,090 | 6,570 | 7,080 | 7,610 | 8,160 | 8,730 | | |
| Class 2 | 2,170 | 2,360 | 2,560 | 2,780 | 3,020 | 3,270 | 3,540 | 3,830 | 4,140 | 4,470 | 4,830 | 5,220 | 5,640 | 6,090 | 6,570 | 7,080 | 7,610 | 8,160 | |
| Class 1 | 1,850 | 2,000 | 2,170 | 2,360 | 2,560 | 2,780 | 3,020 | 3,270 | 3,540 | 3,830 | 4,140 | 4,470 | 4,830 | 5,220 | 5,640 | 6,090 | 6,570 | 7,080 | |
| Typist Class 2 | 2,360 | 2,560 | 2,780 | 3,020 | 3,270 | 3,540 | 3,830 | 4,140 | 4,470 | 4,830 | 5,220 | 5,640 | 6,090 | 6,570 | 7,080 | 7,610 | 8,160 | 8,730 | |
| Typist Class 1 | 1,850 | 2,000 | 2,170 | 2,360 | 2,560 | 2,780 | 3,020 | 3,270 | 3,540 | 3,830 | 4,140 | 4,470 | 4,830 | 5,220 | 5,640 | 6,090 | 6,570 | 7,080 | 7,610 |
| Driver-Chief | 2,170 | 2,360 | 2,560 | 2,780 | 3,020 | 3,270 | 3,540 | 3,830 | 4,140 | 4,470 | 4,830 | 5,220 | 5,640 | 6,090 | 6,570 | 7,080 | 7,610 | 8,160 | |
| Driver | 1,850 | 2,000 | 2,170 | 2,360 | 2,560 | 2,780 | 3,020 | 3,270 | 3,540 | 3,830 | 4,140 | 4,470 | 4,830 | 5,220 | 5,640 | 6,090 | 6,570 | | |
| Security-Chief | 1,850 | 2,000 | 2,170 | 2,360 | 2,560 | 2,780 | 3,020 | 3,270 | 3,540 | 3,830 | 4,140 | 4,470 | 4,830 | 5,220 | 5,640 | 6,090 | 6,570 | 7,080 | |
| Security | 1,600 | 1,720 | 1,850 | 2,000 | 2,170 | 2,360 | 2,560 | 2,780 | 3,020 | 3,270 | 3,540 | 3,830 | 4,140 | 4,470 | 4,830 | 5,220 | 5,640 | | |

Source: FWO

3. Rice Handling Rate and Contracted Place
in Central Region

| Order | Type of Job | Activity | Unit Wage Rate | |
|-------|--|---|---------------------|--------------------|
| | | | Small Bag 50 kg. | Big Bag 100 kg. |
| 1 | Up from boat | Not exceed 2nd floor | | |
| | A. Ferry Boat | | 1.92 | 2.54 |
| | B. Rowboat | 1. No Roof or Roof can be opened | 1.05 | 1.27 |
| | | 2. Have Roof: Addition | 0.27 | 0.45 |
| | 1.1 Up from boat | From boat to Regrade use wage rate as A. and B. | | |
| | 1.2 Up to harbour | Up to harbour and Down to boat (pass harbour) Use Up and Down handling rate from warehouse or from boat to boat that on the harbour side | | |
| 2 | Down to boat | | | |
| | A. Down to boat without arranging and stacking | | 1.23 | 1.59 |
| | B. Arranging and Stacking in the boat | 1. For ferry boat add. | 0.44 | 0.53 |
| | | 2. For rowboat and other kind of boat add. | 0.44 | 0.53 |
| | C. Handling across boat | From original boat to next boat (rate per boat) add. | 0.27 | 0.44 |
| | D. Down to boat | Use wage rate as A and B | | |
| 3 | From Truck | 1. From Truck at front of Warehouse to stack | 1.40 | 2.05 |
| | | 2. From Truck to the customer or retailer | 1.40 | 2.05 |
| | | 3. From Truck to Truck or other vehicle | 1.40 | 2.05 |
| | | 4. From Truck to Regrade | 1.40 | 2.05 |
| 4 | Up to Truck | 1. From Warehouse to Truck or other vehicle | 1.40 | 2.05 |
| | | 2. From boat to Truck or other vehicle | 1.92 | 2.54 |
| | | 3. From Rice heap to Truck | 1.40 | 2.05 |
| 5 | Stack in Warehouse | Stack not exceed 2nd floor (about 13 sacks) add up from wage rate in 1 and 3. | | |
| | Stack to 3rd floor | Not exceed 7 sacks add | 0.44 | 0.53 |
| | Stack to 4th floor | Not exceed 7 sacks add | 0.60 | 1.04 |

| Order | Type of Job | Activity | Unit Wage Rate | |
|-------|---|--|---------------------|--------------------|
| | | | Small Bag 50 kg. | Big Bag 100 kg. |
| 6 | Change rope | Carry from stack, get off old rope, and saw a New rope and to stack again. | | |
| | | 1. Not change sack and weighing | 1.92 | 2.54 |
| 7 | Change new sack | Carry from stack take off old rope and pour to new sack and saw and stack. | | |
| | | 1. Without weighing | 1.92 | 2.54 |
| 8 | Change Stack | Change Stack or carry the collected sack to stack not exceed 2nd (13 sacks). | | |
| | | 1. within 30 sacks | - | - |
| 9 | Handling in Warehouse in order to regrade | 2. exceed 30 sacks | 1.04 | 1.59 |
| | | | | |
| 10 | Fill in sack | Take rice from pilling as 9 to fill in sack, weighing and sawing, then carry to stack not exceed 2nd floor | 1.92 | 2.54 |
| 11 | Mixed rice | Take rice from pilling in 9 and mix then fill in sack, weighing and sawing as wanted standard and stack no more than 2nd floor (this rate include 15). | 2.14 | 2.98 |
| 12 | To screen | 1. From stack to screen | 0.44 | 0.79 |
| | | 2. From boat to screen | 0.36 | 0.60 |
| 13 | To high screen | Open sack and screen and fill in sack, weighing and saw and stack or carry to pous as ordering. | 2.54 | 3.41 |
| 14 | Seperate worm nest | Job like 13 | 0.27 | 0.44 |
| 15 | Pour rice at pilling | Dip rice and throw in order to mix rice | - | 0.44 |
| 16 | Fill in double sacks | | 0.44 | 0.53 |
| 17 | Handling on truck to the back of truck | | 0.70 | 1.04 |

| Order | Type of Job | Activity | Unit Wage Rate | |
|-------|--|---|---------------------|--------------------|
| | | | Small Bag 50 kg. | Big Bag 100 kg. |
| 18 | Handling from small boat (Capacity of boat below 50 sack). | Job like 1 add | - | 1.83 |
| 19 | Handling down or up of rejected rice | Carry from truck or boat to stack in warehouse not exceed 2nd floor | 0.95 | 1.31 |
| 20 | From warehouse to other near by warehouse | (per crossing) | - | 0.19 |
| 21 | Handling gemny-bag | Down or up to Boat or Truck at the front of warehouse and stack in warehouse. | 0.09 | 0.19 |
| 22 | Setting bridge in order to carry rice to a cargo ship. | When the ship moor at warehouse | 0.44 | 0.79 |
| 23 | Overtime | <p>Addition from normal rate</p> <p>1. After 5 P.M. (Normal work hour is from 8 A.M. to 5 P.M.).</p> <p>a. From 17.00-22.30 o'clock: double</p> <p>b. From 22:30-07.00 o'clock: triple</p> <p>2. Work in Sunday or Official holiday wage rate have to be add up as following.</p> <p>a. From 8.00-17.00 : double</p> <p>b. From 17.00-22.30 : triple</p> <p>c. From 22.30-07.00 : quadruple</p> | | |

4. Operation Plan of Each Equipment

| | | |
|--|-------|---------------------------------------|
| 1. Rice Processing Equipment for Export Rice (350 ton/day, Vertical) | | |
| a) Total process quantity per year | ..... | 200,000 ton |
| b) Number of equipment | ..... | 2 sets |
| c) Working hours per day | ..... | 16 hrs |
| d) Power consumption | ..... | 280.3 KW |
| 2. Rice Processing Equipment for Export Rice (150 ton/day) | | |
| a) Total process quantity per year | ..... | 40,000 ton |
| b) Number of equipment | ..... | 1 set |
| c) Working hours per day | ..... | 16 hrs |
| d) Power consumption | ..... | 143.15 KW |
| 3. Rice Processing Equipment for Export Rice (350 ton/day, Horizontal) | | |
| a) Total process quantity per year | ..... | 110,000 ton |
| b) Number of equipment | ..... | 1 set |
| c) Working hours per day | ..... | 16 hrs |
| d) Power consumption | ..... | 297.9 KW |
| 4. Rice Processing Equipment for Domestic Rice (100 ton/day) | | |
| a) Total process quantity per year | ..... | 30,000 ton |
| b) Number of equipment | ..... | 1 set |
| c) Working hours per day | ..... | 16 hrs |
| d) Power consumption | ..... | 227.8 KW |
| 5. Grain processing facility | | |
| a) Total drying quantity per year | ..... | 6,000 ton |
| b) Moisture reduction | ..... | 10% (24% to 14%) |
| c) Dryer holding capacity | ..... | 15 ton |
| d) Moisture reduction ratio | ..... | 3%/hr |
| e) Fuel consumption (Kerosen) | ..... | 5.5 kg water evaporation per litre |
| f) Power consumption | ..... | 65.95 KW |
| 6. Grain Cleaning & Grading Facilities | | |
| a) Total working hours per year | ..... | 1,000 hrs |
| b) Power consumption | ..... | 23.2 KW |

| | | |
|--|-------|---|
| 7. Rice Packing Facilities | | |
| a) Total working hours per year | ..... | 1,600 hrs |
| b) Power consumption | ..... | 23.6 KW |
| 8. Movable Chain Conveyor | | |
| a) Capacity | ..... | 50 ton/hr |
| b) Number of Conveyor | ..... | 2 sets/5,000 ton W/H |
| c) Turn-over | ..... | 2 times/year (Regional W/H) 1.5 time/year (Provincial W/H) |
| d) Power consumption | ..... | 1.5 KW |
| 9. Movable Bag Slat Stacker | | |
| a) Capacity | ..... | 64 ton/hr |
| b) Number of Stacker | ..... | 1 set/5,000 ton W/H (Stacker shall not be used for one-fourth of total amount) |
| c) Turn-over | ..... | 2 times/year (Regional W/H) 1.5 time/year (Provincial W/H) |
| d) Power consumption | ..... | 2.2 KW |
| 10. Forklift for Central Shipping Complex | | |
| a) 1 forklift is allocated per 20,000 ton of yearly rice handling. | | |
| b) Number of operation from receiving to shipping | ..... | 4 times |
| c) Loading capacity | ..... | 3 ton |
| d) Operating time | ..... | 5 min./1 operation |
| e) Working efficiency | ..... | 0.8 |
| f) Max. output | ..... | 70 ps |
| 11. Forklift for Regional Warehouse | | |
| a) Total handling rice | ..... | 4,000 ton |
| b) Number of operation receiving to discharging | ..... | 2 times |
| c) Loading capacity | ..... | 2 ton |
| d) Operating time | ..... | 5 min./1 operation |
| e) Working efficiency | ..... | 0.8 |
| f) Max. output | ..... | 50 ps |
| 12. Truck Crane | | |
| a) Total shipping quantity per year | ..... | 44,000 ton (Rajburana) 35,000 ton (Nonthaburi) |
| b) Loading capacity | ..... | 3 ton |
| c) Operating time | ..... | 3 min./shipping |
| d) Working efficiency | ..... | 0.8 |
| e) Max. output | ..... | 133 ps |

5. Tariffs of Electricity

1. Small Industry

Electric use for industrial purpose inside buildings, factory including location around of which max 15 minutes demand is 30 - 499 kilowatt through Demand & Energy volt meter with pressure of not less than 11 kilovolt

Monthly rate per meter

Demand charge - figured as per monthly max demand 95 baht per kilowatt

Energy charge :-

| | |
|--------------------------------------|--------------|
| first 50 units per 1 kilowatt demand | 1.46 baht/kw |
| next 150 " " " | 1.45 " |
| " 200 " " " | 1.44 " |
| more than this | 1.43 " |

Min rate - monthly charge figured from 4.1 plus 4.2 or as per note (5) below must not lower than demand charge figured from 60% of max demand in the last 12 month (end in the present month)

Note

- 1) Public service or state enterprise of industrial type usage, if demand is at 30 - 499 kw, the rate is applied
- 2) Usage of lower than 11 kilovolt pressure, demand charge increase 3 baht/kilowatt
- 3) Usage of 69 or 115 kilovolt pressure level, demand charge reduce 2 baht/kilowatt.
- 4) Incase volt-meter is set to the low pressure side of transformer, kilowatt and unit figured as per 4.1 and 4.2 will increase 2% to cover loss in the transformer which is not included.
- 5) In any month of which max demand is less than 30 kw, the rate in 2) is used to figure the month charge and, however, the charge must not lower than the above min. charge
- 6) The rate of this type is used under the regulations law on industrial factory establishment and must be approved by the provincial electricity authority, Bangkok and the purchase-sales contract must be done before use.

2. Big Industry

Electric use for industrial purpose inside buildings, factory and location around of which max 15 minutes demand is more than 500 kw. through demand & energy volt meter with not lower than 11 kilovolt pressure

Monthly rate per meter

Demand charge

figured as per monthly max demand 95 baht/kilowatt

Energy charge

| | | |
|----------------------------------|------|-----------|
| first 200 units per 1 kw. demand | 1.44 | baht/unit |
| next 280 " " " | 1.43 | " |
| more than this | 1.41 | " |

Min rate : monthly rate figured as per 5.1 plus 5.2 or as per note 5) below must not lower than demand charge figured from 60% of max demand in the last 12 month (end in the present month)

- Note
- 1) Public service or state enterprise of industrial type usage, and demand charge is more than 500 kw., the rate is applied
 - 2) Electric use of lower than 11 kilovolt pressure, demand charge increase 2 baht / kilowatt
 - 3) Electric use of 69 or 115 kilovolt pressure level, demand charge reduce 5 baht / kilowatt
 - 4) In case volt meter is set to the low-pressure side of the transformer, kilowatt and unit figured as per 5.1 and 5.2 increase 2% to cover loss in the transformer which is not included
 - 5) In any month of which max demand is less than 500 kw. the rate in 4) is figured for the month-charge. However, the charge must not lower than the above min. charge.
 - 6) The rate to this type must be used under the regulations law on industrial factory establishment and must be approved by the provincial electricity authority, Bangkok and the purchase-sales contract must be done before use.

6. Tariff of Water Supply (Bangkok)

Unit B /m³

| Type 1 Residence | 1984 | | | | | 1985 | | | | | |
|-----------------------|------|------|------|------|------|------|------|------|------|------|-------|
| | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
| 0 - 30 m ³ | 2.10 | 2.30 | 2.50 | 2.70 | 2.90 | 3.10 | 3.30 | 3.50 | 3.70 | 3.90 | 4.10 |
| 31 - 40 | 2.35 | 2.55 | 2.75 | 2.95 | 3.15 | 3.35 | 3.55 | 3.75 | 3.95 | 4.15 | 4.35 |
| 41 - 50 | 2.60 | 2.30 | 3.00 | 3.20 | 3.40 | 3.60 | 3.80 | 4.00 | 4.20 | 4.40 | 4.60 |
| 51 - 60 | 2.85 | 3.05 | 3.25 | 3.45 | 3.65 | 3.85 | 4.05 | 4.25 | 4.45 | 4.65 | 4.85 |
| 61 - 70 | 3.10 | 3.30 | 3.50 | 3.70 | 3.90 | 4.10 | 4.30 | 4.50 | 4.70 | 4.90 | 5.10 |
| 71 - 80 | 3.35 | 3.55 | 3.75 | 3.95 | 4.15 | 4.35 | 4.55 | 4.75 | 4.95 | 5.15 | 5.35 |
| 81 - 90 | 3.75 | 4.00 | 4.25 | 4.50 | 4.75 | 5.00 | 5.25 | 5.50 | 5.75 | 6.00 | 6.25 |
| 91 - 100 | 4.00 | 4.25 | 4.50 | 4.75 | 5.00 | 5.25 | 5.50 | 5.75 | 6.00 | 6.25 | 6.50 |
| 101 - 120 | 4.25 | 4.50 | 4.75 | 5.00 | 5.25 | 5.50 | 5.75 | 6.00 | 6.25 | 6.50 | 6.75 |
| 121 - 160 | 4.50 | 4.75 | 5.00 | 5.25 | 5.50 | 5.75 | 6.00 | 6.25 | 6.50 | 6.75 | 7.00 |
| 161 - 200 | 4.75 | 5.00 | 5.25 | 5.50 | 5.75 | 6.00 | 6.25 | 6.50 | 6.75 | 7.00 | 7.25 |
| more than 201 | 5.25 | 5.50 | 5.75 | 6.00 | 6.25 | 6.50 | 6.75 | 7.00 | 7.25 | 7.50 | 7.75 |

| Type 2 Business, State Enterprise, Others | 1984 | | | | | 1985 | | | | | |
|---|------|------|------|------|------|------|------|------|------|------|-------|
| | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. |
| 0 - 10 m ³ | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| 11 - 20 | 3.75 | 4.00 | 4.25 | 4.50 | 4.75 | 5.00 | 5.25 | 5.50 | 5.75 | 6.00 | 6.25 |
| 21 - 30 | 4.00 | 4.25 | 4.50 | 4.75 | 5.00 | 5.25 | 5.50 | 5.75 | 6.00 | 6.25 | 6.50 |
| 31 - 40 | 4.25 | 4.50 | 4.75 | 5.00 | 5.25 | 5.50 | 5.75 | 6.00 | 6.25 | 6.50 | 6.75 |
| 41 - 50 | 4.50 | 4.75 | 5.00 | 5.25 | 5.50 | 5.75 | 6.00 | 6.25 | 6.50 | 6.75 | 7.00 |
| 51 - 60 | 4.75 | 5.00 | 5.25 | 5.50 | 5.75 | 6.00 | 6.25 | 6.50 | 6.75 | 7.00 | 7.25 |
| 61 - 80 | 5.00 | 5.25 | 5.50 | 5.75 | 6.00 | 6.25 | 6.50 | 6.75 | 7.00 | 7.25 | 7.50 |
| 81 - 100 | 5.25 | 5.50 | 5.75 | 6.00 | 6.25 | 6.50 | 6.75 | 7.00 | 7.25 | 7.50 | 7.75 |
| 101 - 120 | 5.50 | 5.75 | 6.00 | 6.25 | 6.50 | 6.75 | 7.00 | 7.25 | 7.50 | 7.75 | 8.00 |
| 121 - 160 | 5.75 | 6.00 | 6.25 | 6.50 | 6.75 | 7.00 | 7.25 | 7.50 | 7.75 | 8.00 | 8.25 |
| 161 - 200 | 6.00 | 6.25 | 6.50 | 6.75 | 7.00 | 7.25 | 7.50 | 7.75 | 8.00 | 8.25 | 8.50 |
| 201 - 300 | 6.25 | 6.50 | 6.75 | 7.00 | 7.25 | 7.50 | 7.75 | 8.00 | 8.25 | 8.50 | 8.75 |
| more than 301 | 6.25 | 6.50 | 6.75 | 7.00 | 7.25 | 7.50 | 7.75 | 8.00 | 8.25 | 8.50 | 8.75 |

7. Tariff of Water Supply (up country)

| Using Water m ³ /month | Rate | | | | | | | | | | | |
|--------------------------------------|--------------------------|------|------|------|------|------|------|-------|------|------|------|-------|
| | Unit: ₪ / m ³ | | | | | | | | | | | |
| | 1984 | | | | | | 1985 | | | | | |
| | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sep. | Oct. |
| 0- 10 | 2.25 | 2.50 | 2.75 | 3.00 | 3.25 | 3.50 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 | 3.75 |
| 11- 20 | 2.75 | 3.00 | 3.25 | 3.50 | 3.75 | 4.00 | 4.25 | *4.50 | 4.50 | 4.50 | 4.50 | 4.50 |
| 21- 50 | 3.25 | 3.50 | 3.75 | 4.00 | 4.25 | 4.50 | 4.75 | 5.00 | 5.25 | 5.50 | 5.75 | *6.00 |
| 51- 80 | 4.25 | 4.50 | 4.75 | 5.00 | 5.25 | 5.50 | 5.75 | 6.00 | 6.25 | 6.50 | 6.75 | *7.00 |
| 81-100 | 4.75 | 5.00 | 5.25 | 5.50 | 5.75 | 6.00 | 6.25 | 6.50 | 6.75 | 7.00 | 7.25 | *7.50 |
| 101-300 | 5.25 | 5.50 | 5.75 | 6.00 | 6.25 | 6.50 | 6.75 | 7.00 | 7.25 | 7.50 | 7.75 | *8.00 |
| more than 301 | 5.75 | 6.00 | 6.25 | 6.50 | 6.75 | 7.00 | 7.25 | 7.50 | 7.75 | 8.00 | 8.25 | *8.50 |

8. Fumigation Charge

I. Fumigation Charge by Volume

I.A. Phosphine gas, Mg/Al - Phosphide (Tablet/Bag)

Concentration : 30 tablets/1,000 cu.ft.
Fumigated Period: 48-72 hrs.

| | |
|-----------------------|------------------------|
| Rice | 220.-Baht/1,000 cu.ft. |
| Maize, Sorghum, Beans | 200.-Baht/1,000 cu.ft. |

Remark: In case higher concentration is needed, an increased charge of 60.-Baht/1,000 cu.ft. for every increasing 30 tablets will be collected.

I.B. Methyl Bromide - CH_3Br

Concentration : 2 lb./1,000 cu.ft.
Fumigated Period: 24-48 hrs.

| | |
|-----------------------|------------------------|
| Rice | 220.-Baht/1,000 cu.ft. |
| Maize, Sorghum, Beans | 200.-Baht/1,000 cu.ft. |

Remark: In case higher concentration is needed, an increased charge of 40.-Baht/1,000 cu.ft. for every increasing 1 lb. will be collected.

II. Fumigation Charge by Weight

II.A. Phosphine gas, Mg/Al - Phosphide (Tablets/Bag)

Concentration : 30 tablets/1,000 cu.ft.
Fumigated Period: 48-72 hrs.

| | |
|-----------------------|-------------|
| Rice | 13.-Baht/MT |
| Maize, Sorghum, Beans | 12.-Baht/MT |

Remark: In case higher concentration is needed, an increased charge of 2.-Baht/MT for every increasing 30 tablets will be collected.

II.B. Methyl Bromide - CH_3Br

Concentration : 2 lb./1,000 cu.ft.
Fumigated Period: 24-48 hrs.

| | |
|-----------------------|-------------|
| Rice | 13.-Baht/MT |
| Maize, Sorghum, Beans | 11.-Baht/MT |

Remark: In case higher concentration is needed, an increased charge of 2.-Baht/MT for every increasing 1 lb. will be collected.

II.C. In case there is empty space to be fumigated more than 10% of the cargo's weight, all the empty space to be fumigated will be charged according to the regulated weight by Stowage Factor.

In case fumigation on board of ocean vessel, full price rate will be charged.

In case fumigation in godown, cargo boat or silo, only 60% of full price rate will be charged.

Stowage Factor to be calculated cargo's weight for empty space

| | <u>Packing in Gunny Bag</u> | <u>Not packed in Gunny Bag</u> |
|---------|---------------------------------|------------------------------------|
| Rice | 52 | - |
| Maize | 54 | 49 |
| Sorghum | 50 | - |
| Beans | 53 | - |

III. Fumigation Charge in Container

| | | |
|-------------|--------------------|------------------|
| 40 ft. size | First unit | 1,000.-Baht/unit |
| | the following unit | 800.-Baht/unit |
| 20 ft. size | First unit | 800.-Baht/unit |
| | the following unit | 600.-Baht/unit |

Concentration of Methyl Bromide : 2-3 lb./1,000 cu.ft.
or Phosphine gas : 30-40 tablets/1,000 cu.ft.

- Remarks:
1. Minimum service charge for 1 time fumigation is Baht 1,000.-
 2. The above service charge includes transportation charge in Bangkok Metropolis.
 3. Fumigation out of Bangkok Metropolis area, transportation charge shall be collected per one round trip as follows:

| | | |
|--------|----------------------------------|-----------|
| within | 100 kms. from Bangkok Metropolis | = 500 Bah |
| " | 100-150 " | = 700 " |
 4. Fumigation on board of ocean vessel both in Bangkok Metropolis and at Koh Sichang, transportation charge is not collected.

This is effective on and from August 1, 1983.

Source: Private sector

APPENDIX L

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| 1. | Annual Disbursement of Project Cost | 1 |
| 2. | Cost Breakdown by Project Site | 2 |
| 3. | Land Acquisition | 3 |

1. Annual Disbursement of Project Cost

(Unit: Ø1,000)

| <u>Year</u> | <u>Foreign</u> | <u>Local</u> | <u>Total</u> |
|-------------|----------------|--------------|--------------|
| 1 | 5,010 | 1,477 | 6,487 |
| 2 | 92,169 | 115,952 | 208,121 |
| 3 | 225,264 | 174,172 | 299,436 |
| 4 | 162,481 | 220,160 | 382,641 |
| 5 | 164,516 | 147,769 | 312,285 |
| 6 | 3,914 | 0 | 3,914 |
| Total | 653,354 | 659,530 | 1,312,884 |

2. Cost Breakdown by Project Site

Unit: \$1,000

| Location | Civil Work | | Construction | | Machinery & Equipment | | Total |
|---|------------|--------|--------------|---------|-----------------------|--------|---------|
| | Foreign | Local | Foreign | Local | Foreign | Local | |
| <Central Shipping Complex> | | | | | | | |
| Laem Chabang | 6,061 | 3,789 | 42,127 | 102,771 | 75,999 | 17,615 | 248,362 |
| Nonthaburi | 455 | 357 | 6,789 | 12,015 | 35,567 | 7,029 | 62,212 |
| Rajburana | - | - | - | - | 53,558 | 11,762 | 65,320 |
| Bukkalo | 1,200 | 800 | 1,502 | 5,898 | 23,146 | 7,163 | 39,709 |
| Sub-total | 7,716 | 4,946 | 49,764 | 121,338 | 188,270 | 43,569 | 415,603 |
| <Regional Warehouse> | | | | | | | |
| Nonthaburi | 15,551 | 7,642 | 11,018 | 38,208 | 4,519 | 1,178 | 78,116 |
| Nakhon Ratchasima | 403 | 350 | 11,231 | 25,189 | 23,919 | 4,824 | 65,916 |
| Nakhon Sawan | 3,209 | 3,297 | 16,023 | 33,888 | 28,229 | 4,582 | 89,228 |
| Lampang | 401 | 1,232 | 11,334 | 25,428 | 9,629 | 1,710 | 49,734 |
| Surat Thani | 250 | 219 | 3,132 | 8,409 | 4,649 | 1,364 | 18,023 |
| Sub-total | 19,814 | 12,740 | 52,738 | 131,122 | 70,945 | 13,658 | 301,017 |
| <Provincial Warehouse> | | | | | | | |
| Suphan Buri | 1,318 | 1,563 | 3,051 | 8,592 | 529 | 13 | 15,066 |
| Chainat | 273 | 212 | 2,934 | 8,245 | 529 | 14 | 12,207 |
| Saraburi | 289 | 710 | 2,897 | 7,892 | 529 | 13 | 12,270 |
| Chiang Mai | 781 | 1,967 | 2,725 | 7,648 | 529 | 20 | 13,670 |
| Chiang Rai | 238 | 594 | 2,655 | 7,793 | 529 | 21 | 11,770 |
| Phitsanulok | 736 | 1,504 | 2,720 | 8,012 | 529 | 121 | 13,622 |
| Phichit | 852 | 1,171 | 3,010 | 7,014 | 529 | 186 | 12,762 |
| Surin | 393 | 913 | 2,764 | 7,630 | 529 | 267 | 12,496 |
| Ubon Ratchathani | 259 | 235 | 2,717 | 7,777 | 529 | 189 | 11,706 |
| Udon Thani | 254 | 218 | 2,432 | 7,361 | 529 | 188 | 10,982 |
| Sub-total | 5,393 | 9,087 | 27,905 | 77,844 | 5,290 | 1,032 | 126,551 |
| G. Total | 32,923 | 26,773 | 130,407 | 330,304 | 264,505 | 58,259 | 843,171 |

3. Land Acquisition

| <u>Location</u> | <u>Acreage (m²)</u> | <u>Price (฿/Rai)</u> | <u>Total Price (฿)</u> |
|-----------------|--------------------------------|----------------------|----------------------------|
| Laem Chabang | 45,000 | 500,000 | 14,062,500 |
| Saraburi | 9,805 | 100,000 | 612,813 |
| Chiang Rai | 9,798 | 100,000 | 612,375 |
| | | <u>Total</u> | <u>15,287,688</u> ===== |

Note : 1 Rai \doteq 1,600 m²

APPENDIX M

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1 Replacement Cost

| | | (Unit: Yen) |
|----------------------|---|------------------------|
| <u>Durable Years</u> | <u>Equipment</u> | <u>Total Amount</u> |
| 13 Years | ° Rice Processing Equipment for Export Rice (350 ton/day) | 503,796,000 |
| | ° " (350 ton/day) | 783,384,000 |
| | ° " (150 ton/day) | 352,657,200 |
| | ° Rice Processing Equipment for Domestic Rice (100 ton/day) | 232,794,000 |
| | ° Grain Processing Facilities | 388,672,000 |
| | ° Grain Cleaning & Grading Facilities | 73,438,500 |
| | ° Rice Packing Facilities | 239,655,900 |
| | Sub Total | 2,574,397,600 |
| 10 Years | ° Truck Scale | 17,987,400 |
| 5 Years | ° Truck Crane | 75,608,600 |
| | ° Bag Sewing Machine | 3,582,000 |
| | ° Platform Scale | 4,958,100 |
| | ° Movable chain Conveyor | 62,178,400 |
| | ° Movable Bag Slat Stacker | 36,687,400 |
| | ° Inspection Instrument | 21,607,700 |
| | ° Forklift | 82,058,700 |
| | ° Pallet | 179,572,500 |
| | Sub Total | 466,253,400 |
| | Total | 3,058,638,400 ===== |

3 Difference Between Building and Civil
Engineering of Laem Chabang and Nonthaburi

| Laem Chaban | Non Thaburi |
|---|---|
| <p><u>Sita</u></p> <p>A warehouse of 70,000 tons and a factory for rice selection for export will be built on a sita with an area of about 45,000 m², at a newly developed port. The warehouse consists of a two-storied building and 6 flat buildings. Each building has a roof with a planned slope of <u>4-sun</u>.</p> | <p><u>Sita</u></p> <p>A jute factory had been built on the site with an area of about 7,700 m² (including a pond with an area of 8,600 m²). A regional warehouse of 20,000 tons, a packing house of 500 m² and a training center are planned to be built on the site with an area of about 68,400 m². Owing to the limitation of land spaces, the warehouse will be two-storied, and it will have a water-proofad roof.</p> |
| <p><u>Wharf</u></p> <p>A wharf will be built at the new port.</p> | <p><u>Wharf</u></p> <p>A new wharf will be required.</p> |
| <p><u>Foundation</u></p> <p>Concrete pile ø 350 to 400 & 12,000 in use</p> | <p><u>Foundation</u></p> <p>Steel pile ø 500 & 24,000 in use</p> |
| <p><u>Building Structure</u></p> <p>Column and beam built with ferro concrete; walls made of concrete blocks; roofs made of steel frame slates.</p> | <p><u>Building Structure</u></p> <p>Reinforced concrete construction; roofs should be water-proof.</p> |
| <p><u>Facility</u></p> <p>Water tower and wells not required; receiving electricity required.</p> | <p><u>Facility</u></p> <p>Water tower and wells required. Transmission is required prior to receiving electricity.</p> |

4 Project Cash Flow (Financial Evaluation)

Alternative I

(Unit: \$1,000)

| Year | C o s t | | | B e n e f i t | | | | | Net cash flow | | | |
|------|--------------|-----------|------------|---|-----------|---------------------------|--------------------------|-------------------------------------|---------------|-----------------------------|---|-----------|
| | Project cost | Land rent | O & M cost | Replacement cost of machinery & equipment | Total | Reduction in storage loss | Saving of warehouse rent | Rental revenue from storage service | | Increase in export earnings | Residual value of machinery & equipment | Total |
| 1 | 5,685 | | | | 5,685 | | | | | | | ▲ 5,685 |
| 2 | 179,132 | | | | 179,132 | | | | | | | ▲ 179,132 |
| 3 | 334,897 | | | | 334,890 | | | | | | | ▲ 334,897 |
| 4 | 298,507 | | | | 321,519 | | | | | | | ▲ 321,519 |
| 5 | 248,769 | 461 | 23,012 | | 301,966 | | | | | | | ▲ 301,966 |
| 6 | 2,917 | 802 | 52,736 | | 59,055 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 190,027 |
| 7 | | 802 | 78,216 | | 79,018 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 170,064 |
| 8 | | 802 | 78,216 | 12,127 | 91,145 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 157,937 |
| 9 | | 802 | 78,216 | 28,160 | 107,178 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 141,904 |
| 10 | | 802 | 78,216 | 9,314 | 88,332 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 160,750 |
| 11 | | 802 | 78,216 | | 79,018 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 170,064 |
| 12 | | 802 | 78,216 | | 79,018 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 170,064 |
| 13 | | 802 | 78,216 | 12,839 | 91,857 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 157,225 |
| 14 | | 802 | 78,216 | 28,401 | 107,419 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 141,663 |
| 15 | | 802 | 78,216 | 10,275 | 89,293 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 159,789 |
| 16 | | 802 | 78,216 | 98,033 | 177,051 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 72,031 |
| 17 | | 802 | 78,216 | 92,500 | 171,518 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 77,564 |
| 18 | | 802 | 78,216 | 95,465 | 174,483 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 74,599 |
| 19 | | 802 | 78,216 | 28,160 | 107,178 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 141,904 |
| 20 | | 802 | 78,216 | 9,314 | 88,332 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 160,750 |
| 21 | | 802 | 78,216 | | 79,018 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 170,064 |
| 22 | | 802 | 78,216 | | 79,018 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 170,064 |
| 23 | | 802 | 78,216 | 12,839 | 91,857 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 157,225 |
| 24 | | 802 | 78,216 | 28,401 | 107,419 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 141,663 |
| 25 | | 802 | 78,216 | 10,275 | 89,293 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 159,789 |
| 26 | | 802 | 78,216 | | 79,018 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 170,064 |
| 27 | | 802 | 78,216 | | 79,018 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 170,064 |
| 28 | | 802 | 78,216 | 12,127 | 91,145 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 157,937 |
| 29 | | 802 | 78,216 | 26,193 | 205,211 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 43,871 |
| 30 | | 802 | 78,216 | 101,815 | 180,833 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 68,249 |
| 31 | | 802 | 78,216 | 83,339 | 162,357 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 86,725 |
| 32 | | 802 | 78,216 | | 79,018 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 170,064 |
| 33 | | 802 | 78,216 | 12,839 | 91,857 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 157,225 |
| 34 | | 802 | 78,216 | 28,401 | 107,419 | 179,642 | 13,718 | 1,500 | 54,222 | | 249,082 | 141,663 |
| 35 | | 802 | 78,216 | | 79,018 | 179,642 | 13,718 | 1,500 | 54,222 | 187,515 | 436,597 | 357,579 |
| | 1,069,907 | 24,521 | 2,399,348 | 840,817 | 4,334,593 | 5,389,260 | 411,540 | 45,000 | 1,626,660 | 187,515 | 7,659,975 | 3,325,382 |

6 Inland Charges up to the Shipment on Vessels

| <u>Item</u> | <u>Charge (₹/t)</u> | <u>Remarks</u> |
|-------------------------------------|---------------------|---|
| 1. Coolies' charge Ex-Godown | 90 | Unloading from truck visual inspection and storing, mixing & blending, weighing, bagging & sieving. |
| 2. Fumigation | 5 | |
| 3. Purchase of new jute bag | 55 | New bag 235- Trade-in 180- |
| 4. Loading cargo boat charge | 30 | |
| 5. Cargo boat transportation charge | 50 | |
| 6. Loading on vessel | 20 | |
| 7. Commission to middleman | 25 | |
| 8. Insurance for stored inventory | 15 | |
| Others | 10 | |
| | <hr/> 300 <hr/> | |

7 Economic Export Parity Price of Milled Rice*1

| | |
|---|-------------------------|
| 1. FOB Bangkok*2 | US\$ 225 |
| 2. FOB Bangkok in Baht's (\$1 = <u>฿26.85</u>)*3 | ฿ 6,041 |
| 3. Handling Charge at the Port*4 | ฿ 300 |
| 4. Overland Freight from The Project Sites to the Port*5 | ฿ 225 |
| Export Parity Price at Project Site | <u>฿ 5,516</u> ===== |

Note:

- (1) *1 Unit is bahts per metric ton unless otherwise specified.
- *2 Average FOB price (November 14, 1984, by Rice Committee Board of Trade of Thailand) weighted by PWO's actual export volume in 1983.
- *3 Shadow exchange rate by Exchange Quotations at 5, December 1984 in Tokyo foreign exchange market.
- *4 See No. 5
- *5 Average freight by E.T.O. (Express Transport Organization) weighted by distance from each project site.
- (2) Export premium, export duty and municipal tax on milled rice export are excluded (see 13-1-4, 11)).

8 Project Cash Flow (Economic Evaluation)

Alternative I

(Unit: \$1,000)

| Year | C o s t | | | | B e n e f i t | | | | | Net cash flow | | |
|------|--------------|-----------|------------|---|---------------|---------------------------|--------------------------|-------------------------------------|----------------------------|---------------|---|-----------|
| | Project cost | Land rent | O & M cost | Replacement cost of machinery & equipment | Total | Reduction in storage loss | Saving of warehouse rent | Rental revenue from storage service | Increase in export earning | | Residual value of machinery & equipment | Total |
| 1 | 5,770 | | | | 5,770 | | | | | | | ▲ 5,770 |
| 2 | 180,656 | | | | 180,656 | | | | | | | ▲ 180,656 |
| 3 | 337,825 | | | | 337,825 | | | | | | | ▲ 337,825 |
| 4 | 301,019 | | 23,012 | | 324,031 | | | | | | | ▲ 324,031 |
| 5 | 251,213 | 376 | 52,736 | | 304,325 | | | | | | | ▲ 304,325 |
| 6 | 2,973 | 583 | 55,336 | | 58,892 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 205,059 |
| 7 | | 583 | 78,216 | | 78,799 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 185,152 |
| 8 | | 583 | 78,216 | 12,316 | 91,115 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 172,836 |
| 9 | | 583 | 78,216 | 28,600 | 107,399 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 156,552 |
| 10 | | 583 | 78,216 | 9,460 | 88,259 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 175,692 |
| 11 | | 583 | 78,216 | | 78,799 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 185,152 |
| 12 | | 583 | 78,216 | | 78,799 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 185,152 |
| 13 | | 583 | 78,216 | 13,040 | 91,839 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 172,112 |
| 14 | | 583 | 78,216 | 28,844 | 107,643 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 156,308 |
| 15 | | 583 | 78,216 | 10,435 | 89,234 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 174,717 |
| 16 | | 583 | 78,216 | 99,564 | 178,363 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 85,588 |
| 17 | | 583 | 78,216 | 93,945 | 172,744 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 91,207 |
| 18 | | 583 | 78,216 | 96,956 | 175,755 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 88,196 |
| 19 | | 583 | 78,216 | 28,600 | 107,399 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 156,552 |
| 20 | | 583 | 78,216 | 9,460 | 88,259 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 175,692 |
| 21 | | 583 | 78,216 | | 78,799 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 185,152 |
| 22 | | 583 | 78,216 | | 78,799 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 185,152 |
| 23 | | 583 | 78,216 | 13,040 | 91,839 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 172,112 |
| 24 | | 583 | 78,216 | 28,844 | 107,643 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 156,308 |
| 25 | | 583 | 78,216 | 10,435 | 89,234 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 174,717 |
| 26 | | 583 | 78,216 | | 78,799 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 185,152 |
| 27 | | 583 | 78,216 | | 78,799 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 185,152 |
| 28 | | 583 | 78,216 | 12,316 | 91,115 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 172,836 |
| 29 | | 583 | 78,216 | 128,164 | 206,963 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 56,988 |
| 30 | | 583 | 78,216 | 103,405 | 182,204 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 81,747 |
| 31 | | 583 | 78,216 | 84,640 | 163,439 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 100,512 |
| 32 | | 583 | 78,216 | | 78,799 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 185,152 |
| 33 | | 583 | 78,216 | 13,040 | 91,839 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 172,112 |
| 34 | | 583 | 78,216 | 28,844 | 107,643 | 190,815 | 13,718 | 1,500 | 57,918 | | 263,951 | 156,308 |
| 35 | | 583 | 78,216 | | 78,799 | 190,815 | 13,718 | 1,500 | 57,918 | 190,443 | 454,394 | 375,595 |
| | 1,079,456 | 17,866 | 2,399,348 | 853,948 | 4,350,618 | 5,724,450 | 411,540 | 45,000 | 1,737,540 | 190,443 | 8,108,973 | 3,758,355 |

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