

#### 4-5 Basic Design

The basic design of the facilities and equipment presented hetherto is as follows.

#### 4-5-1 Facilities

(1) Scale

| Item                                       | Specifications  | Area                |
|--|-----------------|---------------------|
| Mechanics training/repair workshop         | 12.4m x 12.0m   | 148.8m <sup>2</sup> |
| Mechanics storage room                     | 8.2m x 7.0m     | 57.4m <sup>2</sup>  |
| Office (Joint-use)                         | 6.0m x 5.0m     | 30.0m <sup>2</sup>  |
| Fishing gear training/development workshop | 8.4m x 12.0m    | 100.8m <sup>2</sup> |
| Fishing gear storage room                  | 6.2m x 7.0m     | 43.4m <sup>2</sup>  |
| Lavatory, etc.                             |                 |                     |
| ground floor total                         | (24.4m x 19.0m) | 463.6m <sup>2</sup> |
| Lecture/conference room                    | 8.2m x 7.0m     | 57.4m <sup>2</sup>  |
| Training materials room                    | 4.0m x 5.0m     | 20.0m <sup>2</sup>  |
| Specialists' office                        | 4.0m x 5.0m     | 20.0m <sup>2</sup>  |
| Dormitory room                             | 4.2m x 5.3m     | 22.26m <sup>2</sup> |
| Dormitory room                             | 4.0m x 5.3m     | 21.2m <sup>2</sup>  |
| Corridor, stairway, etc.                   |                 | 29.94m <sup>2</sup> |
| first floor total                          | (24.4m x 7.0m)  | 170.8m <sup>2</sup> |
| Total area                                 |                 | 634.4m <sup>2</sup> |

(2) Structure

| Item       | Specifications  |
|------------|---|
| 1 Workshop | Rigid steel-frame 1-story structure; posts: steel square pipes; beams: H-type steel girders |
| 2 Rooms    | Rigid steel-frame 2-story structure; posts: steel square pipes; beams: H-type steel girders |

(3) Utilities

| Item                    | Specifications   |
|-------------------------|--|
| 1 Water supply          | Wash basin (2), toilet (2), low tank and high tank (2@), shower (2), sink (4)  |
| 2 Drainage system       | For sewage, effluent, and rainwater  |
| 3 Sanitation facilities | Wash basin (2), toilet (3), sink (2), shower (2)                               |
| 4 Fire hydrant          | None. Fire extinguishers provided.   |
| 5 Electricity           | Lighting (fluorescent and incandescent lights), power outlets                  |
| 6 Telephone lines       | Telephone lines, interphones, wiring fixtures                                  |
| 7 Air-conditioning      | None. Ceiling propellor fans in rooms and ceiling ventilation fan in lavatory. |

(4) Mechanics training/repair workshop equipment

① Apparatuses

| No. | Item                 | Specifications  | Qty     |
|-----|----------------------|---|---------|
| 1   | Hydraulic press      | For outboard motor crankshaft   | 1 unit  |
| 2   | Drilling machine     | 22 mm $\phi$ , 220 VAC, 1 $\phi$ , 388-mm swing, drill set: 1 mm - 22 mm $\phi$ , 1 mm up   | 1 set   |
| 3   | Tabletop grinder     | 150 mm $\phi$ , 220 VAC, 1 $\phi$ , 0.25 kW   | 1 unit  |
| 4   | Air compressor       | Air pressure: 7 kg/cm <sup>2</sup> , tank capacity: 60 l, 220 VAC, 1 $\phi$ , 0.4 kW, air hose with hose band L 15 m, 6.3 mm $\phi$ , 9.5 mm $\phi$ , 12.7 mm $\phi$ , chuck included | 1 set   |
| 5   | Vice                 | 100 mm  | 2 units |
| 6   | Vice                 | 150 mm  | 2 units |
| 7   | Air tools            | Air gun, small and medium impact wrench, spray gun, engine cleaner pressure: 6 kg - 8 kg/cm <sup>2</sup>  | 1 set   |
| 8   | Garage jack          | 2-ton load  | 1 unit  |
| 9   | Garage jack          | 5-ton load  | 1 unit  |
| 10  | Electric welder      | 220 VAC, 100 A, 20 m cab tire cable, cable holder x 1, welder's mask x 1, leather gloves x 2, residue-removing hammer x 1   | 1 set   |
| 11  | Gas welder           | French-type gas cylinder connection, twin gas hose x 1, cutting torch x 1, welding torch x 1, oxygen gas regulator x 1, acetylene gas regulator x 1, cutting tip x 1, welding tip x 1 | 1 set   |
| 12  | Test tank            | For outboard motor operation test   | 1 set   |
| 13  | Heavy-duty workbench | W 1,800 x D 900 x H 740 (mm)  | 2 units |
| 14  | Heavy bin rack       | W 950 x D 300 x H 1,280 (mm) 30 boxes   | 2 units |

| No. | Item                                  | Specifications                                  | Qty      |
|-----|---------------------------------------|---|----------|
| 15  | Tool and parts shelf                  | W 910 x D 485 x H 1,815 (mm)                    | 2 units  |
| 16  | Net storage shelf                     | W 1,800 x D 750 x H 1,800 (mm) (4 shelves)      | 2 units  |
| 17  | Misc. shelf                           | W 580 x D 600 x H 800 (mm)                      | 2 units  |
| 18  | Tool shelf                            | W 1,800 x D 450 x H 1,800 (mm) (6 shelves)      | 2 units  |
| 19  | Portable generator                    | 100 V or 220 V, 50 Hz, 2.5 KVA, 8.5 l fuel tank | 1 set    |
| 20  | General-purpose vat                   | W 600 x D 480 x H 150 (mm)                      | 6 units  |
| 21  | Cart                                  | L 680 x D 370 x H 920 (mm) (4 shelves)          | 3 units  |
| 22  | Hand cart                             | L 1,000 x D 710 x H 920 (mm) (4 shelves)        | 3 units  |
| 23  | Hydraulic test pump                   | 100 kg/cm <sup>2</sup> , hose included          | 1 unit   |
| 24  | Cable reel                            | 220 VAC, 1 $\phi$ , 220 m cable                 | 2 units  |
| 25  | Chain block                           | 1 t x 2.5 m                                     | 2 units  |
| 26  | Chain block                           | 2 t x 3.0 m                                     | 1 unit   |
| 27  | Stepladder                            | 900 mm & 1,800 mm                               | 1 unit   |
| 28  | Valve seat grinder                    | 28 mm - 60 mm capacity, 220 V, 1 $\phi$         | 1 unit   |
| 29  | Battery charger                       | 12 VDC - 24 VDC output; 220 V, 1 $\phi$ input   | 1 unit   |
| 30  | Fishing net repair bench              | 25 x D 1,500 x H 800 (mm)                       | 2 units  |
| 31  | Repair bench                          | W 1,800 x D 900 x H 740 (mm)                    | 2 units  |
| 32  | Drilling machine bench, grinder bench | W 380 x D 470 x H 720 (mm)                      | 1 each   |
| 33  | Repair lamp                           | Based on manufacturer's specifications          | 6 units  |
| 34  | Fire extinguisher                     | Dry chemical                                    | 10 units |

② Measuring instruments

| No. | Item                           | Specifications                                | Qty                |
|-----|--------------------------------|---|--------------------|
| 1   | Dial gauge                     | JIS-type, 0.01 mm                             | 4 units            |
| 2   | Cylinder gauge                 | JIS B7515 No. 4 & 5                           | 1 each             |
| 3   | External micrometer            | 0 - 25, 25 - 50, 50 - 75, 75 - 100, 100 - 125 | 1 each             |
| 4   | Internal micrometer            | 0 - 25, 25 - 50, 50 - 75, 75 - 100, 100 - 125 | 1 each             |
| 5   | Digital non-contact tachometer | 0 rpm - 30,000 rpm                            | 2 units            |
| 6   | Calipers                       | 200 mm and 300 mm                             | 2 each             |
| 7   | Steel ruler                    | 150 mm, 300 mm, 600 mm, and 1,000 mm          | 1 each             |
| 8   | Steel tape measure             | 5 m   | 1 unit             |
| 9   | Feeler gauge                   | 50 mm x 10 blades<br>150 mm x 25 blades       | 2 units<br>2 units |
| 10  | Box surface plate              | 400 mm x 400 mm                               | 1 unit             |
| 11  | Outside calipers               | 150 mm and 200 mm                             | 1 each             |
| 12  | Tester                         | 12 VAC - 1,000 VAC, 0.3 VDC - 1,000 VDC       | 2 units            |
| 13  | Clamp meter                    | AC 300 A, 600 V, 1 K $\Omega$                 | 1 unit             |
| 14  | Inner calipers                 | 150 mm  | 1 unit             |
| 15  | Steel compass                  | 150 mm  | 1 unit             |
| 16  | Leaf gauge                     | Measuring range: 1 mm - 15 mm                 | 2 units            |
| 17  | Try square                     | H 200 x W 30 x T 3 (mm)                       | 1 unit             |

| No. | Item            | Specifications  | Qty     |
|-----|-----------------|---|---------|
| 18  | Precision block | L 100 x H 58 x T 35 (mm)  | 1 unit  |
| 19  | Scribing block  | H 200 x L 70 x H 25 (mm)  | 1 unit  |
| 20  | Straight edge   | 200 mm and 600 mm   | 1 each  |
| 21  | Scriber         |   | 2 units |
| 22  | Ignition meter  | AC: 0 - 25, 2 - 50, 0 - 250, 0 - 500 V;<br>DC: -5 - 25, -10 - 50, -50 - 250, -100 - 500 V | 2 units |
| 23  | Screw gauge     | M: 0.25 - 2.5 pitch x 28, 1.0 - 11.5 pitch x 22   | 1 set   |

### ③ Tools

| No. | Item                      | Specifications  | Qty     |
|-----|---------------------------|---|---------|
| 1   | File                      | 250 mm with handle, flat file x 2, semi-round file x 2, round file x 2, triangular file x 2 | 1 set   |
| 2   | File set                  | 184 mm x 84 mm, fine, 10-file set   | 2 sets  |
| 3   | Milling vice              | Max. vice width: 60 mm  | 1       |
| 4   | File cleaning brush       | 0.3 steel, approx. 270 L x 25 B   | 3       |
| 5   | Screwdriver set           | Plastic handle, 12-screwdriver set  | 2 sets  |
| 6   | Socket wrench set         | 7 mm - 23 mm, 13-wrench set   | 2 each  |
| 7   | Gear puller               | Range: 40 x 75, 80 x 200, 120 x 300   | 1 each  |
| 8   | T wrench                  | 19-wrench set: 6, 7, 8, 9, 10, 11, 12, 13, 14, 17, 19, 21, 22, 23, 24, 27, 29, 30, 32 (mm)  | 2 sets  |
| 9   | 45° ring spanner          | 6-spanner set   | 2 sets  |
| 10  | Double-ended spanner      | 20-spanner set (5.5 mm - 36 mm)   | 5 sets  |
| 11  | Single-ended spanner      | 14-spanner set (5.5 mm - 36 mm)   | 1 set   |
| 12  | Ring wrench               | 6-wrench set (8 x 9, 10 x 12, 11 x 13, 12 x 14, 14 x 17)                                    | 2 sets  |
| 13  | Single-ended ring spanner | 11-spanner set (10 mm - 36 mm), open end angle: 45°   | 1 set   |
| 14  | Combination pliers        | 150 mm, 200 mm, and 250 mm  | 2 each  |
| 15  | Water pump pliers         | 250 mm  | 2 units |
| 16  | Vice pliers               | 250 mm  | 5 units |
| 17  | Pliers                    | 150 mm and 200 mm   | 1 each  |
| 18  | Long-nose pliers          | 150 mm  | 5 units |

| No. | Item                               | Specifications                                | Qty     |
|-----|------------------------------------|---|---------|
| 19  | Penetrating screwdriver            | ±150 mm, 200 mm, and 250 mm                   | 5 each  |
| 20  | Interchangeable screwdriver shanks | 6-shank set                                   | 1 set   |
| 21  | Allen wrench                       | No. 508, M12                                  | 1 each  |
| 22  | C vice                             | 100 mm and 200 mm                             | 2 each  |
| 23  | Flat chisel                        | 16 mm and 25 mm                               | 5 each  |
| 24  | Crosscut chisel                    | 6 mm and 9 mm                                 | 5 each  |
| 25  | Pin punch set                      | L 150 mm, 8-punch set                         | 5 sets  |
| 26  | Center punch set                   | 12-punch set                                  | 2 sets  |
| 27  | Blank punch                        | 16-punch set (3 mm - 30 mm)                   | 2 sets  |
| 28  | Numerical punch                    | 6 mm  | 2 sets  |
| 29  | Letter punch                       | 6 mm  | 2 sets  |
| 30  | Single-hand hammer                 | 1/4 lb, 1/2 lb, 1 lb, and 1 1/2 lb            | 2 each  |
| 31  | Copper hammer                      | 1 kg  | 2 units |
| 32  | Plastic hammer                     | 1 kg  | 2 units |
| 33  | Blacksmith hammer                  | 2.7 kg and 5.4 kg                             | 2 each  |
| 34  | Hand tap set                       | M3 - M6, M6 - m <sup>24</sup> , double handle | 1 each  |
| 35  | Round dice set                     | M3 - M6, M6 - m <sup>24</sup> , double handle | 1 each  |
| 36  | Metal-cutting saw                  | 250 mm, 10 dozen spare blades included        | 2 sets  |
| 37  | Grease gun                         | Type 8  | 1 set   |
| 38  | Oil syringe                        | Type 600                                      | 2 sets  |



| No. | Item               | Specifications  | Qty     |
|-----|--------------------|---|---------|
| 39  | Rotary pump        | 25 mm   | 2 sets  |
| 40  | Pipe wrench        | 200 mm and 250 mm   | 1 each  |
| 41  | Pipe curter        | No. 2, spare blade set included   | 2 sets  |
| 42  | Pipe vice          | Double stand  | 1 unit  |
| 43  | Reverse tap set    |   | 1 set   |
| 44  | Torque wrench      | 1/2" Sq., 0 kg - 1,900 kg/cm, L 490 mm<br>*5/8" socket (9.5 mm) ratchet type 0 kg - 1 kg/cm | 1 set   |
| 45  | Socket adapter     | 1/2" x 3/8" and 1/2" x 3/4"   | 2 each  |
| 46  | Scraper            |   | 2 units |
| 47  | Oil supplier       | Polyethylene 180 cc and 2L  | 3 each  |
| 48  | Monkey wrench      | 200 mm and 300 mm   | 1 each  |
| 49  | Soldering iron     | Compact, battery-powered type   | 2 units |
| 50  | Solder (w/resin)   | 1.5 mm $\phi$ and 2.0 mm $\phi$   | 2 each  |
| 51  | Soldering paste    | 50 g  | 1 unit  |
| 52  | Wooden level gauge | L 300 mm  | 1 unit  |
| 53  | Disk grinder       | 100 mm $\phi$ , 150 mm $\phi$ , 220 V 1 $\phi$ , spare brush included                       | 1 each  |
| 54  | Disk grinder disk  | 100 mm $\phi$ x 25, 150 mm $\phi$ x 25  | 2 each  |
| 55  | Cloth material     | White, 5 kg   | 6 units |
| 56  | Work gloves        |   | 10 doz. |
| 57  | Bearing pulley     |   | 1 unit  |
| 58  | Drum handle        |   | 1 unit  |

| No. | Item             | Specifications  | Qty     |
|-----|------------------|---|---------|
| 59  | Oil stone        | W 25 mm x T 50 mm x L 150 mm                                | 2 units |
| 60  | Safety glasses   |   | 1 doz.  |
| 61  | Nipper           | L 150 mm  | 1 unit  |
| 62  | Wooden hammer    | 50 mm $\phi$ and 75 mm $\phi$                               | 1 each  |
| 63  | Plastic welder   | 100 VAC, 280 W, 300°C                                       | 1 unit  |
| 64  | Nylon sling      | 25 mm x L 3,000 mm and 50 mm x L 3,000 mm                   | 2 each  |
| 65  | Snap ring pliers | 6 mm - 25 mm and 25 mm - 50 mm, both for inside and outside | 1 each  |

\*To be confirmed in the implementation.

④ Tools for gasoline outboard motors and the refrigerator truck

| No. | Item                     | Specifications   | Qty     |
|-----|--------------------------|--|---------|
| 1   | Crank installation tools | According to manufacturer's specifications                               | 1 set   |
| 2   | Crank jig set            | According to manufacturer's specifications                               | 1 set   |
| 3   | Special tool set A       | According to manufacturer's specifications, for intermediate repairs     | 3 sets  |
| 4   | Standard tool kit        | According to manufacturer's specifications                               | 5 sets  |
| 5   | Gear oil pump            | According to manufacturer's specifications, also usable as a grease pump | 1 unit  |
| 6   | Test propeller           | According to manufacturer's specifications                               | 2 each  |
| 7   | Timing tester            | According to manufacturer's specifications                               | 2 units |
| 8   | IG coil tester           | According to manufacturer's specifications                               | 2 units |
| 9   | Timing light             | According to manufacturer's specifications                               | 2 units |
| 10  | Tire lever               | According to manufacturer's specifications, medium and large sizes       | 2 each  |
| 11  | Tire patch kit           | According to manufacturer's specifications, vices included               | 1 each  |
| 12  | Special tool kit AA      | According to manufacturer's specifications, for minor repairs            | 10 sets |
| 13  | Gear oil                 | 200 1 drum   | 4 drums |
| 14  | Plug cleaner             | 200 1 drum   | 1 drum  |
| 15  | Stud bolt remover        |  | 1 set   |
| 16  | CDI Tester               | According to manufacturer's specifications                               | 1 set   |

⑤ Tools for diesel outboard motors

| No. | Item                           | Specifications | Qty      |
|-----|--------------------------------|----------------|----------|
| 1   | Test tool set (A)              |                |          |
|     | Tachometer                     |                | 4 units  |
|     | Thermometer                    |                | 4 units  |
|     | Temperature-sensing element    |                | 12 units |
| 2   | Maintenance tool set (B)       |                |          |
|     | Pipe                           |                | 4 units  |
|     | Gauge                          |                | 4 units  |
|     | Grease pump                    |                | 4 units  |
|     | Coupling                       |                | 4 units  |
|     | Filter wrench                  |                | 4 units  |
|     | Strainer wrench                |                | 4 units  |
|     | Flywheel tool                  |                | 4 units  |
|     | Fuel injection adjustment tool |                | 4 units  |
|     | Injector removal tool          |                | 4 units  |
|     | Valve adjustment tool          |                | 4 units  |
|     | Gear adjustment tool #1        |                | 4 units  |
|     | Gear adjustment tool #2        |                | 4 units  |
|     | Clamp #18                      |                | 12 units |
|     | Pump                           |                | 4 units  |

| No. | Item                          | Specifications | Qty     |
|-----|-------------------------------|----------------|---------|
| 3   | Power head tool set (C)       |                |         |
|     | Gauge                         |                | 2 units |
|     | Injector tool                 |                | 2 units |
|     | Box                           |                | 2 units |
|     | Seal holder readjustment tool |                | 2 units |
| 4   | Bottom tool set (D)           |                |         |
|     | Front gear tool               |                | 2 units |
|     | Rear gear tool                |                | 2 units |
|     | Gear mounting tool            |                | 2 units |
|     | Bearing removal tool (A)      |                | 2 units |
|     | Bearing tool (A)              |                | 2 units |
|     | Seal tool (A)                 |                | 2 units |
|     | Bearing tool (B)              |                | 2 units |
|     | Sealing tool (B)              |                | 2 units |
|     | Bearing tool (C)              |                | 2 units |
|     | Front gear tool               |                | 2 units |
|     | Rear gear tool                |                | 2 units |
|     | Tool 1                        |                | 2 units |
|     | Tool 2                        |                | 2 units |
|     | Tool 3                        |                | 2 units |

| No. | Item                       | Specifications | Qty     |
|-----|----------------------------|----------------|---------|
|     | Spacer (A)                 |                | 2 units |
|     | Tool                       |                | 2 units |
|     | Indicator                  |                | 2 units |
|     | Tool 5                     |                | 2 units |
|     | Tool 6                     |                | 2 units |
|     | M6 bolt x 20 plate         |                | 8 units |
|     | Nut M10                    |                | 2 units |
| 5   | Fuel injection device tool |                |         |
|     | Cam box                    |                | 2 units |
|     | Injector set               |                | 2 units |
| 6   | Test propeller             |                | 2 units |

⑥ FRP repair materials

| No. | Item                  | Specifications                  | Qty      |
|-----|-----------------------|---------------------------------|----------|
| 1   | Resin                 | 20 kg/can                       | 2 units  |
| 2   | Gel coat              | Orange and white, 20 kg/can     | 2 each   |
| 3   | Glass mat             | 600 gm <sup>2</sup> , 50 m roll | 1 unit   |
| 4   | Glass cloth           | 580 gm <sup>2</sup> , 47 m roll | 1 unit   |
| 5   | Curing agent adhesive | 5 kg/can                        | 2 units  |
| 6   | Curing agent          | 5 kg/can                        | 1 unit   |
| 7   | Rubber gloves         |                                 | 20 units |
| 8   | FRP maintenance kit   | Kit A                           | 20 kits  |

(5) Fishing gear training/development workshop equipment

① Carpenter's tools

| No. | Item                              | Specifications   | Qty     |
|-----|-----------------------------------|--|---------|
| 1   | Drill                             | 12 mm, 15 mm, 18 mm $\phi$                             | 1 set   |
| 2   | Power saw                         | 185 mm $\phi$ , 220 V, 1 $\phi$                        | 2 units |
| 3   | Power drill                       | 30 mm $\phi$ , 220 V, 1 $\phi$                         | 2 units |
| 4   | Power drill bit                   | 3 mm - 24 mm $\phi$ , for wood, 22 bits                | 1 set   |
| 5   | Power planer                      | W 120 mm, 220 V, 1 $\phi$                              | 1 unit  |
| 6   | Wood file                         | L 250 mm, flat and semi-round                          | 1 each  |
| 7   | Pliers                            | L 150 mm and 200 mm                                    | 1 each  |
| 8   | Planer                            |  | 1 each  |
| 9   | Single-hand hammer (double-ended) | 3/4 lb, 1 lb, and 1 1/2 lb                             | 1 each  |
| 10  | Hammer (double-ended)             | 1 lb and 5 lb  | 1 each  |
| 11  | Wire cutter                       | 13 mm $\phi$ , L 750 mm, spare cutting blades included | 1 unit  |
| 12  | Blade screwdriver                 | L 150 mm, 200 mm, and 250 mm                           | 1 each  |
| 13  | Phillips screwdriver              | L 150 mm and 200 mm                                    | 1 each  |
| 14  | Monkey wrench                     | L 250 mm, 300 mm, and 375 mm                           | 1 each  |



| No. | Item                       | Specifications  | Qty    |
|-----|----------------------------|---|--------|
| 15  | Disk grinder               | 150 mm, 220 V 1 $\phi$ , 25 spare disks included        | 1 set  |
| 16  | Flat chisel                | W 20 mm x L 200 mm                                      | 1 unit |
| 17  | Pipe wrench                | L 300 mm and 600 mm                                     | 1 each |
| 18  | Nail puller (flat crowbar) | L 390 mm and 450 mm                                     | 2 each |
| 19  | Wire cutter                | L 120 mm  | 1 unit |
| 20  | Perforator (ring auger)    | 8 mm, 9 mm, 12 mm, and 15 mm $\phi$                     | 1 each |
| 21  | NT cutter                  | Feet-type, spare cutting blades included (Min. 5 dozen) | 5 sets |
| 22  | Chisel                     | 7-chisel set (mm): W 6, 9, 12, 15, 18, 21, 24           | 1 set  |

② Work tools

| No. | Item           | Specifications                          | Qty      |
|-----|----------------|---|----------|
| 1   | Spike          | L 350 mm wooden and L 150 mm steel      | 8 each   |
| 2   | Snatch block   | 150 mm $\phi$ , one-wheel and two-wheel | 1 each   |
| 3   | Wooden block   | 100 mm $\phi$ , one-wheel and two-wheel | 1 each   |
| 4   | Shackle        | SD-20                                   | 10 units |
| 5   | Sea knife      | 200 mm blade, case included             | 10 units |
| 6   | Measuring tape | Glass fiber, 50 m                       | 1 unit   |
| 7   | Measuring tape | Glass fiber, 5 m                        | 2 units  |
| 8   | Net scissors   |   | 10 units |
| 9   | Work gloves    | Thick cloth material                    | 2 doz.   |

(6) Furnishings

| No. | Item   | Specifications  | Qty  |
|-----|--|---|--|
| 1   | Lecture/conference room<br>Classroom tables<br>Classroom chairs<br>Long table (collapsible type)<br>Collapsible chairs<br>Blackboard<br>Portable blackboard<br>Bookshelf | 5<br>330 x 340<br>1,500 x 600 x 700<br>Pipe construction<br>1,200 x 900<br>1,200 x 900<br>2-shelf, no glass door, 1,200 x 400 x 880 | 1 unit<br>2 units<br>7 units<br>18 units<br>1 unit<br>1 unit<br>1 unit |
| 2   | Training materials room<br>Printer stand<br>Collapsible long table   | 800 x 700 x 655<br>1,800 x 450  | 1 unit<br>1 unit   |
| 3   | Specialists' office<br>Office desks<br>Chairs<br>File cabinet<br>Equipment boxes   | 1,400 x 600 x 700<br>Vinyl type, 400 x 380<br>Steel door, 1,200 x 400 x 880<br>For 3 persons  | 3 units<br>3 units<br>1 unit<br>1 unit                                 |
| 4   | Dormitory room (for 2 rooms)<br>Beds<br>Mats<br>Lockers  | Pipe construction, 2,025 x 910 x 900<br>1,910 x 910 x 90<br>1-level, 4 lockers, 900 x 515 x 1,790                                   | 8 units<br>8 units<br>2 units  |

(7) Training equipment

| No. | Item                   | Specifications  | Qty    |
|-----|------------------------|---|--------|
| 1   | Videocassette recorder | VHF 110 - 127 V/220 - 246 V, automatic voltage conversion | 1 unit |
| 2   | Video camera           | CCIR: 625 lines, 50                                       | 1 unit |
| 3   | Video monitor          | 21-inch screen  | 1 unit |
| 4   | Overhead projector     | Stage size: 250 mm x 250 mm                               | 1 unit |
| 5   | Photocopier            | A3-size dry-type copier                                   | 1 unit |
| 6   | Typewriter             | Type size: 628 mm   | 1 unit |
| 7   | Desktop calculator     | With printer  | 1 unit |

4-5-2 Equipment

(1) FRP vessels

| No. | Item                          | Specifications  | Qty      |
|-----|-------------------------------|---|----------|
| 1   | 4.7-meter FRP fishing vessel  | Approx. dimensions L x B x D (m): 4.7 x 1.4 x 0.55,<br>Approx. weight: 95 kg, Max. capacity: 370 kg,<br>External hull panel: FRP single plate construction,<br>Special equipment: Counter-friction keel, deck<br>paneling, side deck counter-friction aluminum top,<br>anchor rope, Engine: 8 hp outboard motor   | 50 units |
| 2   | 7.1-meter FRP fishing vessel  | Approx. dimensions L x B x D (m): 7.1 x 1.7 x 0.65,<br>Approx. weight: 245 kg, Max. capacity: 920 kg,<br>External hull panel: FRP single plate construction,<br>Special equipment: Counter-friction keel, deck<br>paneling, side deck counter-friction aluminum top,<br>anchor rope, Engine: 40 hp gasoline outboard motor<br>or 27 hp diesel outboard motor  | 15 units |
| 3   | 12.8-meter FRP fishing vessel | Approx. dimensions L x B x D (m): 12.8 x 2.0 x 1.1,<br>Approx. weight: 700 kg, Max. capacity: 4,000 kg,<br>Fuel tank capacity: 40 l, Ice storage capacity:<br>0.26 m3, External hull panel: FRP single plate<br>construction, Fittings: Forward: Mooring bar x 1,<br>hatch cover x 2, drain plug x 2, mast step x 2,<br>deck panel x 1<br>Aft: Transom board x 1, motor well x 1, transom<br>pad x 1, side deck counter-friction aluminum top x 1,<br>drain cover x 1, manual bilge pump x 1, anchor and<br>rope x 1<br>Special equipment: Sail x 1, sheet x 1, rudder and<br>attachment (SUS) x 1, outboard motor handle fitting<br>x 1, Engine: 27 hp diesel outboard motor | 3 units  |
| 4   | Spare parts                   | Spare parts will be purchased by the Gambian side with<br>the loan repayment funds.   |          |

(2) Outboard motors

| No. | Item                    | Specifications   | Qty      |
|-----|-------------------------|--|----------|
| 1   | Gasoline outboard motor | 8 hp L type  | 53 units |
| 2   | Diesel outboard motor   | 27 hp L type   | 22 units |
| 3   | Spare parts             | A minimum number of essential parts for diesel outboard motors and parts not readily available will be selected. | 75 units |

## (3) Fishing nets and gear

| No. | Item                                     | Specifications   | Qty       |
|-----|--|--|-----------|
| 1   | Bottom gill net materials (For 75 units) |  |           |
|     | Nylon net material                       | 210D/27 x 140 mm, 30 mesh x 100 mm, light gray           | 75 pcs    |
|     | Nylon net material                       | 210D/18 x 120 mm, 30 mesh x 100 mm, light gray           | 38 pcs    |
|     | Nylon net material                       | 210D/12 x 100 mm, 30 mesh x 100 mm, light gray           | 38 pcs    |
|     | Nylon net material                       | Mono-Filament #28 x 150 mm, 25 mesh x 100 mm, light gray | 75 pcs    |
|     | Nylon net material                       | Mono-filament #16 x 120 mm, 30 mesh x 100 mm, light gray | 38 pcs    |
|     | Nylon net material                       | Mono-filament #16 x 100 mm, 30 mesh x 100 mm, light gray | 38        |
|     | Polyethylene rope                        | 8 mm $\phi$ x 200 m                                      | 165 coils |
|     | Nylon rope                               | 8 mm $\phi$ x 200 m                                      | 30 coils  |
|     | Float                                    | FB 132 g, 140 x 50 x 10                                  | 15,000    |
|     | Sinker                                   | SF 75 g, 30 x 20.5 x 9.5                                 | 37,500    |
|     | Buoy                                     | PE 300 mm $\phi$   | 75        |
|     | Anchor                                   | Steel, 10 kg, single barb                                | 38        |
|     | Net thread                               | Nylon 210D/48, 0.5 kg, light gray                        | 300 balls |
|     | Net thread                               | Nylon 210D/27, 0.5 kg, light gray                        | 150 balls |
|     | Net thread                               | Nylon 210D/18, 0.5 kg, light gray                        | 75 balls  |
|     | Net thread                               | Nylon 210D/12, 0.5 kg, light gray                        | 75 balls  |
|     | Net thread                               | Nylon mono-filament #16 0.5 kg                           | 150 balls |
|     | Net thread                               | Nylon mono-filament #28 0.5 kg                           | 150 balls |

| No. | Item  | Specifications  | Qty       |
|-----|---|---|-----------|
|     | Dye   | Brown 10-kg can   | 8 cans    |
|     | Dye   | Light gray 10-kg can  | 8 cans    |
| 2   | Surrounding gill net material (for 5 complete nets) |   |           |
|     | Nylon net material                                  | 210D/9 x 90 mm, 140 mesh x 100 mm, light gray                                       | 50        |
|     | Nylon net material                                  | Mono-filament #10 x 90 mm, 140 mesh x 100 mm, light gray                            | 10        |
|     | Polyethylene rope                                   | 8 mm $\phi$ x 200 m   | 40 coils  |
|     | Float   | FB 132 g, 140 x 50 x 10   | 10,000    |
|     | Sinker  | SF 75 g, 30 x 20.5 x 9.5  | 13,000    |
|     | Buoy  | PE 300 mm $\phi$  | 20        |
|     | Net thread  | Nylon 210D/27, 0.5 kg, white  | 50 balls  |
|     | Net thread  | Nylon 210D/9, 0.5 kg, light gray  | 200 balls |
|     | Net thread  | Nylon mono-filament #10 0.5 kg, light gray  | 50 balls  |
| 3   | Purse seine   |   |           |
|     | Finished net  | Length: FL250 m, Main net: Nylon 210D/18 x 50 mm,<br>Cod end: Nylon 210D/18 x 40 mm | 1         |
|     | Spare net material                                  | Materials for 3 complete nets   | For 1 net |
|     | Berth line rope                                     | Nylon cloth knit rope, 14 mm $\phi$ x 300 m   | 2 coils   |
| 4   | Stow net material (for 80 complete nets)            |   |           |
|     | Nylon net material                                  | Russell knit, no knotting, 35-mm mesh, 400 mesh x 100 m                             | 20        |
|     | Nylon rope  | 6 mm $\phi$ x 200 m   | 20 coils  |



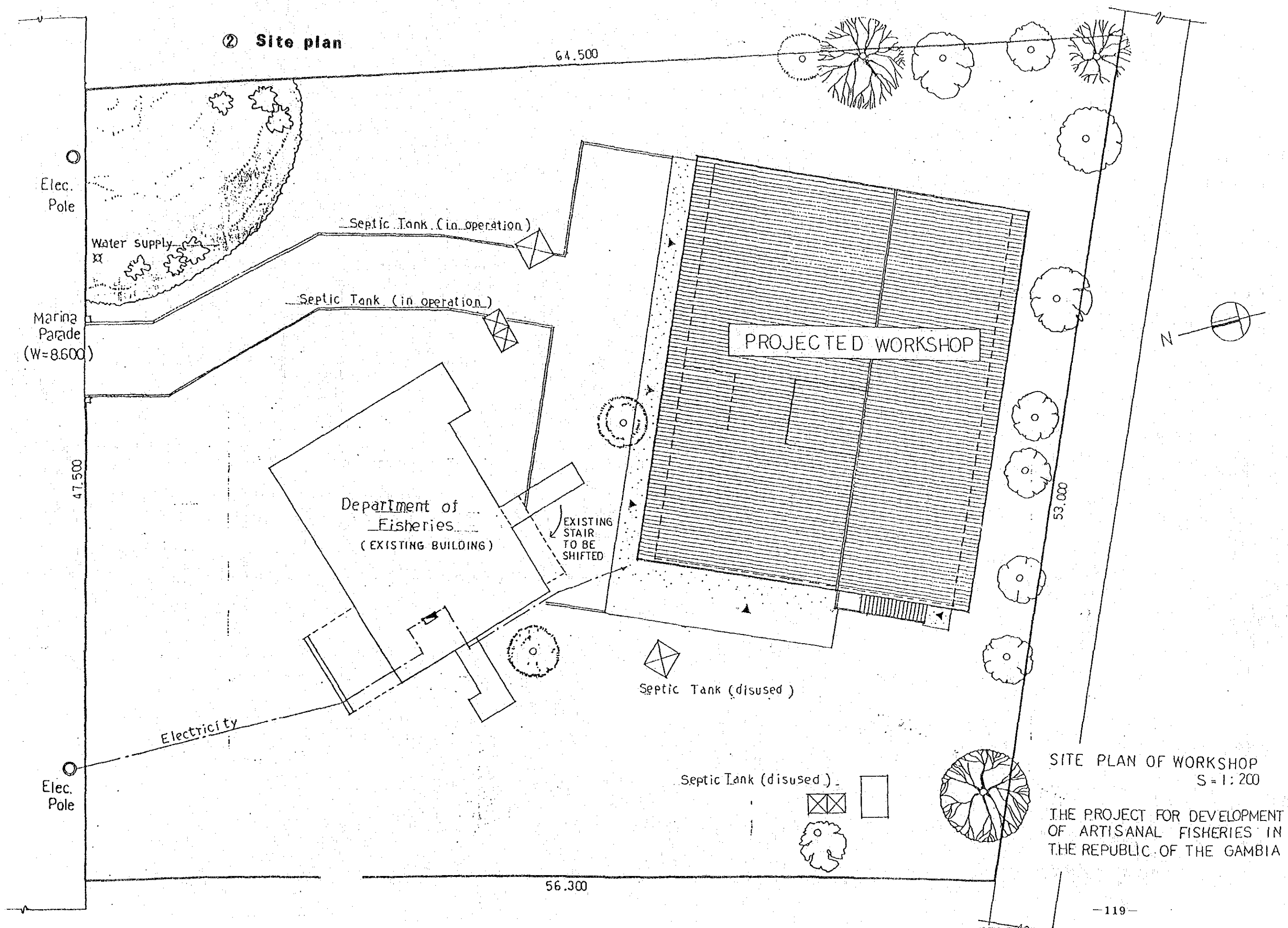
(4) FRP fishing canoe equipment

| No. | Item                      | Specifications                     | Qty      |
|-----|---------------------------|------------------------------------|----------|
| 1   | Steel spike               | 150 mm                             | 2 units  |
| 2   | Wooden spike              | 350 mm                             | 2 units  |
| 3   | Net scissors              |                                    | 2 pairs  |
| 4   | Knife w/case              |                                    | 10 pairs |
| 5   | Measuring tape            | Glass fiber tape, 50 m             | 1 units  |
| 6   | Measuring tape            | Glass fiber tape, 5 m              | 2 units  |
| 7   | Helmet                    |                                    | 10 units |
| 8   | Vinyl raincoat            | Full-length                        | 10 units |
| 9   | Rubber boots              |                                    | 10 pairs |
| 10  | Work gloves               | Thick nylon material               | 10 pairs |
| 11  | Life jacket               |                                    | 10 units |
| 12  | Net needle                | 230 mm                             | 10 units |
| 13  | Net needle                | 185 mm                             | 10 units |
| 14  | Net needle                | 160 mm                             | 10 units |
| 15  | Fish tray                 | 30 kg capacity                     | 30 units |
| 16  | Magnet compass            | Encased in box                     | 2 units  |
| 17  | Waterproof flashlight     | With 3 batteries and 5 spare bulbs | 10 units |
| 18  | Precision measuring gauge | Plastic or stainless steel         | 50 units |

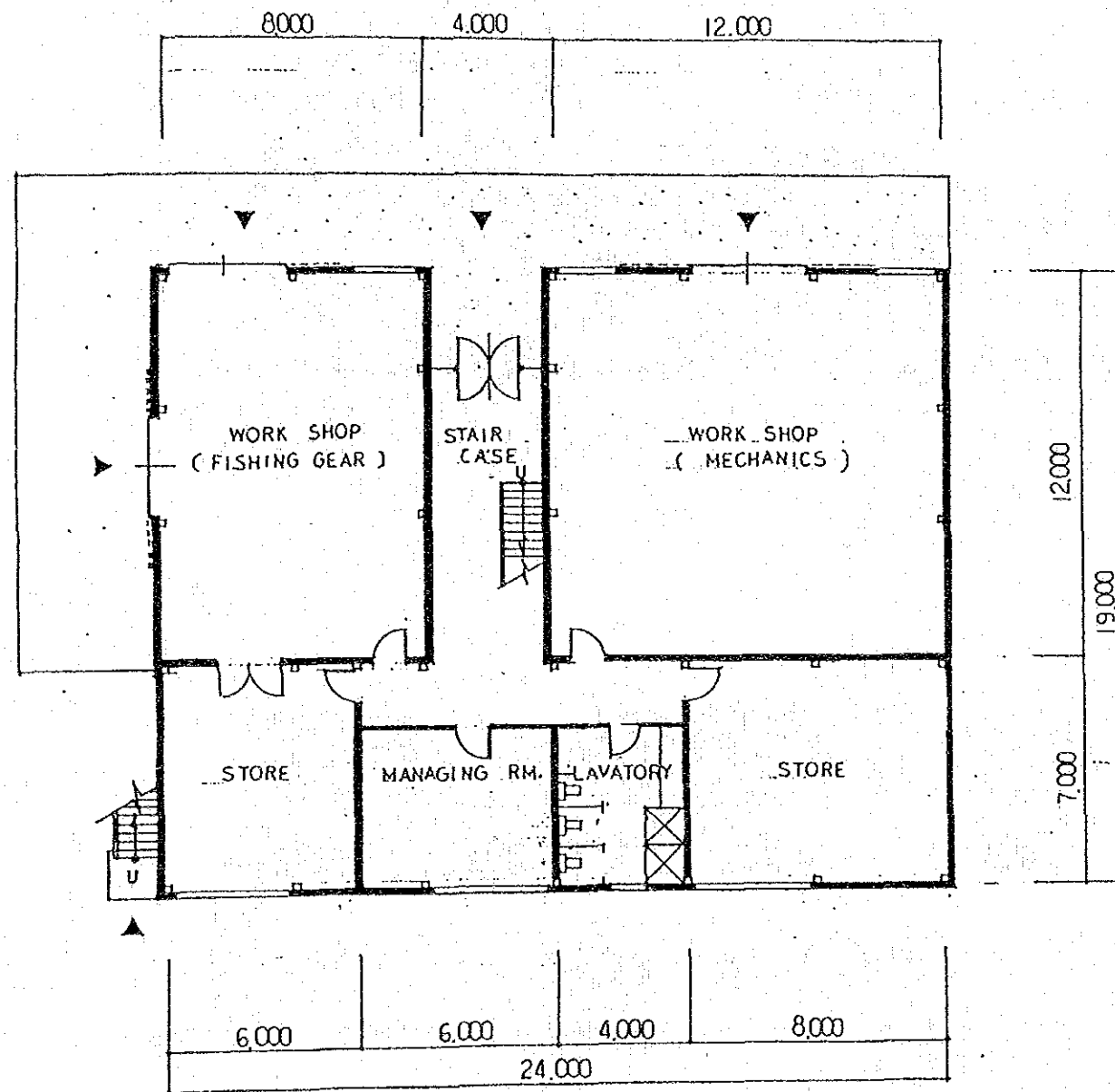
(5) Motor vehicles

| No. | Item                | Specifications   | Qty      |
|-----|---------------------|--|----------|
| 1   | Refrigerator truck  | 5-ton capacity   | 1 unit   |
| 2   | Canoe landing winch | Portable type for 2-ton canoes, 9 mm $\phi$ x 45 m wire, with hook | 10 units |
| 3   | Motorcycles         | 175 cc offroad model with carrier                                  | 12 units |
| 4   | Canoe roller bar    | 150 mm, 2-meter length, FRP or plastic construction                | 40 units |

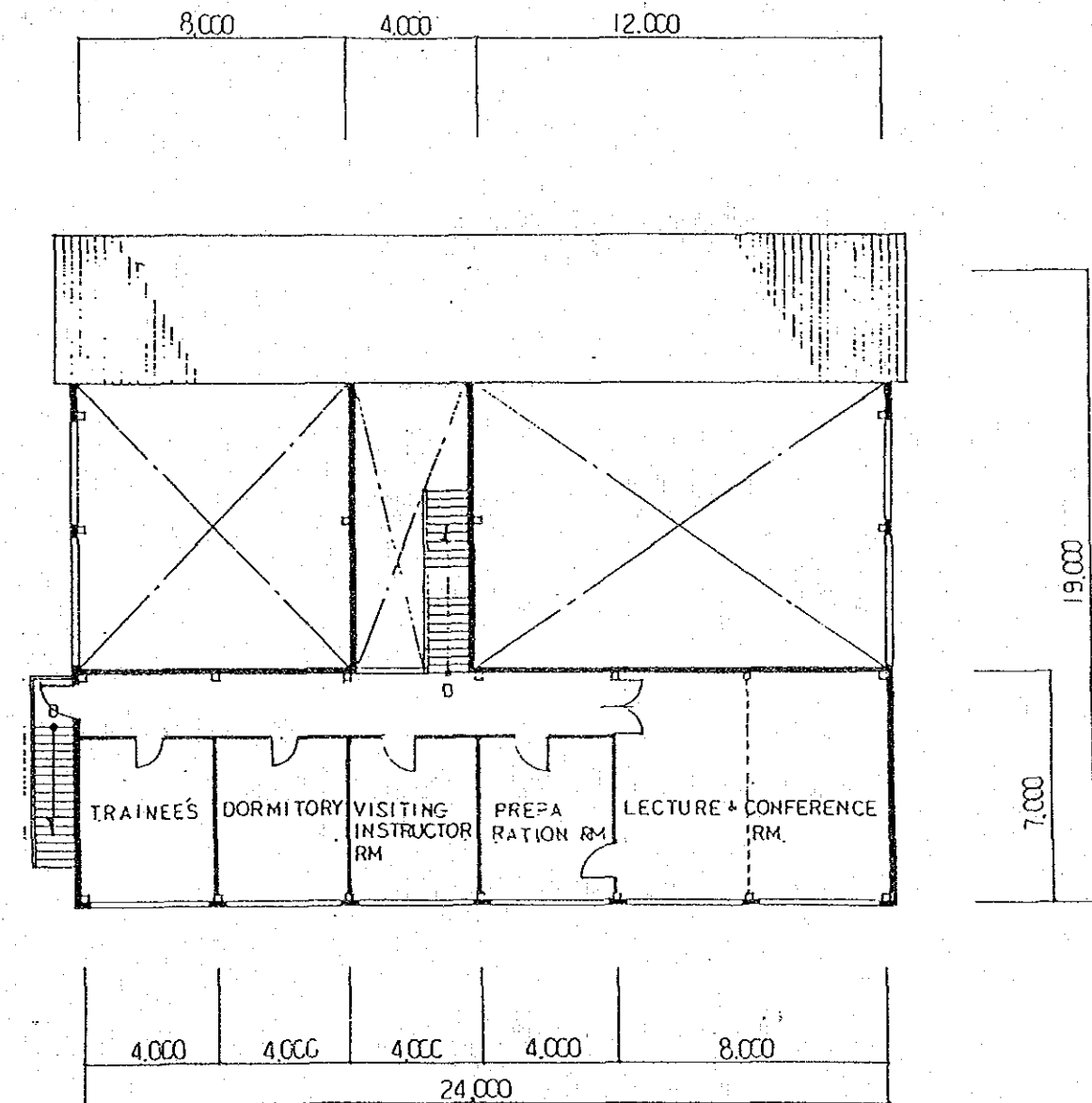
PROJECT SITE



### ③ Floor plan



GROUND FLOOR



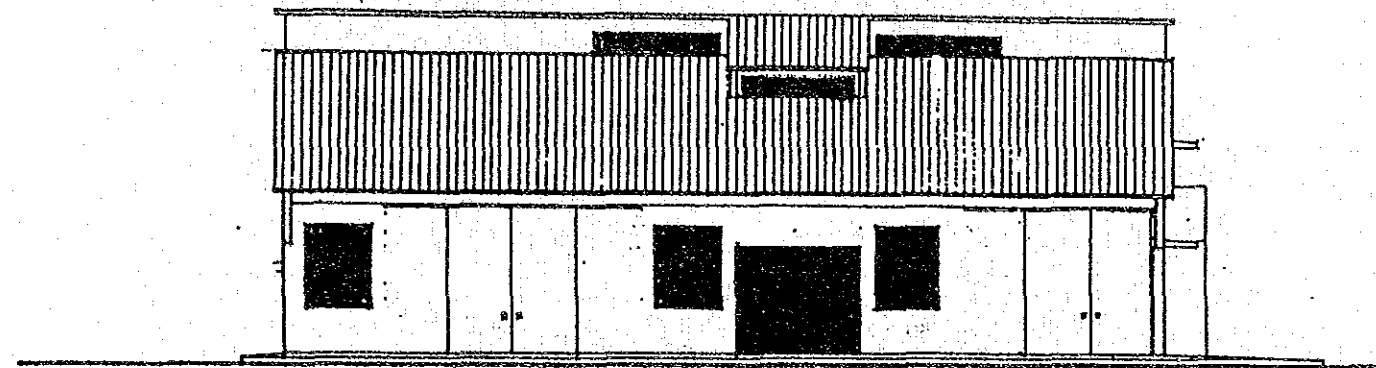
FIRST FLOOR

FLOOR PLANS OF WORKSHOP

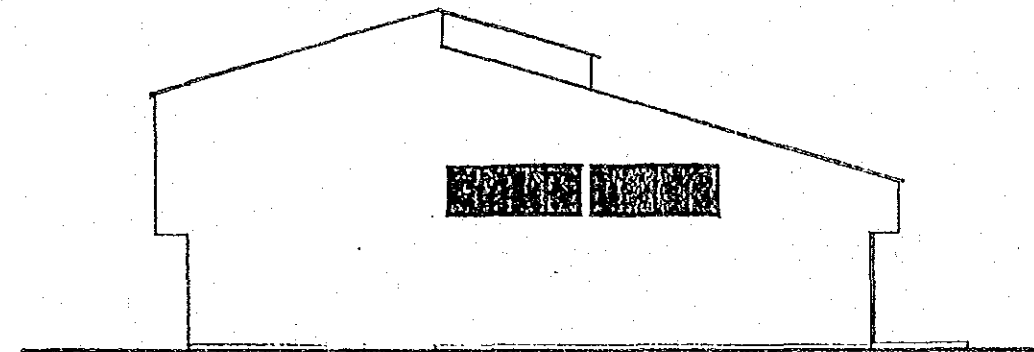
S = 1:200

THE PROJECT FOR DEVELOPMENT  
OF ARTISANAL FISHERIES IN  
THE REPUBLIC OF THE GAMBIA

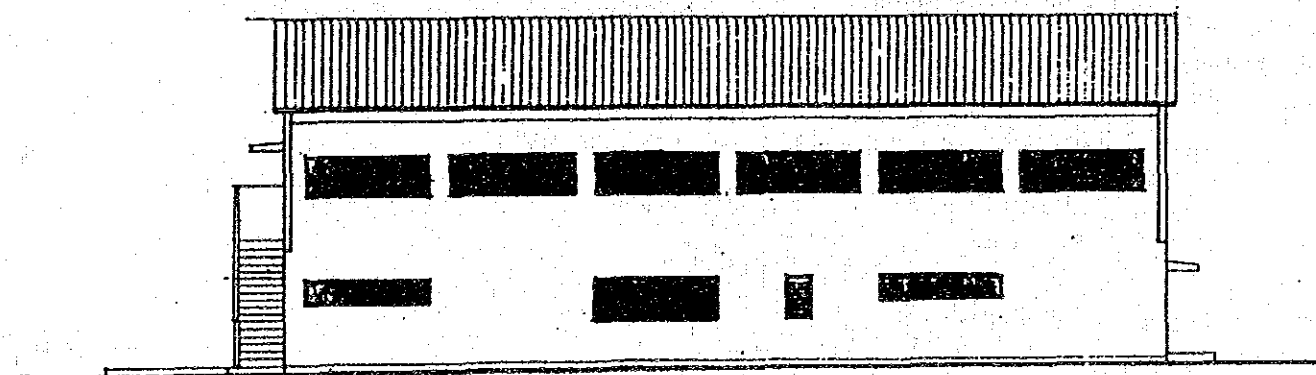
④ Elevation drawing



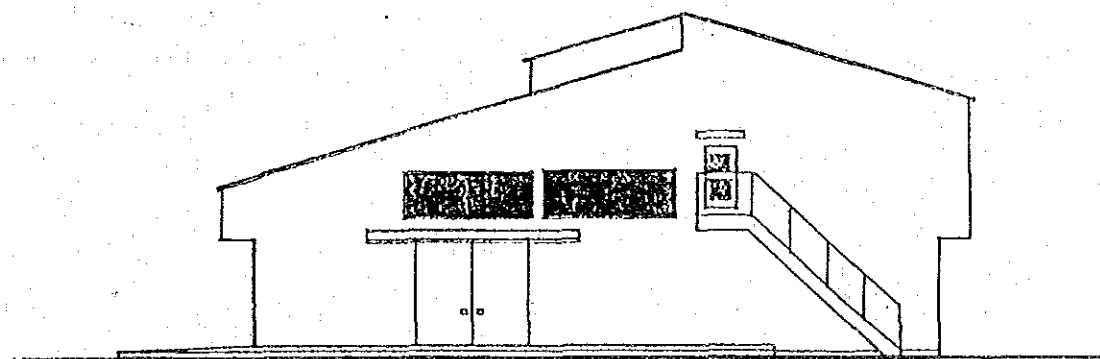
NORTH



EAST



SOUTH

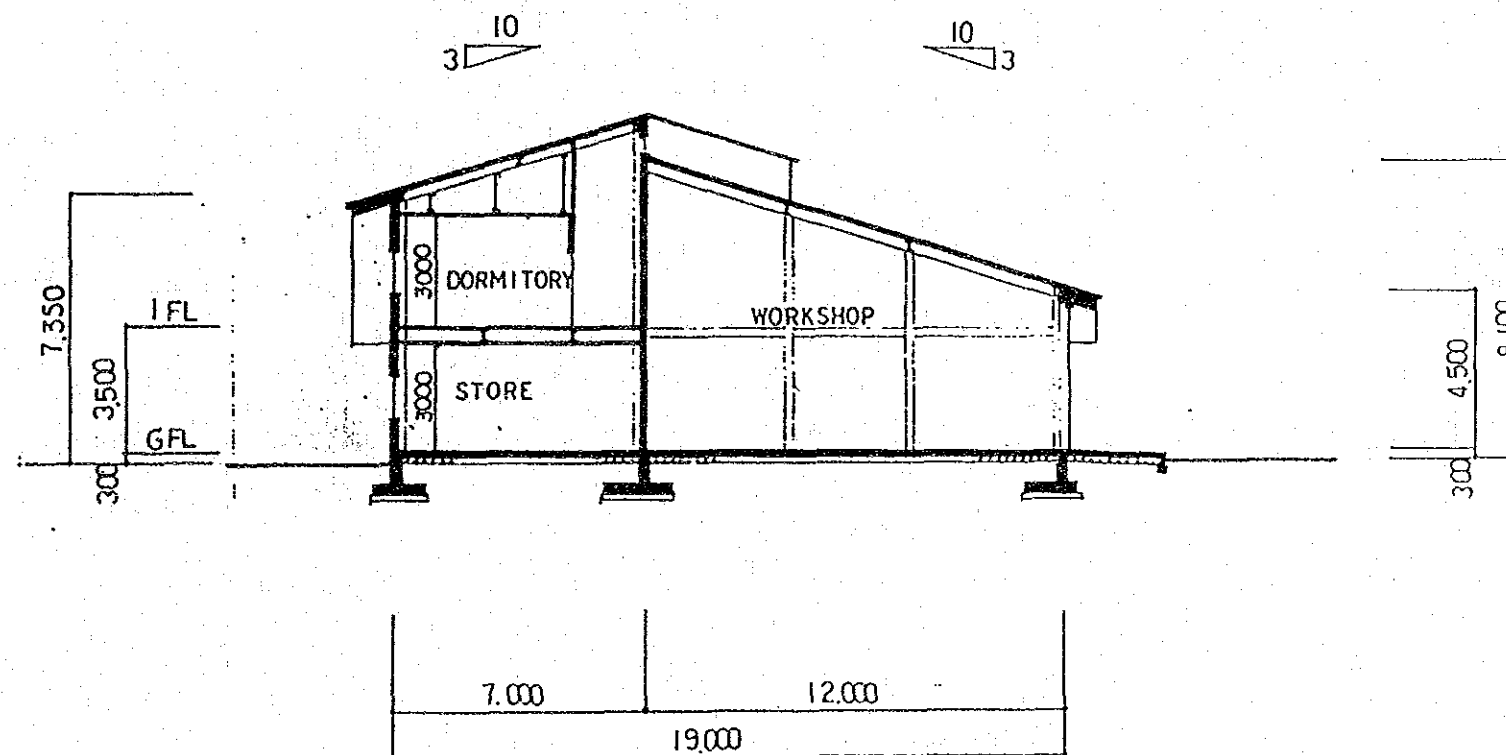


WEST

ELEVATIONS OF WORKSHOP  
S = 1 : 200

THE PROJECT FOR DEVELOPMENT  
OF ARTISANAL FISHERIES IN  
THE REPUBLIC OF THE GAMBIA

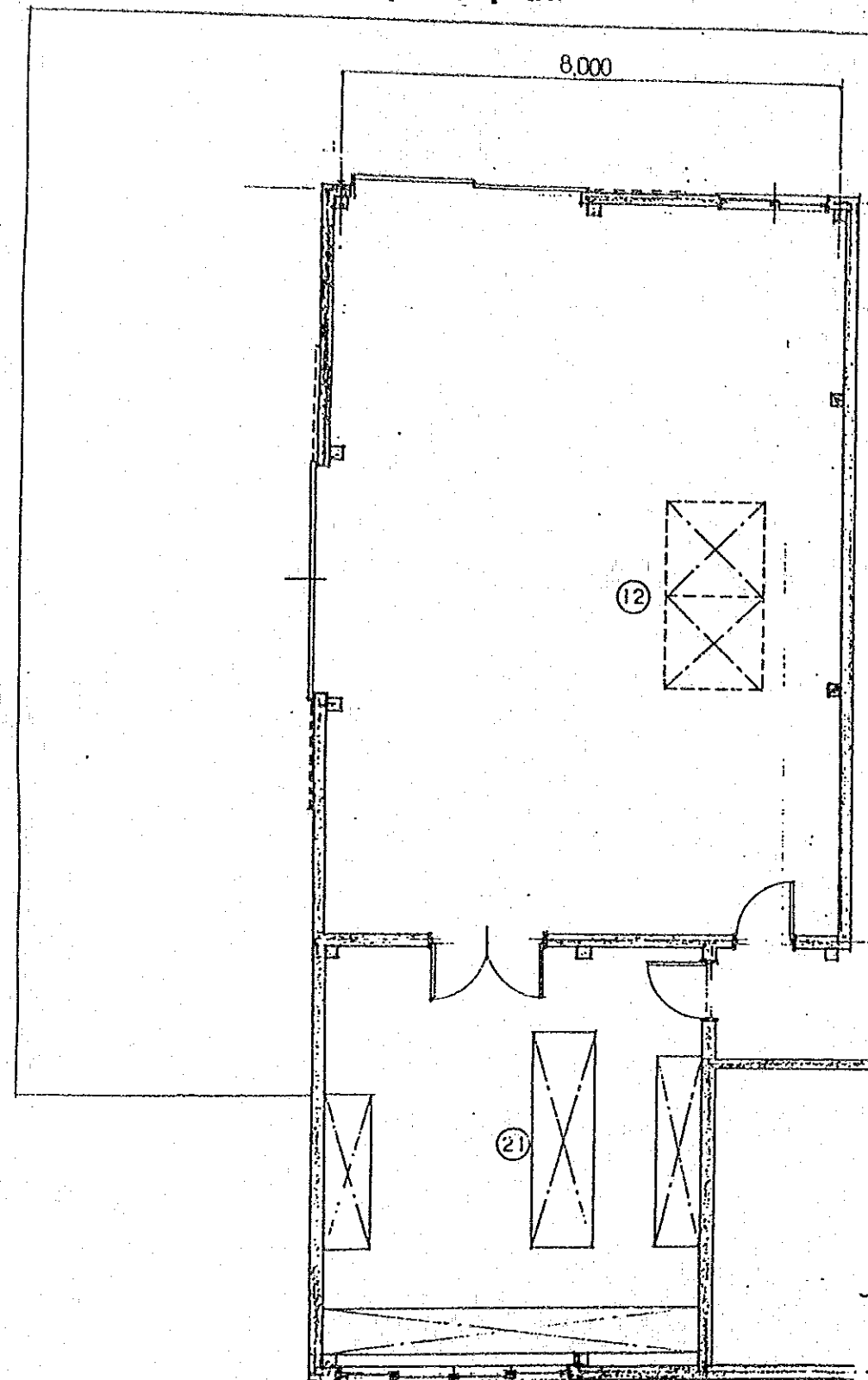
⑤ Section drawing



SECTION OF WORKSHOP  
S = 1 : 200

THE PROJECT FOR DEVELOPMENT  
OF ARTISANAL FISHERIES IN  
THE REPUBLIC OF THE GAMBIA

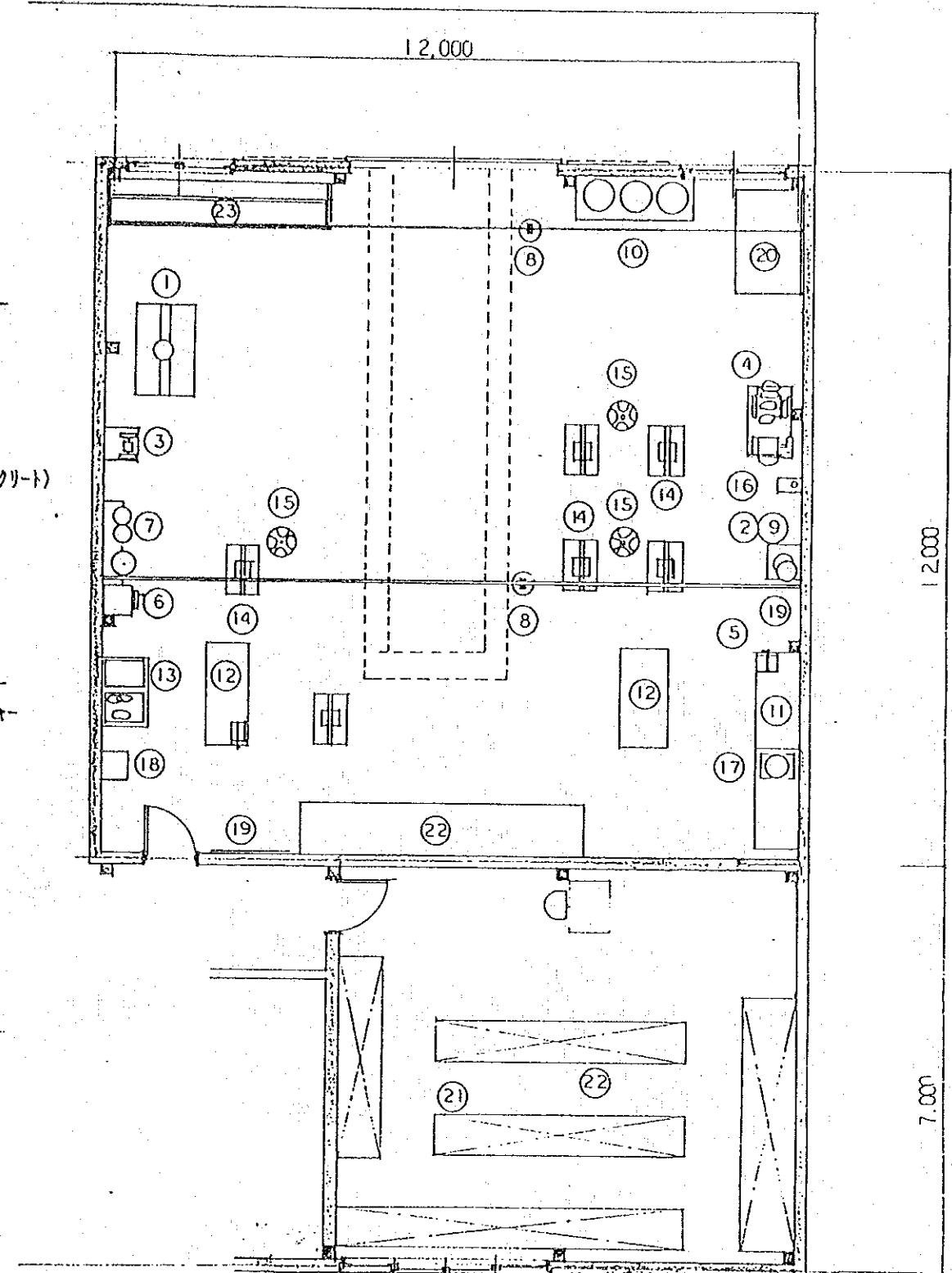
# ⑥ Workshop layout plan



WORK SHOP (FISHING GEAR)  
LAYOUT PLAN S= 1:100

## ITEMS OF EQUIPMENT

- |                       |                 |
|-----------------------|-----------------|
| 1 Hydraulic Press     | 油圧プレス           |
| 2 Drilling Machine    | 卓上ボール盤          |
| 3 Grinder             | グラインダー          |
| 4 Air Compressor      | エアコンプレッサー       |
| 5 Vise                | 万力              |
| 6 Electric Arc Welder | 電気溶接機           |
| 7 Gas Cutter & Welder | ガス切断・溶接機        |
| 8 Chain Block         | チェーンブロック        |
| 9 Desk for Drilling   | ドリル台            |
| 10 Drum Can Stand     | ドラム缶置き場(コンクリート) |
| 11 Strong Work Stand  | 強力作業台           |
| 12 Work Bench         | 作業台             |
| 13 Engine Generator   | 非常発電機           |
| 14 Repair Stand       | 修理スタンド          |
| 15 Caddie             | キャディー           |
| 16 Test Pump          | テストポンプ          |
| 17 Valve Seat Grinder | バルブシートグラインダー    |
| 18 Battery Charger    | バッテリーチャージャー     |
| 19 Hanging Board      | 工具掛け            |
| 20 Test Tank          | テストタンク          |
| 21 Adjusting Shelf    | 自在棚             |
| 22 Tool Board         | 工具置             |
| 23 Engine Rack        | 船外機格納ラック        |



WORK SHOP (MECHANICS)  
LAYOUT PLAN S= 1:100  
THE PROJECT FOR DEVELOPMENT  
OF ARTISANAL FISHERIES IN  
THE REPUBLIC OF THE GAMBIA





## **CHAPTER 5 PROJECT ADMINISTRATION AND OPERATION**



## CHAPTER 5 PROJECT ADMINISTRATION AND OPERATION

### 5-1 Project Operation and Management

#### 5-1-1 Workshop Operation

The Project will be implemented by the Development Section of the Department of Fisheries under the Ministry of Water Resources, Forestry, and Fisheries. Of the 34 personnel employed by the Development Section, 25 will be involved in the Project's implementation; sixteen will be from the Development Section and 9 will work as temporary mechanics.

The mechanics workshop and fishing gear workshop will be staffed by the following personnel:

#### ① Mechanics workshop

|                     |   |   |
|---------------------|---|---|
| Responsible person: | Senior Mechanics Foreman                                    | 1 |
| Repair technicians: | Assistant Senior Mechanics Foreman                          |   |
|                     | Foreman   | 1 |
|                     | Mechanics Foreman   | 1 |
|                     | Fisheries Technicians                                       | 7 |
| Fishermen training: | Head instructor (Senior Mechanics Foreman 1)                |   |
|                     | Assistant instructor (Assistant Senior Mechanics Foreman 1) |   |
|                     | Trainees (4 per session)                                    |   |

#### ② Fishing gear workshop

|                     |  |   |
|---------------------|--|---|
| Responsible person: | Assistant Senior Fisheries Officer                     | 1 |
| Repair technician:  | Assistant Fisheries Officer                            | 1 |
| Fishermen training: | Head instructor (Assistant Senior Fisheries Officer 1) |   |
|                     | Assistant instructor (Assistant Fisheries Officer 1)   |   |
|                     | Trainees (6 per session)                               |   |

### 5-1-2 Equipment Management

① FRP fishing vessels, outboard motors, and fishing gear

The distribution of this equipment and the management and operation of the revolving loan system will be handled by the Development Section of the Fisheries Department. The equipment will be allotted to those who have completed the training session and to those who will undergo the training session. The equipment will be given after the trainee completes the training session.

② Refrigerator truck

The refrigerator truck will be managed by the Fisheries Department and operated under the guidance of a specialist.

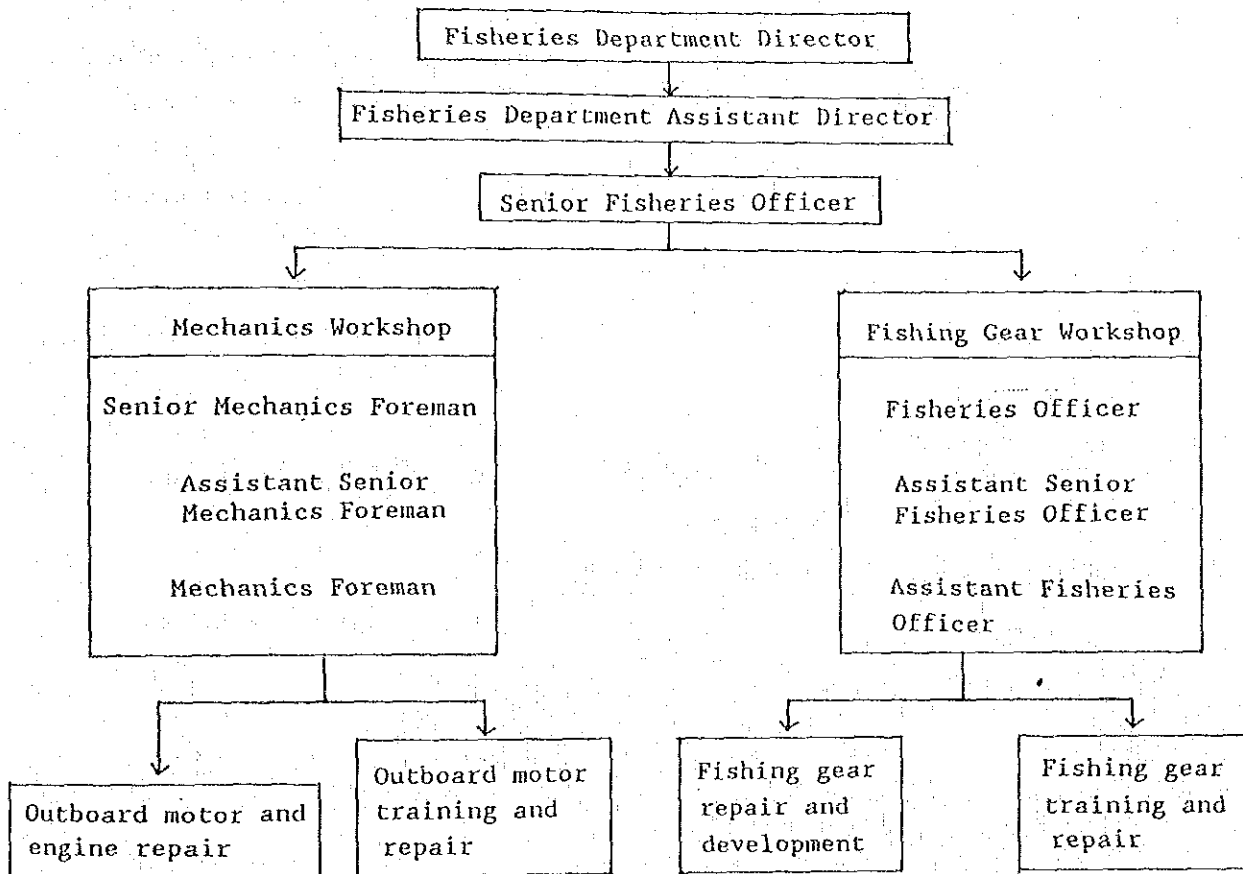
③ Landing winches

Landing winches will be provided on a trial basis to coastal fishing villages that operate large wooden canoes. The winches will be managed by the Fisheries Department's local offices.

④ Motorcycles

The motorcycles will be operated and managed by the Fisheries Department's local offices in the inland areas.

# Organizational Chart



## 5-2 Project Operation

### 5-2-1 Necessary Expenses for Project Implementation

#### (1) Workshop operation expenses

As shown below, these will include the expenses for workshop operation, the training programs, trainee support, travel for local office personnel, etc. The total amount of 21,370 D necessary for these expenses can be appropriated from the 40,000 D budget for fisheries development and training.

##### i. Trainee support

Fishing gear repair trainees

(D 4/day x 30) x 6 trainees x 3 mo. x 3 sessions

= D 6,480/year

Mechanical repair trainees

(D 4/day x 30) x 4 trainees x 4 mo. x 2 sessions

= D 3,840/year

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Subtotal

D 10,320/year

##### ii. Instructors' fees

Fishing gear instructor

D 150 x 1 instructor x 3 mo. x 3 sessions

= D 1,350/year

Mechanics instructor

D 150 x 1 instructor x 4 mo. x 2 sessions

= D 1,200/year

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Subtotal

D 2,550/year

##### iii. Other expenses

Oxygen gas D 700 x 5 cylinders

= D 3,500/year

Acetylene gas D 2,500 x 2 cylinders

= D 5,000/year

---

Subtotal

D 8,500/year

##### iv. Total

D 21,370/year

(2) Other expenses

The workshop building will require 13,100 liters (approx. 3,000 gallons) of water monthly for the lavatory, shower facility, etc. The monthly water bill will amount to D 28.5 (D 342/year) at the rate of D 9.5/1,000 gallons. Since the water bill is paid by the Presidential Office, the Fisheries Bureau need not appropriate a budget for water expenses.

The workshop building will use an average of 24 kW/day, based on its normal power consumption, peak consumption, and night time consumption of 2.5 kW/hour, 3 kW/hour, and 0.25 kW/hour respectively. Since the billing rate is D 0.95/kW, the monthly power bill will be D 502/month (D 6,019/year). Since the power bill is also paid by the Presidential Office, the Fisheries Bureau need not appropriate a budget for power expenses.





## CHAPTER 6 PROJECT IMPLEMENTATION



## CHAPTER 6 PROJECT IMPLEMENTATION

### 6-1 Implementation

The Project will be implemented by the Gambia's Department of Fisheries, under the Ministry of Water Resources, Forestry, and Fisheries. It will therefore handle consultant contracts, contracts with outside contractors, banking agreements, equipment procurement, construction plans, etc.

After the Exchange of Notes between Japan and the Gambia for this Project, an appointed Japanese consultant will conduct detailed deliberations with the Gambian side on the Project's basic design policy, the generation of tender documents, construction supervision, equipment procurement, etc. The consultant will assist in the detailed design of the workshop building, the generation of tender documents, the bidding procedure, bidding evaluation, and contract conclusion.

## 6-2 Construction Supervision

In accordance with the Japanese government's grant aid policies and the consultant contract, the appointed Japanese consultant shall form a Project implementation team who will oversee the implementation of the basic design. This team must ensure that the Project proceeds without delays until its completion.

As part of his supervisory duties, the consultant will approval drawings, witness plant tests and equipment installations, and inspect equipment transfers. He will also dispatch specialists and facilitate the smooth implementation of the Project.

The consultant will also monitor the construction's progress and equipment arrivals. If any delays are foreseeable, he will notify the Gambian side as to the appropriate measures to be taken. He will supervise the overall implementation of the Project.

In accordance with the contract concluded, the Japanese contractors must execute the building construction, equipment deliveries, surface shipments to the Gambia, and other operations within the allotted time period.

### 6-3 Area of Responsibility

The Gambia and Japan's respective areas of responsibility for the workshop construction are indicated below.

| Task                    | Description   | Japan  | The Gambia |
|-------------------------|---|--------|------------|
| Road                    | <ul style="list-style-type: none"> <li>o Access road to the site on the the Fisheries Department property.</li> </ul>   |        | o          |
| Ground preparation      | <ul style="list-style-type: none"> <li>o Land surveying and boring surveys.</li> <li>o Removal of existing work shed and trees from the site.</li> <li>o Removal of the site's underground obstructions and ground leveling.</li> </ul>   | o      | o<br>o     |
| Electrical work         | <ul style="list-style-type: none"> <li>o Installation of power lines and cables from the Fisheries Department building's distribution board.</li> <li>o Installation of power lines and cables from the workshop's distribution board.</li> </ul>   | o      | o          |
| Telephone installation  | <ul style="list-style-type: none"> <li>o Installation of telephone lines and cables from the Fisheries Department building.</li> <li>o Installation of telephone lines and interphone lines in the workshop building.</li> <li>o Installation of telephones in the rooms of the workshop building.</li> </ul> | o      | o<br>o     |
| Water supply            | <ul style="list-style-type: none"> <li>o Installation of the water supply system.</li> <li>o Plumbing work in the workshop building.</li> </ul>   | o      | o          |
| Drainage                | <ul style="list-style-type: none"> <li>o Installation of a drainage pipe to the existing septic tank within the property.</li> <li>o Installation of a drainage system in the workshop building.</li> </ul>   | o<br>o |            |
| Periphery work          | <ul style="list-style-type: none"> <li>o Installation of fencing, surface paving, and berm around the building. (Porch excluded.)</li> </ul>  |        | o          |
| Transportation expenses | <ul style="list-style-type: none"> <li>o Expenses for the surface transportation of construction materials and equipment from Japan to Banjul.</li> <li>o Local transportation and storage expenses for the materials and equipment.</li> </ul>   | o<br>o |            |
| Customs fees            | <ul style="list-style-type: none"> <li>o Procedures and fees for customs clearance and duty exemption for construction materials and equipment.</li> </ul>  |        | o          |
| Expedience procedures   | <ul style="list-style-type: none"> <li>o Procedures for customs clearance and duty exemption for Japanese personnel.</li> </ul>   |        | o          |
| Work supervision        | <ul style="list-style-type: none"> <li>o Overall supervision of construction work.</li> <li>o Gambian counterparts for construction supervision.</li> </ul>   | o      | o          |

#### 6-4 Implementation Schedule

##### (1) Procedure

The Project is to be completed approximately 16.5 months after the notes for the grant aid are exchanged between Japan and the Gambia. The Project will proceed as follows:

##### ① Detailed design

Based on the Basic Design Study Report, detailed designs for the workshop building and equipment will be formulated. Documents of tender will also be generated. (Approx. time required: 3.5 mo.)

##### ② Bidding

On behalf of the Government of the Gambia, the consultant will publicly announce the bidding, check the qualifications of the bidders, and evaluate the documents of tender. He will also witness the contract conclusion between the Government of the Gambia and the successful bidder (contractor). (Approx. time required: 2 mo.)

##### ③ Construction work and equipment production

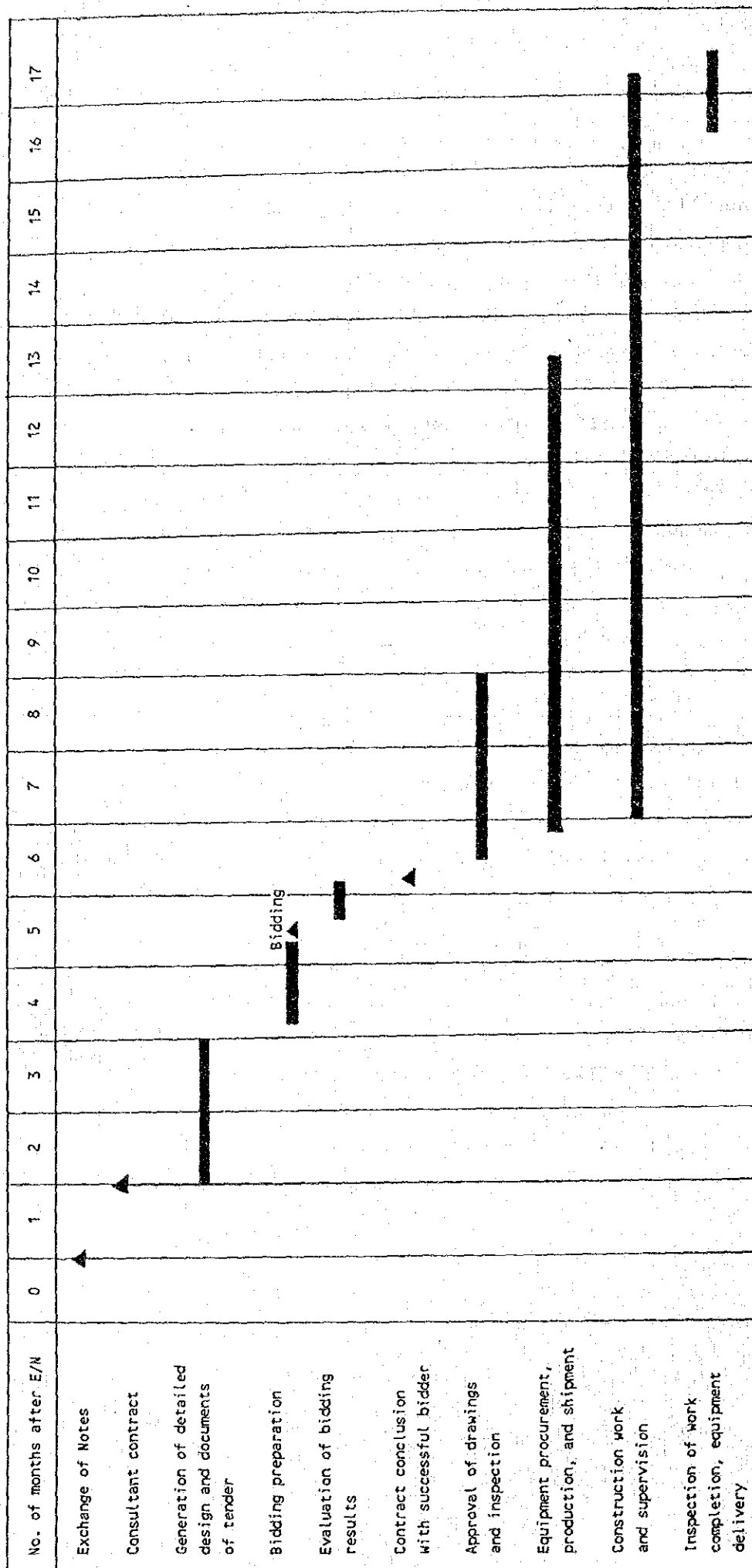
The consultant will formulate the contractor's construction and production documents, approve proposed drawings, inspect plants, inspect shipments before loading, and supervise the overall operation. The contractor will procure the construction materials, manufacture the equipment and supplies, arrange the transportation of equipment to the Gambia, and construct the workshop on-site. (Approx. time required, including shipping time: 11.5 mo.)

④ Project completion

Upon the completion of the workshop building, the consultant will inspect the dimensions and surface finish of the building and the quantity of equipment installed, conduct equipment tests in the presence of Gambian officials, and confirm whether the building has been built according to the specifications sheet and construction plan. After all work is completed, the Gambian side will issue a certificate of building completion and a certificate of equipment receipt.



(2) Implementation schedule



## CHAPTER 7 PROJECT EVALUATION



## CHAPTER 7 PROJECT EVALUATION

### 7-1 Impact of Project Implementation

The traditional, non-motorized, wooden canoe is prevalent in the Gambia's fishing industry. In order to promote artisanal fishing, the Fisheries Development Project deems it necessary to modernize the Gambia's fishing vessels by having more FRP fishing vessels and more outboard motors installed on vessels. Along with the motorization of fishing vessels, it will be essential to train fishermen on the maintenance and repair of outboard motors.

The Project aims to procure equipment for fishing vessel modernization and to construct a training facility to improve the equipment repair technology.

Through this Project, the modernization of fishing vessels and the improvement of equipment repair technology will prolong the service life of vessels and outboard motors. Equipment operation problems and maintenance problems will also be greatly reduced. Thus, the value of this Project is very high.

The impact of this Project is described below.

#### (1) Fishing vessel modernization

Due to the tree shortage, wood must be imported to build wooden canoes. By switching over to FRP fishing vessels instead, forestry resources can be conserved and a longer service life (twice as long as that for wooden canoes) can be expected.

Also, an outboard motor will increase the fishing vessel's capabilities, making more fishing grounds accessible and allowing more fishing operations. The fish catches will thereby increase.

#### (2) Impact of fishermen training

Fishermen training at the workshop will have the following impact:

|   |           |
|---|-----------|
| Other fish stock: 5,100 kg/vessel x 2 vessels = | 10,200 kg |
| 5,100 kg/vessel x 1 vessel x 1/2 =              | 2,550 kg  |
| (Training vessel)                               |           |

---

|       |           |
|-------|-----------|
| Total | 12,750 kg |
|-------|-----------|

---

|             |            |
|-------------|------------|
| Grand total | 837,750 kg |
|-------------|------------|

Total fish catch increase of the above 68 additional FRP fishing vessels: 1,098,810 kg

② Increased profit

i. Profit increase due to 50 additional 4.7-meter FRP fishing vessels: D 3,730/vessel x 50 vessels = D 186,500

ii. Profit increase due to 15 additional 7.1-meter FRP fishing vessels: D 36,204/vessel x 15 vessels = D 543,060

iii. Profit increase due to 3 additional 12.8-meter FRP fishing canoes:  
D 87,138/vessel x 2 vessels = D 179,276  
D 87,138/vessel x 1 vessel x 1/2 = D 43,569  
(Training vessel)

---

|       |           |
|-------|-----------|
| Total | D 222,845 |
|-------|-----------|

Total profit increase of the above 68 additional FRP fishing vessels: D 952,405

(4) Impact of distribution reform

The 5-ton refrigerator truck designated for this Project will be used to reform the fresh fish distribution system. It will transport ice from the ice plant to the fishing villages to preserve fish freshness. It will also transport freshly caught fish from the fishing villages to the areas for consumption.

|   |           |
|---|-----------|
| Other fish stock: 5,100 kg/vessel x 2 vessels = | 10,200 kg |
| 5,100 kg/vessel x 1 vessel x 1/2 =              | 2,550 kg  |
| (Training vessel)                               |           |

---

|       |           |
|-------|-----------|
| Total | 12,750 kg |
|-------|-----------|

---

|             |            |
|-------------|------------|
| Grand total | 837,750 kg |
|-------------|------------|

Total fish catch increase of the above 68 additional FRP fishing vessels: 1,098,810 kg

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---

|       |           |
|-------|-----------|
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|-------|-----------|

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