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CHAPTER I

DETAILED ENGINEERING DESIGN OF DEPOT MINI PLANNING

ARTICLE 1

GENERAL TECHNICAL SPECIFICATIONS

1.1 WORKING DRAWINGS

Working drawings for the entire work should always be on the field every time. These drawings must be able to be read clearly and show the latest changes. They should be used as a reference for the implementation and details related to the project.

1.2 DIFFERENT DRAWING

The differences between this work description and the drawings should be discussed with the Work Directors/Supervisors. Changes in the implementation drawings must be within the permission of the Task Employer.

1.3 SHOP DRAWING

a. Shop Drawing is an implementation of detail drawings to be made by the Contractor under the Drawing Contract Documents that have been adapted to the field conditions.

b. Contractor shall prepare Shop Drawing for specific details that have not been included full in Work Drawings or the requested by the Board of Directors/Supervisors.

c. The Shop Drawing must clearly stated and described all the necessary data, including the submission of examples of all materials, product descriptions, how to install and/or the

specifications/special requirements in accordance to the manufacturers specifications which have not been covered in detail in working drawings.

d. Contractor shall submit the Shop Drawing to the Board of Directors/Supervisors for the written approval of the Board of Directors/Supervisors, a minimum of 10 days prior to implementation of the plan on the field or in other locations (manufacturing, etc.).

1.4 WORK IMPLEMENTATION

a. Before starting the work, the Contractor is required to create Network Planning Diagrams and Time Schedule with Curve S. Furthermore, the Contractor is also required to provide labors, materials, equipments and tools to carry out the work and also to maintain security, surveillance, and maintenance of the materials, equipments and workmanship throughout the implementation until the completion of the work.

b. The Contractor shall include the identity, the name, the position, the expertise of each member implementing the work, and the inventory equipments used for this work.

c. Contractor shall include the identity of the workplace (Work Shop) and the equipment owned that will be used during the work, as well as the work schedule.

d. Provision of material storage on the field should be safe from any damages, loss and things that can interfere any other works to be carried out.

1.5 REGULATIONS / REQUIREMENTS

Procedures for implementation and other instructions related to the legitimate regulations of Republic of Indonesia during the execution of this contract should be rigorously adhered to unless canceled by these description and terms. In particular the regulations are related to the articles below:

a. NI-2 (PBI-1971)	:Regulation Concrete Indonesia (1971) Indonesian
b. 1.4.53.1989 - UDC: 693.5	:Indonesian Building and Construction Standards
c. (SK SNI T-15-1991-03	:Calculation Procedure for Concrete Structure For Building
d. Pubi-1981	:General Requirements for Building Materials in Indonesia
e. NI-3 PUPB PMI-1970	:General Rules of Building Materials in Indonesia & Indonesian Load Regulation
f. NI-4	:Requirements Paint Indonesia
g. NI-5 PKKI	:Indonesian Timber Construction Regulations
h. NI-8	:Regulation of Portland Cement Indonesia
i. PPI-1979	:Guidelines for Plumbing Indonesia
j. PUIL-1977	:General Regulations Electrical Installations
k. PPBI-198	:Planning Building Regulations Steel in Indonesia
l. SKBI	:Standard Building Construction Indonesia
m. SII	:Indonesia Industry Standard
n. Other regulations.	

Contractor is deemed to have sufficient knowledge and understand the contents and the intents of the regulations and the terms mentioned above.

1.6 PRINCIPAL MEASURES

The principal measures and the whole division have been expressed in the implementation drawings.

These measures are the effective/net size, or the size of the final state. Therefore, in the implementation and ordering materials, measures should be counted as an effective measure.

1.7 PROVIDING MATERIALS

1.7.1 MATERIAL NORMALIZATION STANDARD

All material provisions is to be provided by the Contractor based on the Indonesian Normalization (NI) Standard and the General Materials Examination (PUBB).

The standards that will be applied are to be determined by the Task Employer, which will be mentioned in the terms of this work.

1.7.2 FACTORY NAME / BRAND TRADE SPECIFIED

If the specification or drawings mentioned the name of the manufacturer or the brand of a material / equipment type, the Contractor shall offer and put in accordance with prescribed.

1.7.3 EXAMPLES OF MATERIAL

Contractor shall submit samples of materials that will be used to the Task Employer that is included in the scope of work. Contractor shall submit brochures of the materials / tools and wait for the approval from the Task Employer before booking. The materials with questionable quality will be sent to the Material Investigation Office at the expense of the Contractor.

1.7.4 REJECTION OF MATERIALS

If it turns out that there are unacceptable materials considered by the Task Employer in the field of work, the Contractor shall transport these materials out of the field within a period of 3 (three) days, and replaces with the appropriate ones.

1.7.5 PROVIDING TOOLS

In the execution of the work, the Contractor shall provide adequate equipments, such as: Waterpass, Water Pump, Concrete Mixer, Vibrator, wiring, welding generators, power generators and other assistive devices.

ARTICLE 2

SPECIFIC TECHNICAL SPECIFICATIONS

2.1. SPECIFICATION PREPARATION

2.1.1.LOCATION CLEANING

Before starting the work the Contractor shall clean up the work site from all vegetations and other obstacles that can interfere with the work as well as daily cleaning during works.

2.1.2.PROJECT NAME BOARD

Before starting the execution of the work, the Contractor shall install Project Name Board made and implemented in accordance with the instructions of Work Directors/Supervisors.

2.2. KEET AND WAREHOUSE DIRECTORS / SUPERVISORS

2.2.1. DIRECTORS / SUPERVISORS OFFICE

The contractor shall make Directors / Supervisors office with all the amenities within the Project site.

Office width	: 3 m x 4 m
Wall	: Plywood with wood frame Borneo
Roof	: Wave zinc
Floor	: Rammed concrete
Bathroom / WC	: With ceramic squatting closet
Office furniture	: Tables, chairs, cupboards, filing cabinet and other office supplies
Amount	:Minimum 1 units

2.2.2.OFFICE AND WAREHOUSE CONTRACTOR

The contractor shall prepare the office (equipped with workspaces and meeting rooms) and the warehouse with all the amenities to ensure the smooth execution of the work and build them within the project site at the direction of the Work Directors / Supervisors.

Office area and warehouse	: 3 m x 5 m
Wall	: Plywood with wood frame Borneo
Roof	: Wave zinc
Floor	: Rammed concrete
Bathroom / WC	: With ceramic squatting closet
Office furniture	: Tables, chairs, cupboards, filing cabinet and other office supplies
Total	: 1 units

2.2.3.POWER AND WATER SUPPLY

During the execution of the work, the Contractor shall provide electrical power for offices and workplace lighting (for night work if needed) as well as good quality water facilities.

2.3. FIREEXTINGUISHERS

During the execution of the work, the Contractor shall provide sufficient fire extinguishers with a minimum capacity of 3 kg multipurpose type.
The placement is determined by Work Directors/Supervisors.

2.4. LABOR

a. In the execution of the work, the Contractor shall provide:

1. Experienced experts (in the field).
2. Foremanwho is able to supervise the work assigned.
3. Experienced semi-skilled construction workers.

b. Contractor shall arrange and be responsible for all things related to the deployment of labors.

c. The contractor must hire security officers to maintain the security of the project area and create project safety rail project as directed by the Work Directors/Supervisors.

d. The contractor should take precautions against the occurrence of riot and unlawful conducts by the workers.

ARTICLE 3

NON STRUCTURAL CONCRETE WORK

3.1. SCOPE OF WORK

1. Provide labor, materials, equipment and other assistive devices to carry out the work as stated in the drawing, with perfect results.

2. This work includes practical column concrete; ring beam concrete for buildings intended to be included in iron works and concrete formwork work / reference, and all concrete work that is not structural, as shown in the drawing.

3.2. MATERIAL REQUIREMENTS

1. Portland Cement

   The quality of cement used should be equal to TIGA RODA brand. Cement that has partly/entirely hardened is not permitted to be used. Portland cement storage must be free of moisture, free of water with the floor raised off the ground and stacked in accordance with the cement stacking guidance.

2. Sand Concrete

   The sand shall consist of clean grains and free from organic materials, mud, etc; and must meet the grain composition and hardness that is listed in PBI 1971 and PBI 1990.

3 Coral Concrete / Split

   Clean coral with good quality, non-porous and has a hardness gradation in accordance with the terms of PBI 1971 and PBI 1990 is used. The storing / piling of concrete coral sand should be separated one from the other until the two ingredients are guaranteed to get the right concrete mix ratio.

4 Water

   The water used has to be clean fresh water and contains no oils, acids, alkalis and organic/other materials that can damage the concrete and must meet the NI-3 Article 10. If necessary, the Directors / Supervisors may ask the Contractor to examine the water in the authorized and legitimate material examinations laboratory at the expense of the Contractor.

5. Concrete Iron

   Concrete Iron used has a U-24 quality to iron with a diameter <11 mm and U-32 to iron with a diameter> 11 mm. Iron must be clean of layers of oil / fat and free of defects such as flakes. Iron

section should be round and meets the requirements of NI-2 (PBI 1971 and PBI 1990). If deemed necessary, the Contractor is required to check the quality of concrete iron to the authorized and legitimate material examination laboratory at the expense of the Contractor. Control of this work shall be in accordance with:

1. The commonly used regulations / local standards.
2. Indonesian Reinforced Concrete Regulations 1971 and PBI 1990.
3. Indonesian Timber Regulations, 1961, NI-5.
4. Indonesian Portland Cement Regulation, 1972, NI-8.
5. Local Government Development Regulations.
6.. General provisions for the implementation of the Public Works Contractor (AV) No. 9, dated May 28, 1941 and the State Gazette No. 1457.
7. Planner's instructions and warnings given orally or written
8 German Normalization Standard (DIN).
9. American Society for Testing and Materials (ASTM).
10. American Concrete Institute (ACI).

3.3. IMPLEMENTATION REQUIREMENTS

1. Quality of Concrete

Quality of concrete to be achieved in the work of non- structural reinforced concrete is K-175 and K-225 and shall meet the requirements specified in PBI 1971 and PBI 1990.

2.Installation of Iron

(a) The requirements for the preparation of reinforcements for straight or curved rods, hooks connection and manufacture stirrup (ring) shall be in accordance with PBI 1971 and PBI 1990.

(b) The installation and the use of reinforced concrete must be adapted to the construction drawings.

(c) Reinforced concrete should be tied firmly to ensure that the iron does not move during the casting, and should be free from the board of reference or work floor by installing a concrete cover in accordance with the regulations stated in PBI 1971 and PBI 1990.

(d) Concrete iron that is not eligible has to be immediately removed from the field within 24 hours after an order from the Directors / Supervisors.

3 Stirring Method

(a) Stirring should use concrete mill.

(b) The measure for Portland Cement, sand and coral must be approved in advance by the Directors / Supervisors.

(c) During the stirring, the thickness of the concrete mix should be monitored by examining the slump in any new mixture. Slump testing, minimum of 5 cm and maximum of 10 cm.

4. Concrete Casting

(a) Contractors are required to carry out the preparatory work by cleaning and watering the molds until saturated, inspecting measurements and heights, and inspecting the reinforcement and the placement of space retainer.

(b) Concrete casting can only be implemented with the approval by Directors / Supervisors.

(c) Casting should be done as well as possible by using a vibrator to ensure that the concrete is quite dense and should be prevented from any defects such as porous concrete and coral nests / split that could weaken the construction.

(d) If the concrete casting is to be stopped and continued the next day then the stop has to be approved by Directors / Supervisors.

5. Reference Works / Formwork

(a) Reference should be installed according with the needed shapes and sizes that have been set in the drawing.

(b) Reference should be installed as such with the reinforcements, so it is quite sturdy and guaranteed not to change shape and position during the casting.

(c) References must be tight (no leaks) with smooth surface, free from impurities (sawing excess), pieces of wood, soil / mud, etc, before the casting is done and should be easily removed without damaging the concrete surface.

(d) The Contractor shall provide samples of material (iron, coral/split, sand and Portland cement) to the Directors/Supervisors, to get approval before starting the work.

(e) The materials used should be stored in a secure storage area, so that the quality of the materials and the quality of work remain guaranteed according with the requirement.

(f) Concrete iron / frame binding wire is made from soft steel and is not zinc plated. The wire diameter is greater than or equal to 0.04 mm. Concrete iron/framebinding wire must meet the requirements specified in the NI-2 (PBI 1971 and PBI 1990).

(g) Concrete must be protected from the heat, so there won't be any fast evaporation occurrence. Protection preparation against the possibility of rain must be considered.

(h) Concrete should be soaked for at least ten days after casting.

6. Reference Demolition Work / Formwork

Dismantling formwork should only be done with the written permission by Directors/Supervisors. After the formwork is opened, it is not allowed to hold any changes to the concrete surface without the approval by Directors / Supervisors.

7.Implementation and Qualification Contractor / Contractor

(a) The contractor is responsible for the perfection of his work up until the handover time (finished).

(b) The work must be done by experts in their field. The contractor must be qualified, with a STM minimum of three (3) years of work experiences.

(c) The Contractor shall follow all rules, both contained in the description and requirements as well as those listed in the drawings or regulations both domestically and abroad.

(d) The Contractor must follow the contracts that will be prepared later with the owner, both on matters of payment as well as the other technical and non-technical.

(e) The Contractor shall place the experts in the field at any time required to be able to discuss and decide any administrative.

8 Examples of Materials

(a) Before starting the work, the Contractor shall provide samples of materials such as: iron, coral, sand, PC to obtain the approval by Directors / Supervisors.

(b) The examples that have been approved by Directors / Supervisors will be used as standards / guidelines for checking / receiving materials sent by the Contractor to the site.

9 Terms of Delivery and Storage Materials

(a) The new materials are brought to the work place intact and unblemished. Some of these materials must still be in the box / original packaging intact with factory seals and labels.

(b) The material should be stored in a protected and enclosed, dry, not moist and clean place in accordance with the requirements specified by the factory.

(c) Storage areas should be sufficient, the material is placed and protected in accordance with its type.

(d) The Contractor is responsible for any damage during shipping and storage. If there is damage, the Contractor shall replace at the expense of the Contractor.

10 Testing the Quality of Work

(a) Prior to the installation being carried out, the Contractor is required to provide Directors / Supervisors an iron materials'Test Certificate'from the manufacturers / factories.

(b) If there is no 'Test Certificate', then the Contractor shall perform tests on the steel / concrete cube in the laboratory that is to be pointed later.

(c) The quality of the concrete must be proven by the Contractor by taking the test object in the form of a cube / cylinder size in accordance with the requirements / regulations in PBI 1971 and PBI 1990. The making must be witnessed by the Board of Directors / Supervisors. The number and frequency of making concrete cubes and other provisions are corresponding to PBI 1971 and PBI 1990.

(d) Contractors are required to make 'Trial Mix' first, before starting concrete work.

(e) The results of laboratory testing is submitted to Directors / Supervisors as soon as possible.

(f) All costs associated with the materialtesting is the responsibility of the Contractor.

11. Terms of Employment Security

(a) The concrete that has been casted is avoided from any hard object collision for 3 x 24 hours after casting.

(b) The concrete is protected from possible defects resulting from other works.

(c) In the event of damage, the Contractor is required to fix it without reducing the quality of the work. The entire cost of reparation becomes the responsibility of the Contractor.

(d) During the hardening, concrete section that has finished casted should always be wetted with water continuously for 1 (one) week or more (according to the provisions in the PBI 1971 and PBI 1990).

ARTICLE 4

ROOF WORK

4.1. SCOPE OF WORK

Provide labors, materials, equipment and other assistive devices to carry out the work as stated in the working drawings, with good and neatresults.

4.2. MATERIAL REQUIREMENTS

Type	: Onduvilla
Color	: Standard or determined later.
Material	: SelulosaBitumen
Long	: 40 cm
Wide	: 106 cm
Thickness	: 0.3 cm
Wave Height	: 4 cm
Reng Distance	: 32 cm
Effective Area / lembar	: 0,31 m2
Berat / sheet	: 1,27 km (4kg per m2)

Type	: Onduline
Color	: Standard or determined later.
Material	: Selulosa Bitumen
Long	: 40 cm
Wide	: 106 cm
Thickness	: 0.3 cm
Wave Height	: 4 cm
Reng Distance	: 32 cm
Effective Area / lembar	: 0,31 m2
Berat / sheet	: 1,27 km (4kg per m2)

4.3. IMPLEMENTATION REQUIREMENTS

Aluminum sheetroofing Work

(a) Before starting work, the Contractor is required to examine the drawings and the field conditions.

(b) other complementary materials such as bolts to.

(c) Ensure all sizes, connection and relationship with other materials by following all instructions in the Drawing Plancarefully.

(d) Contractors are required to prepare shop drawings / working drawings for certain works with the instructions of Directors / Supervisors.

(e) Cutting in the field must be approved by the Board of Directors / Supervisors.

(f)Any unit installed must be given signs to avoid installation errors.

(g) The roof tilt angle is adjustedto the design drawings.

(h) Roof tiles should be installed according to the expertise and placed neatly with all linked directions and should fit and tightly closed.

(i) The distance between the battens must be adapted to the tile that will be used.

(j) Roof tiles are placed above the lightweight steel roof construction batten and the last tile is mounted on flat listplank, so that the tile surface remains flat.

(k) Roof tiles should only be cut at the hips and the valleys and must be in any way placed that the parts to put on the position should not be discarded. The roof tile cutting must use a cutting machine tools. It is not allowed to cut the tile towards the edge or the tips to be adjusted to the size of the roof, the roof edge or other parts of the roof.

(l) The rooftop must be given concrete, and the concrete must be watertight (1PC: 3PS) and reinforced with chicken wire netting, smoothly plastered and painted.

(m) The outer hip rafter must be given waterproof concrete (1PC: 3PS) and reinforced with chicken wire netting and then covered with special tile, and is already a tile accessories.

(n) The end of the outer hip rafter and the meeting with valley rafter should be covered with special tile, and is already a tile

accessories. Valley rafter should be made of the same material from the factory that installed the lightweight steel roof truss.

(o) If there is a lightning rod work, the pathway and the withdrawal method of cable lines must be considered as well as how to install the clamp. This pathway isusing a type of standard special tile factory.

ARTICLE 5
BRICKS WORK

5.1. SCOPE OF WORK

Provide labors, materials, equipment and other assistive devices to carry out the work as stated in the working drawings, with good and neatresults.

Masonry work includes all the details mentioned / shown in the drawing or as directed by the Board of Directors / Supervisors.

5.2. MATERIAL REQUIREMENTS

Bricks must meet the NI-10

Portland cement must meet the NI-8

Sand must meet the NI-3 of Article 14, paragraph 2

The water must meet PVBI-1982 Article 9

5.3. IMPLEMENTATION REQUIREMENTS

1. Pairs of brick / stone red using a 1 PC: 5 sand mixture.
2. For all the outer walls, all ground floor walls ranging from the surface to a height of 30 cm sloop above the surface of the ground floor, the walls in wet areas as high as 160 cm from the floor surface, as well as all the walls in the drawing using

symbols trasraam/waterproof is using watertight with 1 PC: 2 pairs of sand.

The red bricks used are the ex local red bricks with the best quality approved by the Board of Directors / Supervisors, elbow and equal/uniform in size 5 x 10 x 23 cm.

3. Before using, the bricks must be soaked in a water bath or drum until saturated.

   Once the stone is installed with stirring, Naad/casts as deep as 1 cm should be scraped and cleaned with a broom stick and then quenched in water.

   Pairs of brick wallsshould be moistened with water first before plastering and the casts has been scraped and cleaned.

4. Pairs of brick walls are gradually implemented, each stage comprising a maximum of 24 layers each day, followed by practical field cast.

   ½ stone walls with the area greater than 12 $m^2$is added column and beam reinforcement (practical columns) with size 12 x 12 cm, with the main reinforcement 4 ∅ 10 mm, 6 mm ∅ beugel with a distance of 20 cm.

5. Making holes in pairs for scaffolding / Steiger is strictly prohibited.

   Making holes in masonry associated with each portion of concrete work (column) should be given a booster cuttings concrete iron ∅ 6 mm and a distance of 75 cm, which is firstly planted on the concrete work and the part that is planted in the masonry at least 30 cm unless otherwise specified.

   It is not allowed to put a broken into two red brick exceeding 5%. Bricks that are broken more than two should not be used.

   Pair of stone for ½stone wall must produce wall finish after 15 cm and 1 stone finish is 25 cm. Implementation of the pair must be careful, neat and completely perpendicular.

ARTICLE 6

WALL WORK

6.1. SCOPE OF WORK

Included in this wall plastering work is the provision of labor, materials, equipment including assistive devices and transportation equipment necessary to carry out plastering work, so as to achieve a good result quality work.

Wall plastering workis done on the inner and the outer wall surface as well as all the details mentioned / shown in the drawing.

6.2. MATERIAL REQUIREMENTS

Portland cement shall meet the NI-8 (for this work refer to the brand).

Sand must meet the NI-3 of article 14, paragraph 2.

The water must meet NI-3 chapter 10.

The use of mortar plastering:

- 1 PC : 2 sand mixture used for watertight/transparentplastering.
- 1 PC :4 sand mixture used for plastering walls.

The entire plaster surface is finishedwith PC material plaster.

6.3. IMPLEMENTATION REQUIREMENTS

1. Plastering is carried out according to the specification standard of the materials used in accordance with the instructions and the approval of the Board of Directors / Supervisors, and the conditions in the written description and terms of this work.

2. Plastering work can be carried out whenever the concrete or brick wall pair work has been approved by the Board of Directors / Supervisors in accordance with the Work Description and Conditions which are written in this book.

3. This work must follow all instructions in the Architectural drawings mainly on image detail and image pieces about the size of thick / high / peil and profile shape.

4. The adhesive mixture is a mixture in volume,the way to make it is using a mixer for 3 minutes and meet the following requirements:

   For watertight surface, concrete, brick wall pair associated with outdoor air, and all the masonry below ground level to a height of 30 cm above the floor and 150 cm from the surface of the floor to the bathroom, WC / restrooms and other wet areas: 1 PC: 2 sand stucco mixture.

   Watertight mixture must be added to the Daily Bond, with a ratio of 1 part to 1 part of the Daily PC Bond.

   All other surfaces required stucco mix 1 PC: 4 sand.

   - Smooth stucco (finished wall) is using a mixture of PC and water to obtain a homogeneous mixture, the stucco was within 8 days (dry thoroughly).For finishing plastering, the mixture must be added with plamix addivite with a dose of 200-250 grams for every 40 kg of cement .

   - All of the above types of adhesive mixture should be prepared so that it is always in good condition and has not dried up.

   - It is arranged so that the distance of time mixing the adhesive mix with the installation does not exceed 30 minutes, especially for water-resistant mixture.

5. Wall plastering work is only allowed after the completion of installation of electrical and plumbing pipe for the entire building.

6. For the concrete before the plastered surface should be cleaned from the remains of formwork and be scraped first.All holes from binding formwork must be closed with stucco mix.

7. Field pair brick walls and reinforced concrete will be using stucco finish with smooth paint (the mixture above the plaster surface).

8. For wall embedded in the ground should diberapen using waterproof mixture.

9. All the fields that will receive the material (finishing) on the surface is given horizontal grooves or lines scraping to give a better bond to the finishing materials, except for the receiving water.

10. Pairs of stucco head is made at a distance of 1 m, mounted upright and using pieces of 9 mm thick plywood for wall flatness benchmark.

11. The thickness of the plaster must reach the surface of the wall thickness / columns that are expressed in the drawing, or according with the peils the drawing requested. Minimum of 2.5 cm thick of stucco; if the thickness exceeds 2.5 cm,it should be covered with chicken wire to help and strengthen the adhesion of the plaster on the part of work permitted by the Directors / Supervisors.

12. For each kind of different surface materials that meet in one surface, it should be given Naad (the streams) with a width of 0.5 cm 0.7 cm deep, except where there are other clues in the drawing.

13. Flat surface should have tolerance or convex curved field that does not exceed 5 mm for each distance of 2 m. If exceeded,

the Contractor is obliged to fix the cost at the expense of the Contractor.

14. The plaster humidity should be kept reasonable so that drying takes place not too suddenly, by wetting the surfaces every time they look dry and protect from the scorching heat of the sun directly with cover materials that could prevent rapid water evaporation.

15. If cracks occur as a consequence of drainage is not good, plastering must be disassembled and repaired back up until deemed acceptable by the Directors / Supervisors with costs at the expense of the Contractor. During the seven (7) days after completion, the Contractor should always wet the plaster until it is saturated at least 2 times each day.

16. During the installation, thebrick wall / concrete are yet finished, the Contractor shall always maintain and guard against damage and fouling other materials. Any damages incurred are the responsibility of the Contractor and shall be repaired.

17. It is not justified surface to finish the work before the plaster is over 2 (two) weeks old.

ARTICLE 7

FLOOR WORK

7.1. FLOOR WORK

7.1.1. SCOPE OF WORK

1. This work includes the provision of labor, materials, equipment and other assistive devices for the purposes of the implementation of the good quality work.

2. Pair Ceramic flooring is installed on all of the details mentioned/shown in the figure, the following Plint and stair nosing.

7.1.2.MATERIAL REQUIREMENTS

1. Floor material Used:
   a.Ceramic Type:
   - Ceramic Tile : Equal Roman Homogeneous Tilecream mater and grey
   - Size : 30x30cm and 60x60cm
   - Ceramic floor is used for equivalent quality romance products 1 (KW-1).
   - Thickness : Minimum 12 mm or as drawings.
   - absorbing Power : 1%
   - Hardness : Minimum 6 Mohs scale
   - Compressive strength : Minimum 900 kb/cm2
   - Quality : Level 1 (one), Extruded Single Firing, acid and alkali resistant
   - Chemical Resistance : Consistency with PVBB 1970 (NI-3) Article 33D paragraph 17-23
   - filler material : colored cement grout/grout IGI
   - Adhesive Material : Mortar species 1 PC: 3 sand pairs plus adhesive/carofix 2
   - Color : To be determined later

2. Controlling all of this work shall be in accordance with ASTM rules, regulations ceramic/Granito Indonesia (NI-19), PVBB 1970 and PVBI 1982.

3. Portland Cement shall meet the NI-8 standard, sand and water must meet the requirements specified in PVBB 1970 (NI-3) and PBI 1971 (NI-2)/PBI 1990 and ASTM.

4. The materials that are used before being installed should submit examples firstto the Board of Directors/Supervisors.

7.1.3. IMPLEMENTATION REQUIREMENTS

1.Before starting the work the Contractor is required to create shop drawings of the ceramic pattern.

2. Installed ceramic tile must be in good condition, no cracks, defects and stained.

3. Digesters pairs/binder with a stirring mixture of 1 PC: 3 sand and coupled pairs of adhesive as required or can be used a pure PC mixture and adding adhesive.

4. Ceramic materials prior to installation should be soaked in clean water (no alkali acid) until saturated.

5. The results of tile flooring installation should be a really even surface area, with attention to the slope in the wet area and patio.

6. Pattern, direction and initial installation of the floor should be according with the detail drawings or as directed by Planner/Consultant and Board of Directors/Supervisors. Note the installation and drainage holes/manholes before the work begins.

7 The distance between the units of tiling each other (casts), must be equally wide with the maximum width of 1.5-3 mm, while there are no in-betweenmarble distance (attached), and should form parallel lines and straight as wide and as deep. The casts must intersect to form right angles intersecting each other.

8. Casts are filled with good quality cast filler, from such materials that have been required above.

9 Ceramic Cutting must use special cutting tools according to the manufacturer's instructions.

10 Ceramic tile that has been installed shall be cleaned of all sorts of stains on the ceramic surface.

11. Installed ceramic tile must be protected from the touch/load for 3 x 24 hours and protected from the possibility of defects due to other work.

12. The Ceramic tile plint is installedin right angle against the floor, giving attention to the caststo meet the floor cast and with samethickness of cast as well.

ARTICLE 8

FRAME, DOOR AND WINDOW WORK

8.1. FRAME WORK

8.1.1. SCOPE OF WORK

1. Provide labor, materials, equipment and other tools to carry out the work in order to achieve good results and perfect work.

2. This work covers the entire door frames, window frames, sills bovenlicht as stated/shown in the drawings and shop drawings from the Contractor.

8.1.2. WOOD MATERIAL REQUIREMENTS FRAME

a. All door frames, windows and bouvenlicht are using aluminum materials with a size of 4 inches Equivalent Alexindo anodize products. All materials used in this work should be obtained from suppliers that are known and approved by the Supervisory Consultant. All materials should be straight, flat surface, no defects, free of rust, and other stains that can reduce the quality.

b. Aluminum rods and materials used must be in accordance with its section, shape, 4 mm minimum thickness, size, weight, and other details with the Work listed in the drawing. All materials that will be used in this work is approved in advance in writing by the Supervisory Consultant.

8.1.3. IMPLEMENTATION REQUIREMENTS

1 .Before starting the work, the Contractor are required to examine the drawings and the field conditions (size and peil hole and make an example for all the connection details and system profiles associated with the construction of other materials).

2. Priorityfabrication process, must be prepared before work begins, with the first complete shop drawings made with the instructions of Directors/Supervisors includes the floor plan, location, brand, quality, shape, size.

3 All frames/sills for wall, window and door fabrication is done carefully according to the size and condition of the pitch so that the results can be accounted for.

4 It is required that the frame is installed complemented by the following possibilities:

a. Can be a frame for the dead glass wall.
b. Can be matched with a sliding window, window swivel and others.
c. Frame system can accommodate frameless glass doors.
d. For a system partition, must be able to be installed without having to shut down completely that can damage both the floor and ceiling.
e. Having accessories that can support the above possibility.

5. Tolerance of frame mounting on one side of the wall is 10-25 mm which is then filled with lightweight concrete/grout.

6. Special for sliding window work, it has to be considered before the framesare mounted. Horizontal wall surface (pit walls) attached to the lower and upper threshold should be waterpass.

7 To obtain watertightness against air leakage, especially in the conditioned space, mohair should be placed and if necessary can also use synthetic rubber or synthetic resin material. The usage is on the swing door and double door.

8. Surroundings edge of the frame that looks bordered by a wall is given mixturesfor waterproofing and soundproofing.

8.2. DOOR WORK

8.2.1. SCOPE OF WORK

1. Provide labor, materials, equipment and other assistive devices to carry out the work in order to achieve good results and perfect work.

2. This work includes the manufacture of glass doors, teak wood/formica as stated/shown in the drawing.

8.2.2. MATERIAL REQUIREMENTS

1. Door Leaves Frame Material
   The use of anodised aluminum frame doors Equivalent Alexindo.

8.2.3. IMPLEMENTATION REQUIREMENTS

1. Before starting the execution of the work, the Contractor is required to examine the drawings and the conditions that exist in the field (and the size of the holes), including studying the shape, pattern, layout/placement, mounting means, the details of the mechanism and corresponding drawings.

2. Prior to installation, door materials filling in the work place should be placed on the space/place with good air circulation, not directly exposed to the weather and protected from damage and moisture.

3.All sizes should be appropriate with working drawings.

8.2.4. REQUIREMENTS FOR ALUMINUM FRAME

Aluminum frame materials used must meet the standards of good quality, aluminum frame material used is equivalent to anodise aluminium frame.

ARTICLE 9

GLASS WORK

9.1. SCOPE OF WORK

1 Provide labor, materials equipment and other tools to carry out the work in order to achieve good results and a quality work perfectly.

2 Glass and stained glass work covers all the details stated/indicated in the detail drawings.

9.2. MATERIAL REQUIREMENTS

1 Glass is made of glass objects that generally have flattened to the same thickness, has translucent properties, can be obtained from pull processes translucent, can be obtained from pull processes, roller and floating (Float Glass) with a strength that can withstand winds of 122 kg/m^2.

2 Width and Length Tolerance
Length and width must not exceed the tolerance as specified by the manufacturer.

3 Elbow

Rectangular sheet glass must have flat and straight angles and edges, with maximum allowable elbow tolerance is 1.5 mm per meter.

4 Defects

- Allowed defects on translucent sheet have to be according to the provisions of the factory.
- The glass used should be free of bubbles (the spaces are filled with a gas that is contained in the glass).
- The glass used must be free of chemical composition that can interfere with vision.
- Glass must be free of cracks (broken lines on the glass either part or all of a thick glass).
- Glass must be free of edge lumps (a bulge on the side of length and width to the outside/incoming).
- Must be free of spots, cloud and scratches.
- Free from curving (bent glass sheet).
- The quality of the glass sheets used is AA quality.
- The thickness of the glass sheet used shall not exceed the tolerance specified by the manufacturer. For 6 mm glass thickness of approximately 0.3 mm.

5. Material Glass

- Clear glassmaterials should be in accordance with SII 0189/78 and PBVI 1982 Reflective Glass Product, 5 mm glass shatterproof and 5 mm tempered glass with laminated products equivalent to ASAHIMAS.
- Materials clear glass and tempered glass motif with a 5 mm thickness shall be in accordance with SII 0189/78 and PBVI 1982 Reflective Glass Product.Shatterproofglass is equivalent to ASAHIMAS.
- On the coated surface (Chemical Deposited Silver),the surface should be free of blemishes and defects, free of sulfide and other spots.

6. All of the materials before and after the glass is installed must be approved by the Board of Directors/Supervisors

7. Visible and the invinsible sides of the glass due to the cutting should be smoothed to form a potsherd.

9.3. IMPLEMENTATION REQUIREMENTS

1 All work is done by following the instructions drawings, descriptions and terms of employment in this book.

2 This work requires skill and precision. Therefore the Contractor shall provide manpower with capabilities as required.

3 All of the materials installed shall be approved by the Directors/Supervisors.

4 Materials that have been installed shall be protected from damage and impact, and is marked to be easily known, the signs may not use chalk or paint. The signs must be made of a piece of paper that is glued using glue mixture.

5. Cutting glass must be neat and straight and is required to use the special tools for cutting glass.

6 Cutting glass should be adjusted to the frame size, at least 10 mm into the flow of the glass to the frame.

7 Cleansing the end of the glass must use a soft cotton cloth using clean water.

8 Glass must be installed neatly, sides and edges should be straight and flat, it is not allowed to have any cracks and breaks in the sealant/edges, and must be free from all stain and scratch marks.

ARTICLE 10

HANGER & KEY EQUIPMENT WORK

10.1. SCOPE OF WORK

1. This work includes the provision of labor, materials equipment doors/shutters and other assistive devices to carry out the work to achieve a good result and a perfect work.

2. Installation tool hanger and locking is done over the whole installation on doors, and shutters as indicated/specified in the detail drawings.

10.2. MATERIAL REQUIREMENTS

1 All 'hardware' used must be in accordance with the provisions set forth in the Technical Specifications book. When there is a change or replacement of 'hardware' as a result of the selection of brands, the Contractor shall report the matter to the Board of Directors/Supervisors for approval.

2 All keys must be equipped with identification of aluminum plate measuring 3 x 6 cm with a thickness of 1 mm.
Identification is associated with nickel ring to each key.

10.3. DOOR AND WINDOWEQUIPMENT

10.3.1. KEY WORK AND DOOR HANDLE

1 All doors except the 2 main door is using the key equipment as follows:

A. DG1 (2 UNIT)

- Cylinder : Deckson Equivalent
- 3 pairs of Hinge : Deckson Equivalent
- Handle 2 Place : Deckson Equivalent
- Lockcase : Deckson Equivalent
- Grandel cropping up and down : Deckson Equivalent
- Door Closer : Deckson Equivalent

B. SINGLE DOOR

- Cylinder : Deckson Equivalent
- 1 1/2 pairs of Hinge : Deckson Equivalent
- Handle : Deckson Equivalent
- Lockase : Deckson Equivalent
- Door Closer : Deckson Equivalent

2 Window leaf glassis using lock handle equivalent to Decksonbrand.

3 All keys planted are firmly installed on the door frame. Mounted as high as 90 cm from the floor, or as directed by the Board of Directors/Supervisors.

10.3.2. HINGES WORK

1. Doors for general are using door hinge equivalent to Deckson Brand with at least 3 pieces for each leaf by using flower screws of the same color with the hinge. Number of hinges mounted are to be calculated according to the door load weight, each hinged carry a maximum of 20 kg.

2.Windows for generally are using a window hinge equivalent to Deckson Brand with at least 2 pieces for each leaf by using flower screws of the same color with the hinge.

Contractor shall submit samples of materials for approval by planners.

10.4. IMPLEMENTATION REQUIREMENTS

1 Top hinge is mounted ±28 cm from the top surface of the door.
Bottom hinge is mounted ±32 cm from the bottom surface of the door.
Middle hinge is mounted in the middle between the two hinges.

2 For toilet doors, top and bottom hinges are mounted±28 cm from the surface of the door, the center hinge is mounted in the middle between the two hinges.

3 Door puller is mounted 90 cm from the surface of the floor.

4 Lockcace, handle and backplate installation must be neat, straight and in accordance with the location of the position that has been determined by the Board of Directors/Supervisors. If this is not achieved, the Contractor is obliged to fix at no extra charge.

5. All device locks should work properly, it must be tested roughly and smoothly.

6 Signs identifying the key must be installed in accordance with the door.

7 The contractor shall prepare shop drawings (implementation detail drawings) based on the contract document drawing which has been tailored to the circumstances on the ground.

In the shop drawings should be clearly stated all the necessary data, including product descriptions, how to install or specific details that have not been covered in detail in Contract Documents Drawings, in accordance with the Factory SpecificationsStandard.

8 Shop drawings must be approved first before being implemented by the Directors/Supervisors.

ARTICLE 11

CEILING WORK

11.1. GENERAL

To ensure timely availability of the materials, they must be booked no later than 3 months before being installed, for which the Contractor must show the assertion after sample material orders are approved by the Directors/Supervisors.

To maintain the quality and quality of materials installed, the installation must be performed by a designated agent authorized by the manufacturer.

11.2. CEILING FRAMEWORK

1. Frame the ceiling is made of 40x40 mmhollow.

2.The entire framework of the ceiling is hung on a concrete slab. The hanger wires are attached to a metal plate that is bolted to the concrete slab equivalent with Ramsetto the concrete beams.

3. After the entire frame ceiling is mounted, the entire surface must be flat, straight waterpass. No wavy parts and the trunks of the framework must be mutually perpendicular.

11.3. GYPSUM CEILING COVER

1.Gypsum materials used are using 9 mm thick gypsum.

2. Gypsum that has been installed is well chosen, the shape of each unit must be the same and no parts are cracked, chipped or other defects, and have been approved by the Directors/Supervisors.

3. Gypsum is mounted with mounting means in accordance with the drawings and once installed, the surface area should be flat, straight, water pass and not wavy. No holes between unit connections.

4. Installation of Ceiling Waterproofing t: 40x40cm 4mm hollow frame equivalent to Kalsiboard/GRC Board

11.4 MATERIAL REQUIREMENTS

a. Scope of Work
Includes the installation of all ceiling in accordance with the drawings and requirements.

b. Before the work begins installation of ceiling is then:
- Contractors are required to conduct checks/examinations to the works that are closely related to the work of this ceiling.
- Installation must be done after the ceiling hanger tools are completed.

c. Gypsum materials
-Material : Gypsum 9 mm equivalent kalsiboard
- Size : 120 x 240 cm or as indicated on the drawings.
-Thickness: 9 mm
-Frame : wood or as working drawings
- Ceiling List : list Knauf gypsum or equivalent JayaBoard
- Requirements :All gypsum material used is not defective/broken, Frame-frame in accordance with the requirements.

ARTICLE 12

PAINTING WORK

12.1. SCOPE OF WORK

1.Preparing the surfaces that will be the painted.
2. Painting the surface with materials that have been determined.
3. Painting all surfaces and areas where there is no specific mention in drawings, with colors and materials in accordance with the instructions of the Planner.

12.2. IMPLEMENTATION STANDARD (MOCK-UP)

1. Before painting is started, the Contractor shall do the painting on one surface for each paint color and type required. These surfaces will be used as examples of colors, textures, materials and workmanship manner. These surfaces will be used as the standard mockup that will be determined by the Board of Directors/Supervisors.

2. If each of these surfaces has been approved by the Board of Directors/Supervisors, these surfaces will be used as anoverall painting workminimum standard.

12.3. SAMPLE AND MATERIALS FOR TREATMENT

1. Contractor must prepare a paint sample of each color and type of paint on transparent areas of 30 x 30 cm2. In these areas,it should be listed clearly the colors, paint formula, the number of layers and layer types (of base paint to the final layer).

2. All of the sample surfaces must be considered by the Board of Directors/Supervisors. If these examples have been approved in writing by the Field Directors and the planners, the Contractor can proceed to produce a mockup.

3. Contractor shall submit to the Directors/Supervisors, to then be forwarded to the assignor, at least 2 gallons of each color and type of paint used. Paint cans are sealed and clearly defined the paint inside. The paint will be used as a backup for the treatment, by the assignor.

12.4. PAINT WORK WALL

1.Included in paint workare painting the entirestucco wall and/or other parts of the specified drawing.

2.The outer walls of the building is using paint colors equivalent to Vinilex or determined by the planners.

3.The walls of the building is using Acrylic Emulsion paint type with base layer color equivalent to Vinilex or determinedby the planners.

4. Before beginning the paint work, the plaster has to be really dry, no cracks and the Contractor has to get an approval from the Directors/Supervisors.

5.Inner wall painting layer consists of one (1) layer of ex ICI Dulux or equivalent, followed by 3 (three) layers ex ICI Dulux or equivalent to the viscosity of the paint as following:
- Layer I dilute (additional 20% water).
- Tier II thick.
- Layer III dilute.

6. For similar colors, the Contractor is required to use the cans with the same mixing numbers (batch number).

7. After the paint work is completed, the surface that has been painted should be in a whole, flat, slipperywith no strippedpart and guarded against surface dirtying.

12.5. CEILING PAINTWORK

1. Included in the work of ceiling paint is the plywood ceiling and exposed concrete or other parts specified in the drawing.

2. Paint brand used ex ICI Dulux or equivalent and the color determined by Planner.

3.Gypsum connections should be given flexible sealant so as not to be seen as cracks after painted.

12.6. WORK PAINT IRON

1. Included in this work is the painting of all parts of the steel frame for roof, gutter-iron fence along gutters and other metal work specified in the drawing.

2. Paint used is ex ICI Dulux or equivalent.

3. The paint work is done after the surface to be painted is sanded smoothly and free of dust, oil and others.

4. As ananti-rust base layer, A primer is used one time. Welded joints and sharp ends are given a "touch up" with two layers after the layer thickness 40 micro is applied.

5. Once dry after 8 hours and then sanded again, the surface is given another coating layer. After 16 hours of drying out, the final coat is applied by spraying 3 layers.

6. Painting is done by using a spray with 3 layerscompressor.

7 After the painting is completed, the field of paint should be smooth, shiny and intact, no bubbles and guarded against dirtying.

ARTICLE 13

RAILLING WORK

13.1. SCOPE OF WORK

1.Railing pairingworkt: 0.85cm including painting
2.First flooe screen frame pairing
3.Checkered Plate (stairs)
4.Ladder stepnozing pairing work

13.2. MATERIAL REQUIREMENTS

1. All materials must meet the size and standard and easily available in the market, unless specified otherwise.

2. All the equipmentsis complete with all of the equipments, according with those provided by the manufacturer for each type selected.

3.items used are from the products that have been supplied by the manufacturer for each type selected.

4. Items used is from the products that have been required in the description and the terms in the book.

13.3. IMPLEMENTATION REQUIREMENTS

1.Before being installed, all materials should be shown to the Directors/Supervisors with the factory requirements/regulations for approval. Materials that are not approved must be replaced at no additional cost.

2. If deemed necessary to exchange/replace materials, replacement must be approved by the Directors/Supervisors based on the examples performed by the Contractor.

3. Before installation begins, the Contractor shall examine the drawings and the conditions that exist on the field, including studying the shape, pattern, placement, sparings installation, installation methods and drawing details.

4. If there is any abnormality between drawings, a drawingand the specifications and so on, the Contractor shall immediately report to the Directors/Supervisors.

5. Contractor is not allowed to start the work in a place where there are abnormalities/discrepancies before these abnormalities are resolved.

6. During the implementation, there should always be held testing/inspection for the perfection of the work and its function.

7. The Contractor shall repair/repeat/replace any damages occurred during the implementation and warranty period, at the expense of the Contractor, as long as the damage was not caused by the actions of the owners.

ARTICLE 14

SECONDARY FACADE WORK

14.1SCOPE OF WORK

1. Installation of Sun Shading In Area Building Exterior, Installation of Ornaments in Sun Shadding, and Installation In Wall / Depot Mini

14.2 MATERIAL REQUIREMENTS

1. All materials must meet the size, standard and easily available in the market, unless specified otherwise.

2. All the equipment in a state of complete with all the equipment, according to which has been provided by the manufacturer for each type selected.

3. Items used are from products that have been supplied by the manufacturer for each type selected.

4. Items used is from products that have been required in the description and the terms in the book.

14.3 IMPLEMENTATION REQUIREMENTS

1. All materials before being installed should be shown to the Directors / Supervisors and the requirements / regulations for

factory approval. Materials that are not approved must be replaced at no additional cost.

2. If deemed necessary to hold exchange / replacement of materials, a replacement must be approved by the Directors / Supervisors based examples performed by the Contractor.

3. Before installation begins, the Contractor shall examine the drawings and the conditions that exist in the field, including studying the shape, pattern, placement, installation-sparing sparing, how to install and fit the image details.

4. If there is any abnormality in the picture with a picture, a picture with the specifications and so on, then the Contractor shall immediately report to the Directors / Supervisor.

5. Contractor is not allowed to start work in a place where there are abnormalities / discrepancies in place before these abnormalities resolved.

6. During the implementation should always be held testing / inspection for the perfection of the work and function.

7. The Contractor shall repair / repeat / replace if any damage occurred during the implementation and warranty period, at the expense of the Contractor, as long as the damage was not caused by the actions of owners.

ARTICLE 15

SANITARY WORK

15.1. SCOPE OF WORK

1. Included in this sanitary installation work is the provision of labor, materials, equipment and other assistive devices used in this work to achieve results and perfect quality work.

2 .The sanitarymounting work is according to the drawing details, description and terms in this book.

15.2. MATERIAL REQUIREMENTS

1.All materials must meet the size and standard and easily available in the market, unless specified otherwise.

2. All the equipmentsis complete with all of the equipments, according with those provided by the manufacturer for each type selected.

3.items used are from the products that have been supplied by the manufacturer for each type selected.

4. Items used is from the products that have been required in the description and the terms in the book.

15.3. IMPLEMENTATION REQUIREMENTS

1.Before being installed, all materials should be shown to the Directors/Supervisors with the factory requirements/regulations for approval. Materials that are not approved must be replaced at no additional cost.

2. If deemed necessary to exchange/replace materials, replacement must be approved by the Directors/Supervisors based on the examples performed by the Contractor.

3. Before installation begins, the Contractor shall examine the drawings and the conditions that exist on the field, including studying the shape, pattern, placement, sparings installation, installation methods and drawing details.

4. If there is any abnormality between drawings, a drawingand the specifications and so on, the Contractor shall immediately report to the Directors/Supervisors.

5. Contractor is not allowed to start the work in a place where there are abnormalities/discrepancies before these abnormalities are resolved.

6. During the implementation, there should always be held testing/inspection for the perfection of the work and its function.

7. The Contractor shall repair/repeat/replace any damages occurred during the implementation and warranty period, at the expense of the Contractor, as long as the damage was not caused by the actions of the owners

15.4. SANITARYEQUIPMENT

15.4.1. CLOSET WORK

1. The sitting closet used is equivalent with Toto CW421J complete with all its accessories as listed in the brochure. The color will be determined by the Planner.

2.Installed closet along with the accessories have been well selected, no chipped parts, cracks or other defects and completely approved by the Directors/Supervisors.

3. Closet should be attached securely, the location and height are corresponding to the drawing, and water pass. All stains should be cleaned, pipe connections should not have any leaks.

15.4.2. FAUCET WORK

1. The faucet used is equivalentwithToto TX23BQ13N. The size is costumized for the purposes of each plumbing that is corresponding to the drawings and brochures sanitary tools.

2. Thefaucets must be installed on the water pipe with a strength, elbow, and placement shall be in accordance with the drawings..

15.4.3. FLOOR DRAIN AND CLEAN OUT

1. Floor drain dan Clean out used is equivalent with Toto TX1BV1N, hole 4 " and equipped with a siphon and a hinged cover for floor drain and Sanei to clean out.

2. Floor drain installed at the appropriate places according to thedrawings

3. Installed floor drain has been well-selected, without defects and approved by the Board of Directors/Supervisors.

4. In the places that will be installed floor drain, floor coverings must be perforated neatly, using a small chisel with shape and size according to the size of the floor drain.

5. After the floor drain and clean out are installed, the pairing must be neat, water pass and cleaned out from Cement stains and no leaks.

15.4.4. SINK WORK

1. The sink used is the equivalent with Toto LW 230 complete with all its accessories as listed in the brochure. The color will be determined by the Planner.

2. Installed sinks along with the accessories have been well selected, no chipped parts, cracks or other defects and completely approved by the Board of Directors/Supervisors.

3.Sinks should be attached securely, the location and height are corresponding to the drawing, and water pass. All stains should be cleaned, pipe connections should not have any leaks.

16.4.5. SINK INCLUDE CONCRETE

1. Sink following all the accessories used are complete with all accessories royale as listed in the brochure with color will be determined by the planner.

2. Sink is installed along with the accessories that have been selected properly, no part of the chipping, cracks or other defects and has been approved by the full Directors / Trustees.

3. Sink must be attached securely, location and height according to the picture, water pass. All stains should be cleaned, pipe connections should not be any leaks.

CHAPTER IV
SAFETY, HEALTH AND ENVIRONMENTAL (SH & E) PLAN

ARTICLE 1
GENERAL REQUIREMENT

Preliminary plan of *Safety, Health and Environmental (SH & E)* was prepared based on the needs in the field of *Engineering* and Construction industry. SH & E Management System will convince the implementation of a safe and healthy works.

SH & E management concepts that will be applied during the construction phases to achieve the following objectives:

- Protect the lives of Contractor personnel.
- Maximize the performance of existing assets (labor, heavy equipment, vehicles, and personnel morale)
- Saving the assets of the Contractor (labor, protecting materials / equipment installed from damage, accidents and fire hazards).
- Maintain a good impression (*good public image*) of the Contractor (based on the *high performance safety* and reputation).
- operating cost savings projects.

The following five conditions is a top priority to be applied:

a) Identify / recognize the dangers and risks of:
- The location and condition of the project (vegetation, soil conditions, etc.)
- Characteristics of activity events (*safety hazard*)
- Characteristics of the operation of the instruments of labor, vehicles, equipment (manual operation, routine maintenance, testing equipment).
- Health conditions of workers / labor (mental, saturation, physical & spiritual)
- When overtime (following the standard hours of work, overtime restrictions)
- Loss of obedience / loyalty towards work / lack of safety regulations.

b) Risk analysis, evaluation and monitoring.

c) Civilizing about safety by:
- Submission of safety at each meeting at the project site
- Induction, Tool Box and Management meetings
- Policy Management indicated with brochures, banners, signs, flyers, etc..
- Emergency Exercise the evacuation.
- Exercise safety

• Safety Award

d) Referring to the implementation of work procedures and regulations.
e) safety inspections and audits on each activity.

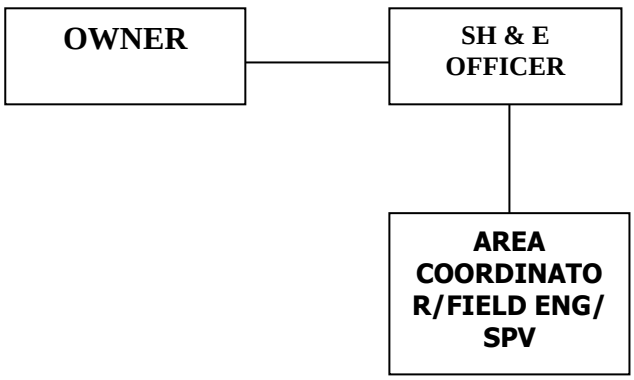
ARTICLE 2
COMPANY SAFETY POLICY

Company Safety Policy is set by the Contractor Management and implemented on the entire project. The policy reflects the seriousness of the Contractor in running SH & E Management.

All employees of the Contractor is responsible for ensuring the SH & E policies to be implemented.

ARTICLE 3
ORGANIZATION OF THE SAFETY, HEALTH AND ENVIRONMENTAL

ORGANIZATION CHART *SH & E COMMITTEE ON*



ARTICLE 4
COORDINATION

4.1 Internal Coordination

Safety Committee assigns an advisor to assist and guide the management of the execution of the work, the planning,

implementation, ongoing monitoring of the implementation time and cost effective safety.

The purpose of the Safety Committee is to achieve a consistent level of safety performance, which can convince the Court and the Owner and Contractor personnel.

Safety Committee membership includes representatives from Contractors which will be led by the Construction Manager.
This committee should hold a committee meeting at least once a month, or if there is an accident.

To streamline the effectiveness of meeting agendas, public safety patrols will be conducted by the committee members the day before the meeting.

4.2 External Coordination

Coordination will be made with external agencies / government agencies, such as police, hospitals, local governments, and others.

ARTICLE 5
IMPLEMENTATION PROGRAM SH & E IN THE FIELD

The people who are competent in the field will be used to identify problems / potential hazards prior to the commencement of work.

Written instructions for tasks that contain a high risk will be prepared.
Safety equipment will be provided and properly maintained during the execution of the work.

Warning signs will be placed at potential places to hazards and should be easily seen by all personnel in the field.

Field Safety Program will take into account the following elements:

1. Basic Regulation SH & E
2. Plan for Prevention of loss
3. First Aid / Medical Procedures
4. Training of Personnel
5. Work Permit
6. Prevention / protection against Fire
7. Emergency Response
8. House Keeping
9. Environmental Hazard
10. Inspections and audits of Loss Prevention and Audit
11. Investigation of accidents

12. Safety Regulations

5.1 Basic Regulation SH & E

Based on analysis of construction hazards, the basics of the provisions of SH & E, was developed and prepared to ensure the safety of all planned work.

The main provisions of the following documented specifically in the implementation of safety in the field:

1. Prevention of workplace accidents, such as:
   - Electrical work
   - Employment in high places
   - Grinding Machine
   - Welding and cutting
   - *Cartridge hammers*
   - *Hazardous Materials and products*
   - Digger machines, earthmoving and other civil works.

2. Work Installation (*erection*)
3. Work Insulation (*Insulation*)
4. *Internal Work*
5. Transportation personnel
6. Handling
7. Fires and other emergencies
8. Evacuation Plan
9. Accident Investigation
   - Accident Investigation and report
   - Serious accident
10 Other provisions

5.2 Plan for Prevention of Loss

Team of field workers ranging from level to Foreman Construction Manager will continually review the field conditions, construction work plans and other field activities to minimize safety hazards and disregard for the safety of personnel actions.

5.3 First Aid / Medical Procedures

Contractor will provide a means P3K / First Aid during execution of work.

5.4 Personnel Training

It underscores the types of information and training required for all personnel and supervisors before starting and during works primarily for local workers. Contractor will provide a certificate of training for each employee, and filing date of the completion of each training.
New hire Orientation Safety Induction Training
Orientation programs for project personnel and supervisors, including all workers, not counting years working in the field of construction. Orientation shall be in accordance with project specifications, such as the types of potential risks, the needs of companies, and others.
Orientation was introduced as part of the overall orientation of the project will be provided by the Management Staff.
Orientation training program will include, but not limited to:

- Hazard communication
- Hearing conservation
- Respirators protection (if applicable)
- PPE (Personnel Protection Equipment)
- Emergency action plans

Supervisor's Orientation

The entire project supervisor assigned will be indoctrinated about the responsibilities of each. They were asked to apply the rules of their company on the work. They are expected to give an example for personnel in regulatory compliance oversight of the work and the desire to implement workplace safety.

Supervisor Safety Training

Safety Training, which is considered to be an integral part of the safety program contractor and part of the productivity improvement, and is implemented in this project.

5.5 Work Permit

In order to monitor and control the potential risks in the field of work, a work permit is needed to do the work in all conditions where the boundary of the unit process or in new construction where hazards might occur. Work permit issued by the Owner and the Court, in accordance with the following safety procedures have been verified.

Some of the significant conditions that must be met are:

- Placing all material buried before digging

- Providing fire protection and enforce no-smoking rules
- Provide personal safety equipment

5.6 Fire Prevention & Protection

To prevent fire, should be given special attention in the area of *pre-planning, a hot-work permit controls*, areas where there are flammable gases, liquids and material control areas, smoke control areas, training and use of alarms, proper electrical wiring, and disposal of waste in place. Procedures specific emphasis on construction safety plans and safety field for each project.

5.7 Emergency Response

Emergency response procedures developed for all potential incidents including fires, explosions, natural disasters, and others. These procedures include a means of communication, fire fighting, medical facilities, safety, evacuation, and other facilities that may be required.

The personnel in a period of periodic guided through meetings, training and encouraging, and others.

5.8 House Keeping

Good housekeeping is an important part of the field safety program. Application of housekeeping as possible is an obligation for all personnel before, during, and after the entire activity of walking.

Work environment, field, and all vacant land must be cleared of scrap and materials unnecessary. Materials needed for the work should be stored properly and kept away from the car so that reasonable access for fire engines and ambulances can be smoothly.

Adequate toilet facilities, hygiene and cleaning service and a water source should be provided if needed.

5.9 Environmental Hazard

Supervisors will use the media to PPE administrative and measurements to reduce and eliminate all sources of environmental hazards. The unidentified worker trained in procedures and requirements.

5.10 Loss Prevention inspect and Audits

At the Contractor Safety Program, the things that got special attention is the prevention of accidents and losses. Safety procedures give instructions how it can assess the progress of each project and if necessary, repair progress for achieving its objectives. The results of the inspection along with the monthly inspection results recorded and included in the statement of loss prevention. Results of a copy of the inspection report and a summary submitted to the relevant manager for corrective action if necessary

Safety Audits

Audits performed by the *Contractor's Safety Department*. The purposes of the audit are:

- Ensure safety and all kinds of needs required.
- *Review* and update the training activity.
- *Review* claims management and control efforts for the prevention of losses.
- Recognize potential trends in *Safety Violation* or loss, which can be applied to the entire project area.
- Ensuring the implementation of the Government Safety Regulations.

5.11 Accident Investigation

The incident that resulted in injuries, lost, investigated and filed by the supervisor in charge and reviewed by the Construction Manager and the Site Safety / Security Officer. The investigation was carried out to prevent the occurrence of problems in safety and to improve existing measures. Periodic surveillance continues to run during the investigation.

5.12 Safety Regulations

Safety regulations must be applied in the field to ensure the safety of the system around the project area.

Included in the scope of safety are:

- Parking Area
- The entrance
- The pedestrian way and road cars
- Identification Signs
- Material passing

- Vehicle and equipment stickers
- Searching people and property
- Camera
- Alcohol, illegal drugs, firearms, and explosives
- Regulation of traffic
- Monitoring the safety regulations in accordance with the safety regulations.