



Republic of the Philippines
Department of Agriculture Western
Visayas
Parola, Iloilo City

TECHNICAL SPECIFICATIONS

ESTABLISHMENT OF CALIMBAJAN SOLAR- POWERED IRRIGATION SYSTEM

(HVCDP 2025)

Brgy. Calimbajan, Makato, Aklan

PREPARED BY:


JEFFREY E. ESPANOLA, ABE
Engineer I (License No. 0008108)

REVIEWED BY:


YVONNE GRACE A. SUR, ABE
Engineer III (License No. 0005870) Head,
EPDSS

CHECKED/SUBMITTED BY:


MOISES D. MANAY, ABE, MEE
Engineer V (License No. 0006077)
Division Chief, RAED

RECOMMENDING APPROVAL:


MARIA TERESA Y. SOLIS
OIC-RTD for Operations and Extension

APPROVED BY:


DENNIS C. ARPILA
Regional Executive Director

I. GENERAL ITEM

SPL1. TEMPORARY FACILITY

The Contractor shall furnish all materials, labor, equipment, and tools and install such temporary works as are necessary for the successful completion of the Contract Work. The Contractor shall negotiate the site for his construction camp, office, and work areas.

These temporary works and construction plans shall include but shall not be limited to the following:

1. Construction camp for housing, feeding, and accommodation for all the Contractor's employees. The Contractor shall also, within proximity of his camp, provide an office and sleeping quarter for DA-RAED 6 monitoring employees, complete with facilities, and shall have a minimum floor area of 48 sq.m.
2. Facilities such as haul roads, potable water, supply, drainage, lighting, sewage disposal system, sanitation, first aid, and fire protection facilities.
3. Workshops, laboratories, warehouses, site offices, stockpile areas, and storage areas for materials, equipment, spare parts, fuel, and oil.
4. All other temporary facilities not specifically listed but required for the proper functioning of the camp set-up and construction activities.

Temporary works shall conform to all government standards and codes and shall meet the sanitary requirements of the Department of Health.

B.9. PROJECT SIGNBOARD, COA BILLBOARD, AND PROJECT MARKER

The Project Marker is made of concrete hollow blocks and reinforced with steel bars, and plaster finished in a 0.88m x 1.4m dimension, and with a concrete foundation underneath, marker information is seen on the approved plans/drawings.

Commission on Audit (COA) Billboard printed on white tarpaulin, 8 ft x 8 ft dimension; resolution 70 DPI; Font: Helvetica; Font Size: Main information – 3 inches; Sub. Information – 1 inch; and Font color: Black.

Department of Agriculture (DA) Billboard shall be on standard billboard measuring 1.2m x 2.4m (4ft x 8ft) using ½ inch plywood or Tarpaulin posted on 3/16-inch plywood. Billboard shall be installed in front of the project site.

B.16 & B.5. MOBILIZATION/ DEMOBILIZATION

The Contractor shall mobilize and move into the Project Site (per his approved Construction Program and Equipment Moving-in and Utilization Schedule) the required construction equipment needed for the successful completion of the Contract Work immediately after receipt of the approved Construction Program. Notwithstanding the approved Equipment Moving-in and Utilization Schedule, the initial equipment required to be mobilized by the Contractor to the Project Site within twenty (20) calendar days after the date of receipt of the approved Construction Program are listed below:

MINIMUM EQUIPMENT REQUIREMENT FOR SOLAR-POWERED FERTIGATION PROJECT

Description	No. of Unit
1. Drilling Rig	1 unit
2. Bar Cutter & Bender	1 unit
3. Service Vehicle	1 unit
4. Welding Machine	1 unit

If for reasons or causes other than "major calamities", the Contractor fails to mobilize fully the initial equipment required within the said period, and all other equipment listed in his approved Equipment Moving-in and Utilization Schedule, at

the discretion of the Secretary/Director, he may be given an extension of time to mobilize them fully but in no case shall it exceed thirty (30) calendar days. Failure to fully mobilize the required construction equipment within said period will be a ground for contract rescission.

Demobilization shall include dismantling and removal from the site of the Contractor's Construction Plant, materials and equipment, and all temporary facilities except some facilities which DA- Western Visayas shall consider to remain and which shall be handled over to DA- Western Visayas at the time of demobilization shall also include clean-up of the site after completion of the Contract Work as approved by DA- Western Visayas and transportation from the site of Contractor's employees.

ITEM 1

WELL DEVELOPMENT

Scope

This item shall consist of furnishing all plant, labor, equipment, appliances, and materials and performing all operations in connection with drilling, sampling, constructing, developing, and testing the well.

Construction Requirements

Cuttings must be carefully collected for every meter of penetration or at every change of lithology. Penetration rate shall be closely monitored to have supplemental data in the evaluation of the hydraulic parameters of the lithology encountered. The rotary drill is recommended to pave the way for electric logging after the drilling exploratory well. Electric logging is used to locate the exact aquifer zone(s). When aquifer zones have been properly located, it is recommended that aquifer testing should be conducted to determine the aquifer characteristics such as maximum yield, before the final well design is constructed. Drilling shall be done up to 11 meters (minimum) below the ground surface. The submersible pump must be at the most applicable level inside the casing. Well perforations should have slot openings of at least 15% of the surface area of the pipe.

Stages of Well Development

1. Jetting.

After the well is installed, it is jetted starting from the bottom of the perforated pipe to remove the trapped mud and fine aquifer materials.

2. Pumping at low discharge.

After the jetting fluid significantly clears up, well development is continued by pumping. Initially, the pump is operated at a very low and controlled discharge until the water clears and pumping is stopped for at least ten minutes after which pumping is resumed.

3. Pumping at intermediate and higher discharge. The well should be developed at intermediate discharges, and up to a pumping rate that is 50% or more above the designed pump discharge.

Scope of Work

- a. Site preparation and Rig Set-up
- b. Drilling of Pilot Hole
- c. Drilling and Installation of Surface casing
- d. Electric logging and Preparation of Well Design.
- e. Reaming from 0 m. to 12.00m (12.00 m.) 4" dia.
- f. Reaming from 0 m. to 12.00m (12.00 m.) 8" dia.
- g. Installation of Casing and Screen with Centralizer
- h. Installation of Gravel Pack Materials
- i. Development by Bailing
- j. Treatment with Sodium Hexametaphosphate

- k. Development by High Velocity Jetting
- l. Development by Surging including Bailing Out of Sediments
- m. Development by Air-lift Method Using Air Compressor
- n. Well Development by Pumping
- o. Step-drawdown pumping test with five (5) steps at one-hour duration each
- p. Discharge rate increasing in an equal fraction of the expected maximum yield
- q. Continuous Constant Discharge Pumping Test
- r. Grouting
- s. Cemented Pit

NOTE

- A pumping test shall be conducted to ascertain whether the designed discharge is applicable, which may change the designed pump size depending on the test result.
- Must be AMTEC Tested (System Test).

II. SOLAR PUMP/ ARRAY/ MOUNTING STRUCTURE/ INVERTER CAGE

803 STRUCTURE EXCAVATION

The work under this Section shall include clearing removal, hauling, and disposal of all excavated materials tamping, and trimming of the foundation bed required for the construction of the permanent structure.

Trimming the sides of excavations to the required profiles and levels as well as removing all loose material should be executed before the consecutive process.

Bottoms of excavations shall be approved by the Engineer's Representative before any concrete is laid.

404 REINFORCING STEEL BARS

All reinforcement shall be placed strictly in accordance with the drawings and as instructed in writing by the Engineer. Nothing shall be allowed to interfere with the required disposition of the reinforcement, and the contractor shall ensure that all parts of the reinforcement are placed correctly in position and are temporarily fixed where necessary to prevent displacement before or during the process of tamping and ramming the concrete in place. The ties, links, or stirrups connecting the bars shall be taut so that the bars are properly braced around which they are intended to fit. Placed correctly in position and are temporarily fixed where necessary to prevent displacement before or during the process of tamping and ramming the concrete in place.

All reinforcing steel bars shall be Grade 40 or PS 275, deformed type and conforming to the requirements of ASTM Designation A-615 or its latest revision. The nominal dimensions and unit weights of bar designation shall be in accordance with the following table:

Bar Number	Designation	Unit (kg/m)	Wt	Diameter (mm)	Nominal Dimensions Cross-Section Area (mm ²)	Perimeter (mm)
10 mm		0.616		10	78.54	
12 mm		0.888		12	113.10	
16 mm		1.578		16	201.06	

Wire for bending reinforcement bars shall be of soft black annealed mild steel wire. The diameter of the wire shall not be less than 16 S.W.G. (1.6mm) and the binding shall be twisted tight with proper pliers. The free ends of the binding wire shall be bent inwards.

Steel reinforcement shall be protected at all times from injury. When placed in the work, it shall be free from dirt, detrimental scale, paint, oil, loose, rust, grease, or other foreign substances. Reinforcement in any member shall be placed and then inspected and approved by the Engineer before the placing of concrete begins. All steel reinforcement shall be accurately placed in the position shown on the drawings and firmly held during the placing and setting of concrete. Concrete placed violating this provision may be rejected and its removal is

required.

All reinforcement shall be furnished in the full lengths indicated on the drawings. Splicing bars, except where shown on the drawing, will not be permitted without the written approval of the Engineer. Splices shall be staggered as far as possible. Additional splices, other than those shown on the drawings; and allowed by the Engineer, shall be at the contractor's own expense.

414 FORMWORKS

All forms shall be of wrought plywood and shall be built light and of sufficient rigidity to prevent distortion due to the pressure of the concrete and other loads incident to the construction operations. Forms shall be constructed and maintained to prevent warping and the opening of joints due to shrinkage of the plywood and lumber.

The forms shall be substantial and unyielding and shall be so designed that the finished concrete will conform to the proper dimensions and contours. The Contractor shall take into consideration the effect of vibration on the formwork and shall be responsible for any damage or default resulting thereof.

The number of spacing of the form struts and braces shall be such that the forms will be and uniformly lock joints between form sections shall be free from play or movement. The shape, strength rigidity, water tightness, and surface smoothness of re-used forms shall be always maintained. Any warped or bulged lumber must be resized before being re-used. Forms which are unsatisfactory in any respect shall not be re-used.

In determining the time for removal of forms, consideration shall be given to the location and character of the structure, the weather, and other conditions influencing the setting of the concrete and the materials used in the mix. In general, the forms of any positions of the structure shall not be removed until the concrete is strong enough to prevent injury to the concrete when the forms are removed.

Method of form removal likely to cause overstressing of the concrete shall not be used. In general, the forms shall be removed from the bottom upwards. Forms and their supports shall not be removed without the written approval of the Engineer. Supports shall be removed in such a manner as to permit the concrete to take the stresses due uniformly and gradually to its weight.

The Contractor shall include in his prices any formwork which may have to be left in position due to the impossibility of removal of same.

405 CONCRETE WORKS

This section describes and specifies work required for plain and reinforced concrete, including formwork intended to be used for the Project under the Contract in accordance with the Drawings, Bills of Quantities, and as directed by the Engineer.

At the beginning of each month, the Contractor shall submit to the Engineer his concreting program for that month, stating the pouring dates, so that adequate checking and supervision can be provided before and during the pouring operation. No pouring shall be allowed unless the Engineer has been given a week-advanced notice of the intention to pour.

All the applicable provisions of the latest revision of the ACI Building Code (ACI-318-85) and American Society for Testing Materials (ASTM) shall govern in all cases not specifically provided for herein.

All cement requirements of concrete works for the contract shall be contractor-furnished. The form to the requirements of the standard specifications for Portland Cement (ASTM: C150 Type 1). All cement shall be stored in suitable weatherproof and approved storage sheds which will protect the cement from dampness. Cement shall be used in the order of its delivery to the site, new deliveries shall not be used unless the cement from earlier deliveries has been completely used.

The term "Fine Aggregates" is used to designate aggregates in which the maximum size of particles is $\frac{3}{16}$ of an inch (6 millimeters). As a means of providing moisture control, the Contractor may be required to stockpile

the fine aggregates over a porous drain to get rid of excess water and stabilize the moisture content. Fine aggregates shall conform to the requirements of ASTM C-33 and shall consist of hard, tough, durable uncoated rock particles. The Contractor shall exercise every possible precaution in transporting, washing, and screening operations to prevent contamination of sand particles.

Fine Aggregate from different sources of supply shall not be mixed or stored in one pile nor used alternately in the same class of construction or mix.

The term "Coarse Aggregate" is used to designate aggregates of such sizes as to fall within the range of 3/16 inches to 1 1/2 inches (0.5 cm to 3.75 cm.) or any size or range of sizes within such limits. Coarse aggregate for concrete shall be furnished by the Contractor and shall consist of crushed rock or a mixture of natural gravel and crushed rock. Coarse aggregate as delivered shall have uniform and stable moisture content. Any rewashing found necessary to provide clean aggregates shall be done prior to finishing screening. Rewashing shall not be performed in finish screens. Coarse aggregates shall conform to the requirements of ASTM C-33 and shall consist of hard, dense, uncoated durable rock fragments.

The mixtures for all classes of concrete shall be designed by the Contractor and approved by the Engineer to obtain the compressive strength at the age of twenty-eight (28) days.

The Contractor shall provide the required samples of concrete to the Engineer without cost. Sampling will, in all cases, be performed by or under the direct supervision of the Project Engineer and the Contractor shall provide without cost to DA all-available tools and labor as may be required. Concrete sampling shall be carried on during concrete operations at the rate of one standard sample for each 75 cubic meters of concrete or fraction thereof placed during each continuous placing operation but in no case shall there be less than one sample for each day concreting. Each standard sample shall consist of three (3) standard cylinders 6-inch diameter and 12-inch high. The Contractor shall keep a record of the samples and the portion of the structures and volume represented which shall be available to DA on demand.

Sampling shall conform to ASTM Designations C-172, preparation, storage, and curing to ASTM Designation C-31, and testing to ASTM Designation C-39. The samples are to be tested by an approved testing laboratory at the expense of the Contractor.

1705 STRUCTURE BACKFILL (25% compaction)

Backfill and fill shall be a structurally sound material such as gravel or native soil free of rocks with a size of more than 5cm, lumps, vegetables, and other organic materials obtained from suitable excavated material and/or from approved borrow pits.

2. SOLAR POWER MODULE MOUNTING STRUCTURE WITH INVERTER CAGE

1. Concrete pedestal 0.25m diameter with post 2" diameter G.I. pipe schedule 40 welded to the 8mm thick base and support plate with 16mm diameter anchor bolt.
2. Support beam- 2"x4"x5mm G.I. Tubular Pipe (cleaned from rust and primed with red oxide).
3. Bracing- 2"x2"x5mm G.I. Tubular Pipe (cleaned from rust and primed with red oxide).
4. Railings - 2" x3" x 1.5mm c-channel (cleaned from rust and primed with red oxide).

3. SOLAR POWER MODULES (6,600 WP) Brand New

1. 6,600 WP Total Solar Power Modules 12 pcs. Solar Modules @ 550 Wp, or its equivalent
2. Manufactured in ISO 9001- Certified Factories
3. Must be CE marked
4. Must have TUV Certification (IEC 61215)
5. Cell type: Mono-crystalline

Solar Power Modules shall be clamped properly to the Mounting structure.

The installation of solar power modules shall be in accordance with the approved Plans or agreed upon by the Project Engineer of the Department of Agriculture Western-Visayas.

The number of panels may change based on the actual power of the pump used.

The Solar Power Modules shall have a minimum of Five (5) years warranty from the date of acceptance by the DA-WV.

4. **INVERTER AND CONTROLLER (5.5 kW)**

1 Unit- 5.5 kW, (may vary/change if the pump power used changes) inverter with system monitoring and waterproofing.

Brand New

1. Pump is running
2. *Input power and alarm indication for: service needed in case of no contact to pump, overvoltage, over temperature, overload, and dry running.*
3. Maximum Power Point Tracking (MPPT).
4. AC/DC compatibility
5. Overcurrent Protection
6. No load protection
7. Operating History Memory
8. Enclosure Class IP65
9. Sine wave Filter
10. RS485 / Ethernet Capability

The Inverter shall have a minimum of Five (5) years warranty from the date of acceptance by the DA-WV.

5. **SUBMERSIBLE PUMP (5.0HP)**

Brand New

Pump power may change/vary based on the pumping test result, drilling, and the site's actual total dynamic head.

Pump

1. 1 unit – **5.0 hp** Submersible Pump, Brand New
 - Capacity : 238 cum/day
 - Total Dynamic Head: 20.8 m
 - Pump Efficiency : 71%

Motor Specification: Built into Pump

1. Built-in frequency converter
2. Can be supplied by either a DC or AC voltage source
3. *The inverter and control unit must be integrated into the motor*
4. Built-in maximum power point tracking (MPPT)
5. Enclosure class: IP68

Motor protection:

The built-in electronic unit must protect the motor in case: (as standard, without additional equipment)

1. Dry running sensor
2. Over and under voltage
3. Overload
4. Over-temperature

The design system for the 5 hp pumps corresponds to the Watt Peak (WP) of the Solar Power Module. Any design higher than these specifications requires additional WP and inverter capacity to correspond to the design. The additional requirements to meet the specifications of the agency shall be at the expense of the contractor.

Electrical cables/wiring must be free from any defects. Wires and cables shall be of approved type meeting all the requirements of the Philippine Electrical Code bearing the PSA mark. All wires shall be copper, soft drawn and annealed, smooth and cylindrical form, and shall be centrally located inside the insulation. All wiring devices shall be standard products of reputable electrical manufacturers.

The Electric Motor Submersible Pump and surface pump shall have a minimum of Five (5) years warranty from the date of acceptance by the DA-WV.

III. ELEVATED TANK SPL

METAL STRUCTURE/FRAME

(Solar Power Module Mounting Structures/ Inverter Cage and Storage Tank Metal Frame)

Description

This work shall consist of steel structures and the steel structure portions of composite structures, constructed in reasonably close conformity with the lines, grades, and dimensions shown on the Plans or established by the Engineer.

The work will include the furnishing, fabricating, hauling, erecting, welding, and painting of structural metals called for in the Special Provision or shown on the Plans. Structural metals will include structural steel, rivets, welding, special and alloy steels, steel forgings and castings, and iron castings. This work will also include any incidental metal construction not otherwise provided for, all in accordance with these Specifications, Plans, and Special Provisions.

Material Requirements

Materials shall meet the requirements of Item 712, Structural Metal; Item 409, Welded Structural Steel, Item 409, Welded Structural Steel; and Item 709, Paints. All materials shall be brand new and free from fractures/defects.

1. Post and Frames and Other Accessories for solar power mounting structures and inverter cage

a. Posts

Posts shall be made of 2" diameter galvanized iron Pipe Schedule 40, anchored into the pedestal as shown on the Plans.

b. Frames

Support frames shall be 2" x 3" x 1.5mm C-Channel railings, 2" x 4" x 1.5mm Tubular G.I Pipe, 2" x 2" x 1/4" Angle Bar, and 8mm thick base plate placed as shown on plans.

2. Storage Tank Metal Frame

a. Posts

The post shall be made of 3 inches of GI pipe Schedule 40 embedded into the pedestal as shown on the plans.

b. Support frames

Support shall be made of 2 inches of GI pipe Schedule 40, 3 inches of GI pipe Schedule 40 bottom frame, and 1in x 1in x 1/4 in angle bar placed as shown on plans.

3. Painting

All exposed steel materials must be painted with epoxy primer.

CONSTRUCTION REQUIREMENT

Fabrication

These Specifications apply to riveted, bolted, and welded construction.

Workmanship and finish shall be in accordance with the best general practice. Portions of the work exposed to view shall be finished neatly.

Structural material, either plain or fabricated, shall be stored above the ground upon platforms, skids, or other supports. It shall be kept free from dirt, grease, or other foreign matter, and shall be protected as far as practicable from corrosion.

Welding

Shall conform to the applicable requirements of Item 409, Welded Structural Steel (DPWH Bluebook, volume 2).

Erection

1. General

The Contractor shall provide the falsework and all tools, machinery, and appliances, necessary for the expeditious handling of the work and shall erect the metal work, remove the temporary construction, and do all work necessary to complete the structure as required by the Contract and in accordance with the Plans and these Specifications.

Handling and Storing Materials

Materials to be stored shall be placed on skids above the ground. It shall be kept clean and properly drained. If the Contract is for erection only, the Contractor shall check the material turned over to him against the shipping lists and report promptly in writing any shortage or damage discovered. He shall be responsible for the loss of any material while in his care, or for any damage caused to it after being received by him.

Method and Equipment

Before starting the work of erection, the Contractor shall inform the Engineer fully as to the method of erection he proposes to follow, and the amount and character of equipment he proposes to use, which shall be subject to the approval of the Engineer. The approval of the Engineer shall not be considered as relieving the Contractor of the responsibility for the safety of his method or equipment or from carrying out the work in full accordance with the Plans and Specifications. No work shall be done until such approval by the Engineer has been obtained.

Assembling Steel

The parts shall be accurately assembled as shown on the working drawings and any match marks shall be followed. The material shall be carefully handled so that no parts will be bent, broken, or otherwise damaged. Hammering which will injure or distort the members shall not be done. Bearing surfaces and surfaces to be in permanent contact shall be cleaned before the members are assembled.

Painting

All surfaces of new structural steel shall be cleaned before applying Epoxy Primer.

803 STRUCTURE EXCAVATION (Refer to Item II, 803- Solar Pump/Array/Mounting Structure)

1705 STRUCTURAL BACKFILL (Refer to Item II, 1705- Solar Pump/Array/Mounting Structure)

414 FORMWORKS AND SCAFFOLDINGS

FORMWORKS

All forms shall be of wrought plywood and shall be built tight and of sufficient rigidity to prevent distortion due to the pressure of the concrete and other loads incident to the construction operations. Forms shall be constructed and maintained to prevent warping and the opening of joints due to shrinkage of the plywood and lumber.

The forms shall be substantial and unyielding and shall be so designed that the finished concrete will conform to the proper dimensions and contours. The Contractor shall take into consideration the effect of vibration on the

formwork and shall be responsible for any damage or default resulting thereof.

The number of spacing of the form struts and braces shall be such that the forms will be and uniformly lock joints between form sections shall be free from play or movement. The shape, strength rigidity, water tightness, and surface smoothness of re-used forms shall be always maintained. Any warped or bulged lumber must be resized before being re-used. Forms which are unsatisfactory in any respect shall not be re-used.

In determining the time for removal of forms, consideration shall be given to the location and character of the structure, the weather, and other conditions influencing the setting of the concrete and the materials used in the mix. In general, the forms of any positions of the structure shall not be removed until the concrete is strong enough to prevent injury to the concrete when the forms are removed.

Method of form removal likely to cause overstressing of the concrete shall not be used. In general, the forms shall be removed from the bottom upwards. Forms and their supports shall not be removed without the written approval of the Engineer. Supports shall be removed in such a manner as to permit the concrete to take the stresses due uniformly and gradually to its weight.

The Contractor shall include in his prices any formwork which may have to be left in position due to the impossibility of removal of same.

SCAFFOLDINGS

No scaffolds shall be erected, moved, dismantled, or altered except under the supervision of competent persons or the supervising engineer.

Scaffolds and their components must be capable of supporting without failure 4 times the maximum intended load.

Steel scaffolding shall be used in accordance with manufacturers' recommendations, proper seating, and locking of all connections, using the corrective devices.

During setting up and dismantling of scaffolds, warning signs, safety Gordon, and other safety measures shall be provided to ensure safety.

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|------|---|---|
| 405 | CONCRETE WORKS (3,000 PSQ) | (Refer to Item II, 405- Solar Pump/Array/Mounting Structure) |
| 404 | REINFORCING STEEL BARS | (Refer to Item II, 404- Solar Pump/Array/Mounting Structure) |
| 1032 | PAINING WORKS | (Refer to Item II, 1032- Solar Pump/Array/Mounting Structure) |
| | <ul style="list-style-type: none">• Color Scheme for DA- Western Visayas Logo: Combination of four (4) colors (Light Gray, Yellow Mango, Forest Green, Earth Brown).• Minimum of three (3) coatings application. | |

ITEM 1201 (B) & IV INSTALLATION OF PIPELINE (PIPES, FITTINGS AND OTHER ACCESSORIES)

Description

This item shall consist of furnishing and installation of all pipes, fittings, closure pieces, bolts, nuts, gaskets, jointing's materials, flanges, and appurtenances as shown and specified on the drawings, and as required by the designated assigned Engineer for a complete and workable piping system.

Material Requirements

Materials shall be in accordance with the approved Plans. Materials used must be brand new and in good condition.

Construction Requirements

After a section of a pipe has been lowered into the prepared trench and immediately before joining the pipe, the ends of the pipe to be joined shall be cleaned, and the rubber gasket lubricated, with a vegetable compound soap all in accordance with the pipe manufacturer's instructions. Assembly of the pipe length shall be in accordance with the recommendation of the manufacturer of the type of joint used. The Contractor shall provide all special tools and appliances required for joining the pipe. When cutting or machining of the pipe is necessary, only tools and methods recommended by the pipe manufacturer and approved by the Engineer shall be employed.

INSTALLATION OF VALVES AND TANK

Description

This item shall consist of the installation of valves and water tanks in accordance with the plans/drawings or as directed by the Engineer.

Material Requirement

All materials shall conform to AWWA and ISO specifications for valve installation.

The Storage Tank shall be a 2000-liter Dark Color Vertical Polyethylene Tank as shown on the plans. It must be brand new.

The Fertigation Tank shall be a 1000-liter HDPE IBC Tank with a steel cage poly tote, as shown on the plans. It must be brand new.

Construction Requirements

Valves shall be installed as specified herein and as shown on the drawings. All valves shall be new and of current manufacture.

Pipe casing, discharge pipe, distribution pipes, drip distribution pipes, drip lines, fittings, and other accessories

1. Pipe Casing: 6" dia. G.I Pipe, Sch. 40
2. Discharge Pipe: 3" dia. GI Pipe Sch. 40 – 72 meters
3. Distribution Pipes: 2 1/2" dia. HDPE Pipe, SDR 11 (Main)- 22 Linear Meters
4. Fittings (Transition Fitting Reducer, Reducing Tee, Couplings, Elbows, Saddle Clamp): HDPE SDR 11
5. Flow Control: 3" dia. Gate Valve (Discharge), 2 1/2" dia. Gate Valve (Main), 1 1/2" dia. Gate Valve (Outlet), 3" dia. Ball Valve (Discharge), 2 1/2" End Cap, Body Material: Brass, PE.

PIPE LAYING AND INSTALLATION

Before laying and installing, the pipe shall be excavated cleared, and leveled at the design slope. The pipe shall be laid and covered except for drip lines and lateral pipes. All pipes shall be connected by coupling band.