



PROJECT TITLE:

**CONSTRUCTION OF 50 CU.M. ELEVATED WATER TANK**

LOCATION

**PUROK LOWER SHUTTLE, BRGY. SAN JOSE, GENERAL SANTOS CITY**

OWNER

**GENERAL SANTOS CITY WATER DISTRICT**

**TECHNICAL SPECIFICATIONS**

Item Description	
<p><b>1. Scope of Work</b></p> <p>a. The scope of work for this project consists of supply and delivery of necessary materials, appurtenances, labor, equipment, tools, power, water consumables and supervision for the completion of the proposed project as shown on plan and technical drawings specified in the scope of work herein.</p> <p>b. The <b>project duration is One Hundred Twenty (120) Calendar Days</b> and shall commence Five (5) Days after the receipt of Notice to proceed.</p> <p>c. The contractor shall fabricate and install needed fittings and other appurtenances as shown and specified, and as required for a complete and workable piping system.</p> <p>d. <b>Steel Tank, 6"Ø Shop Prime Steel Pipes and valves shall be supplied by GSCWD</b>, whereas hauling and installation shall be done by the contractor including supply of <b>4"Ø G.I Pipes, Angle Bar, Steel Flanges, bolts &amp; nuts, rubber gasket and it's accessories.</b></p>	
<p><b>2. Bidders/Contractors Project Experience Requirements</b></p> <p>a. Similar Contract should be projects with civil, piping and structural steel works in any Government or Private Institutions duly supported by a satisfactory CPES rating and or/an owner's certificate of acceptance in Two (2) years from the date of submission and receipts of bids.</p> <p>b. Bidders/Contractors shall be fully experienced and reputable in the field of construction.</p>	
<p><b>3. Definitions</b></p> <p>a. OWNER The word "Owner" refers to the General Santos City Water District.</p> <p>b. ENGINEER The word "Engineer" refers to the individual or firm authorized by the Owner to oversee the execution of the Contract.</p> <p>c. CONTRACTOR The word "Contractor" refers to the party entering into the contract for the performance of the work required.</p> <p>d. CONTRACT</p>	



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<p>The word "Contract" refers to the contract documents and shall include the basic contract entered into by the owner and the contractor for the performance of the work.</p> <p>e. SPECIFICATION        The word "Specification" refers to the General Conditions, Special Provisions and Technical Specifications of the contract together with all addenda and change orders issued with respect thereto.</p> <p>f. DRAWINGS        The word "Drawing" or "Contract Drawing" refers to those drawings accompanying the Specification and subsequent approved drawings, which show the location, nature, extent and form of the work together with applicable detail.</p> <p>g. WORK        The word "Work" refers to the labor, material, equipment, transportation and all incidental costs necessary to complete the Contract.</p> <p>h. SITE        The word "Site" refers to the lands and other places on, under, in or through which the work is to be executed or carried out and any other lands or places provided by the Owner for the purpose of the Contract.</p> <p>i. APPROVAL        The word "Approval" refers to concurrence in writing, including subsequent written confirmation of the previous verbal approval.</p> <p>j. WORKING / CALENDAR DAY        The term "Working Day" refers to working days in the government service.        The term "Calendar Day" refers to the days in a week including Saturdays, Sundays and Holidays.        Whenever the word "Day" is issued, it shall refer to calendar day.</p>	
<p><b>4. SPECIFICATION, DRAWINGS AND DISCREPANCIES</b></p> <p>The intent of the Specifications and Drawings is that the contractor shall furnish all the required plant, labor, materials, equipment and services, unless otherwise specified provided.</p> <p>The Specifications and Drawings are complementary and what is called for in one shall be as binding as if called for in both.</p> <p>Any discrepancies, errors or omission found in the Specifications or Drawings shall be reported in writing within three (3) days from the discovery to the Engineer who will issue the correction in writing within the same period. The contractor shall not take advantage of any such discrepancies, errors or omissions but shall comply with the corrective measures regarding the same as prescribed by the Engineer.</p> <p>Whenever called for in these Specifications or on the Drawings, or where required by the Engineer, the Contractor shall furnish to the Owner for review two (2) prints of each shop drawing.</p> <p>The term "Shop Drawing" as used herein shall be understood to include detail design calculations, fabrications and installations, drawings, lists, graphs, operating instructions. Shop drawing shall be submitted to the Engineer for review and approval within fifteen (15) calendar days from receipt of the Notice of Award.</p>	





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<p>All shop drawings submittal shall be accompanied by transmittal form.        In case of conflict between the Specifications and the Drawings, the Specifications shall govern over the Drawings.</p>	
<p><b>5. RESPONSIBILITIES</b></p> <p>a. Engineer        The Engineer, acting as the authorized representative of the Owner, will decide such questions which may arise as to the quality and acceptability of materials and equipment furnished, work performed, rate of progress of work, interpretation of Specifications and Drawings, and those relating to the acceptability in fulfillment of the Contract by the Contractor.</p> <p>b. Contractor's Employees        The employees of the Contractor are not employees of the Owner. Hence, the Owner shall not be liable or responsible for any personal injury or damage including death caused by any of the employees of the contractor during the lawful performances of their duties.        The contractor shall, at all times, stand solely liable and/or responsible for the enforcement of and compliance with all existing laws, rules and regulations applicable, and the contractor hereby agrees and binds itself to save and hold the Owner free and harmless from any or all liabilities in respect thereto and/or arising there from.</p> <p>c. Contractor's Superintendence        A qualified superintendent shall be present in the work and shall provide competent supervision of the work, until its completion. The superintendent shall have full authority to act in behalf of the contractor, and all directions given by the Owner or authorize representative to the superintendent shall be considered given to the contractor.</p>	
<p><b>6. SUSPENSION OF WORK</b></p> <p>The Engineer, acting on behalf of the Owner may, by written notice to the Contractor, suspend the work in whole or in part for such period or periods as he may deem necessary, owing to such factors as delay in delivery of Owner furnished equipment or materials, or such other conditions as are considered unfavorable for prosecuting the work, or failure on the part of the Contractor to carry out the provisions of the Contract or to provide materials or workmanship meeting the requirements of the Specification.</p>	
<p><b>7. PROJECT MONITORING</b></p> <p>a. Monthly Progress Report        The Contractor is required to submit to the Owner Two (2) copies of Monthly Progress Report which shall include the following;</p> <ol style="list-style-type: none"> <li>1) Items of work accomplished for the month;</li> <li>2) Cumulative summary of work accomplished to date;</li> <li>3) Items of work scheduled for the following month.</li> <li>4) Project photos for the month.</li> </ol>	





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<p>The first Monthly Progress Report will cover the time from the date when the Notice to Proceed is issued until the end of the following month. Subsequently, monthly reports shall be submitted monthly thereafter until provisional acceptance of the project. If the Contractor fails to submit Monthly Progress Report, the Owner may withhold approval of progress payment until the reports are received.</p> <p>b. Monthly Coordination Meeting</p> <p>There will be a regular coordination meeting be conducted twice a month to discuss issues and concerns of the project.</p> <p>The signatory to the Omnibus Sworn Statement who is the duly authorized representative of the winning bidder shall be required to attend the monthly coordination meeting; otherwise, the attendee/representative present</p> <p>During the meeting shall be acknowledged only upon presentation of a duly notarized Special Power of Attorney.</p>	
<p><b>8. LAWS, LICENSES, SAFETY AND OTHER REQUIREMENTS</b></p> <p>a. Permit and Licenses</p> <p>The procurement and payment of all necessary permits such as Zoning, Building, Electrical, Mechanical, Plumbing, Sanitary, etc., in the project implementation shall be the responsibility of the Owner.</p> <p>b. Inspection of Project Site</p> <p>The Contractor shall inspect the site of the work in order to satisfy themselves by personal examination and/or by such other means as they may prefer, of the location of the proposed work and the actual visualization of the work to be done. He should be aware of the conditions which might affect the execution of this contract and has made provisions therefore in his bid.</p> <p>The Contractor must submit <b>Certificate of Site Inspection</b> upon submission of bid proposal.</p> <p>c. Public Safety and Health Regulations</p> <p>The Contractor shall comply with safe work practices and all health and safety regulations of the state and the locality. Furnish protective and lifesaving equipment for persons working at the site and provide a <b>Contractor's All Risk Insurance</b> for all his workers.</p> <p>The Contractor shall provide and maintain such sanitary accommodation for the use of its employees as may be necessary to comply with all applicable national and local laws and ordinances, regulations, customs and practices.</p> <p>Whenever necessary, it shall furnish, erect and maintain fences, barricades, lights, signs and other devices as are necessary to prevent accidents and avoid damage or injury to the public.</p> <p>The Contractor shall be liable to all claims and/or liabilities arising during the public implementation.</p> <p>Should the Contractor fail to faithfully observe the Safety Provisions herein specified, the Owner may exercise remedial rights as stipulated under this Contract.</p> <p>d. Laws and Regulations</p>	





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<p>The Contractor shall observe and comply National, Provincial and Local laws, ordinances, and regulations, which on the manner affect those engaged or employed on the work, the material used in the work, or in the conduct of the work.</p> <p>The Contractor shall indemnify and save harmless the Owner against all claims or liabilities arising from violation of any such laws, ordinance, order, or regulation, whether by itself or by its employees.</p> <p>e. Third Party Liability</p> <p>The Owner shall in no case be held civilly or criminally liable due to the act or omission of the Contractor during the contract period or during the implementation of the required work thereof. Any liability that may arise to the third party shall be the sole responsibility of the contractor.</p>	
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<p><b>9. GENERAL SPECIFICATIONS</b></p> <p><b>a. Site Preparation</b></p> <p>The location of the building where is to be erected shall be staked out and grade established as shown on drawings and in accordance with the Local Building Code. Contractor shall provide instrument for purposes of establishing, checking, and monitoring of the elevation and plumbness.</p> <p><b>b. Earthworks</b></p> <p>Excavation shall include the removal of materials of whatever nature encountered that would interfere with the proper execution and completion of the work. All excavations shall be carried to the grade of the bottom of the footing or slab or as indicated on technical drawings. The materials excavated shall be place as backfill on the footing, etc. and above shall be compacted as described. Excess will be hauled to a place designated by the Owner.</p> <p><b>c. Concrete Works</b></p> <p>Cement shall conform to the "Standard specifications for Portland Cement "(ASTM C-150-Latest Revision) and shall be type I. The cement shall be in accordance with DPWH standards such as "<b>Holcim, Royal or Hex cement</b>" and shall not be more than <b>three (3) months</b> from date of manufacture.</p> <p>Aggregates shall be well-graded, clean, hard particles of gravel or crushed rock. The maximum size shall not be larger than one-fifth (1/5) of the narrowest dimension between forms and not larger than three-fourths (3/4) of the minimum clear spacing between individual reinforcing bars and in no case larger than 38 mm. (1-1/2 in.) in diameter except that the larger diameter may be allowed in massive concreting with the written permission from the Owner.</p> <p>All reinforcing steel bars used shall be of deformed type, new, free from rust, oil, defects, greases or kinks. They shall conform to the latest edition of National Structural Code for Buildings with a minimum grade equal to <b>275 Mpa (Grade 40)</b> unless otherwise shown on the plans. Test of this materials, to determine its suitability shall be in accordance with the standards of the American Society for Testing and Materials (ASTM).</p>	
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An admixture may be added to the concrete to control the set, effect water reduction, and increase workability. The quantity of admixture used and the method of mixing shall be in accordance with the manufacturer's instructions.

The Contractor shall submit design mixes and test results of samples made in accordance with "Standard Method of Making and Curing Concrete Compression and flexure test Specimen in the Laboratory" (ASTM C-192-Latest Revision)

Concrete strength shall be **3,000 psi (20.68Mpa) at 28 days** to be use for concrete floor, zocalo, columns, beams and foundations. **No hand mixing** shall be allowed during concreting operations.

*Reinforcement* shall be accurately placed and adequately secured by using annealed iron wire ties at intersection and shall be supported by concrete or metal supports, spacers or metal hangers. In slabs, beams and girders, splices or reinforcement at point of maximum stress shall be generally avoided. Splices in adjacent bars shall be generally staggered. Lapping of reinforcement bars shall be 40 bar dia. or a max. of 60 bar dia. Hooks and bends shall conform to the Standard Engineering practice.

Concrete forms should be water tight, strong enough and rigid to sustain the weight of concrete. Forms should be oiled to make the wood water proof. Oiling of forms should not be done after the steel bars reinforcements have been set to its position.

Pipes, conduits, dowels, and other items required to be imbedded in the concrete construction shall be so positioned and supported prior to placement of concrete. As concrete is placed, it shall be thoroughly settled and compacted through-out the entire depth of the layer. The Concrete shall be carefully worked by tamping, rodding and vibrating to make sure that all air and rock pockets have been eliminated. All concrete shall be cured for not less than fourteen (14) days after placing in accordance with standards.

The Owner may require a reasonable number of tests on the concrete to be made during the progress of the work. Four cylindrical specimens shall be made for each test of which at least two shall be reserved for 28-day test. Strength test shall be made in accordance with the "Standard Method of Test for Compressive Strength of Cylindrical Concrete Specimens (ASTM C-39-latest revision).

Should the test fail to give the required strength, the Owner shall have the right to order a change in the proportions or in the procedures of curing of the concrete for the rest of structure.

**d. Steel Works – Erection of Steel Reservoir Structure**

**Welding**

All welding shall be the shielded metal arc welding method and shall conform to the AWS "Code for Arc and Gas Welding in Building Construction". Welder's minimum qualification shall be TESDA equivalent passers with **Certificate** provided.

All welds in the tank and structural attachments shall be made in a manner to ensure complete fusion with the base material, within the limits specified for each joint, and in accordance with the qualified procedure.

1. For the installation of shell plate, structural steel & web member weld shall be at:





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- a. Inside Joint – 1<sup>st</sup> Pass
- b. Outside Joint – 2-3 Passes
- 2. Welding shall not be performed when the surfaces of the parts to be welded are wet from rain, or when rain is falling on such surfaces, or during periods of high winds, unless the welder or welding operator and work are protected properly.
- 3. Peening of weld layers may be used to prevent undue distortion. Surface layers shall not be peened. Peening shall be performed with light blows from a power hammer with a blunt-nosed tool.
- 4. The surface bends shall merge smoothly into each other in all welds.
- 5. The reinforcement of butt welds shall, as practicable, be preferably not more than 1.6mm (1/16 in). In no case shall the face of the weld lie below the surface of the plates being joined.
- 6. Gouging at the root of the welds and gouging of welds to remove defects may be performed with a round-nosed tool or by arc or oxygen gouging.
- 7. Each bead of multiple pass weld shall be cleared of slag and other loose deposits before the next bead is applied.

*Preparation of Surface to be welded*

Surfaces to be welded shall be free from loose scale, slag, heavy rust, grease, paint, and any other foreign material except tightly adherent mill scale. A light film of deoxaluminite or equivalent spatter film compound may be disregarded. Such surfaces shall be smooth, uniform, and free from fins, seams, and other defects that adversely affect proper welding. A fine film of rust adhering on cut or sheared edge after wire brushing need not be removed.

**E. Piping Works**

This work shall consist of pipe installation, jointing, welding, fittings, pipe support, valves, bolts & nuts, gasket, steel flanges, interconnection, leak test, disinfection and other appurtenances as shown and specified, and as required for a complete and workable piping system.

The contractor shall take all necessary precautions to prevent the pipe for any damage due to this cause, and shall at his own expense restore and replace the pipe to its specified condition.

All steel pipes, gate valves and butterfly valves shall be provided by the Owner however, installation shall be executed by the Contractor. All other materials needed to complete the installation shall be provided by the Contractor.

All steel flanges shall have a minimum thickness of 19mm (3/4 inch) and bolts, nuts and washer must be hot dip galvanized.

The rubber gasket shall be the continuous ring type with ply, made of special composition rubber and the minimum thickness is 6mm (1/4 inch).



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## F. MISCELLANEOUS WORKS

### PAINTING AND COATING

The following surfaces are to be painted but not limited to:

- a. All submerged metal surfaces
- b. All structural and miscellaneous steel
- c. Steel Tank shell, roofing, exterior and interior surfaces
- d. All above ground piping and other metal surfaces
- e. All exposed concrete

### SURFACE PREPARATION

All structural steel and tank shell plate inside and outside shall be free from dirt, scale, and rust removed by scrapping, wire brushing and sandblasting. All welded joints should be cleared of slag and weld spatter. Before painting, ferrous metal surfaces, including galvanized ferrous metal surfaces, shall be pretreated with approved phosphoric acid etching cleaner in accordance with manufacturer's direction.

#### Steel Tank Shell

- a. Exterior
 

First Coat:	Epoxy Primer
Second and Third Coats:	Blue finish paint (epoxy paint)
- b. Interior
 

First Coat:	Non-toxic epoxy primer and food grade with manufacturer's certification supplied
Second and Third Coats:	Non-toxic epoxy white food grade enamel with manufacturer's certification

#### 1. HYDROTESTING

The reservoir shall be filled with water for hydro testing. Any leaks found after the reservoir is filled shall be repaired and the disinfection procedures repeated to the satisfaction of the Engineer.

#### 2. DISINFECTION

Prior to putting the system to operation, the reservoir and connecting lines thereto shall be thoroughly disinfected with chlorine to eliminate impurities that possibly entered the pipeline during the construction process by means of chlorination. The chlorine dosage applied to the water shall be sufficient to give a chlorine residual of at least 50mg per liter upon completion.

After the chlorine-treated water has been retained for the required time of 24 hours, the chlorine residual in the reservoir and in the lines shall be at least 25mg per litre.





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All valves shall be operated while the lines are filled with the heavily chlorinated water

Chlorine test kit to measure the chlorine residual during the conduct of disinfection shall be provided by the Contractor.

#### 10. SPECIAL CONDITIONS

a. Laboratory Testing Fee

All laboratory testing fee and transportation shall be shouldered by the contractor.

b. Project Turnover

During project's turn-over, Contractor is required to submit as-built plan. The contractor's deliverables are 100 percent accomplished either on each part and the site restored as is prior to construction.

c. Logbook and Weather Chart

A logbook and weather chart shall be maintained by the Contractor at all times in the project site reflecting the daily work activity, weather condition, manpower, equipment, visitors and circumstances affecting the program of work to be signed by both the Engineer and Contractor.

d. Project / COA Signboard

The Contractor shall furnish, erect and maintain one (1) project signboard and one (1) COA signboard in accordance with the Standard Drawings.

The location for the erection of these signs by the Contractor shall be as directed by the Engineer.

e. Equipment

Contractor shall provide the following minimum equipment but not limited to:

Quantity	Description
1	Engine Driven Welding Machine or Transformer Type
1	Bar Cutter
1	One (1) Bagger Mixer
1	Concrete Vibrator
1	Tamping Rammer or Plate Compactor
1	Oxy-Acetylene cutting outfit
1	Power Brush/Grinder
6	Concrete Sample Cylinder
1	Crane/Boom Truck

f. List of Manpower

Quantity	Description
1	Project Engineer
1	Safety Officer
1	Foreman
4	Welder



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4	Skilled Worker
6	Laborer/Helper

g. On-Site Inspection and Testing

All materials furnished and all work performed under the contract shall be subject to inspection by the Owner. The contractor shall be held strictly to the true intent of the Specifications and Drawing in regard to quality of materials, workmanship and diligent execution of the Contract.

Work done in the absence of prescribed inspection may be required to be removed and replaced under the proper inspection; and the entire cost of removal and replacement, including the cost of all materials which may be used in the work shall be borne by the Contractor.

The cost of carrying out the normal inspection and test of material should be at the Contractor's Expense.

**11. SPECIAL PROVISION**

a. Liquidated Damages (LD) The Contractor shall pay liquidated damages to the Owner if he fails to complete the work within the time agreed upon. It is understood that said payment is not a penalty but a fixed sum representing the liquidated damages for each calendar day of delay.

Computation of the said liquidated damages shall conform to the provision of RA 9184.

b. Time Extension

The Contractor may be entitled to an extension of Contract time;

a. If the work has been suspended by the Owner in whole or in part.

b. Under force majeure (i.e. flood, blockade, earthquake, civil disorder, etc.) provided, in either case, the Contractor be not at fault and is not negligent under the terms of the contract.

The extension of time allowed shall be determined by the Owner. Extension of Contract shall be granted for rainy/unworkable days considered unfavorable for the prosecution of the works at the site or based on the actual conditions obtained at the site.

No extension of Contract time whatsoever shall be granted to the Contractor due to non-availability of equipment or materials to be furnished by the Contractor, labor problems and such other cause for which the Government is not directly responsible, or when the affected activities do not fall within the critical path of the network.

To receive consideration, a request for time extension must be made in writing to the Owner through the Engineer stating therein the reason for said request and must be received by the Owner at least **Thirty (30) days prior to the expiration of the Contract time**. Failure to observe this reglementary period shall be a ground for outright denial of the request for time extension.

c. Variation in Quantities






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<p>Bidders are reminded that the quantities are estimated and are for the purpose of comparing bids. The successful bidder shall complete all work items at the unit prices quoted in his bid, regardless of the variation between bid quantities and actual quantities required for completion of the work.</p> <p>Payment will be based on actual quantities furnished, installed or constructed.</p>	
<p><b>12. PLANS AND SPECIFICATIONS</b></p> <p>All works, that may be called for in the specifications and not shown in the plans or vice versa, shall be executed and finished as if described in both. Should any work required which is not denoted on either plans and specifications either directly or indirectly, it is understood that same shall be implied and required and shall be performed and furnished such materials and layout as fully as if it has been so described.</p> <p>The plans and specifications shall be considered complementary and any details mentioned in one but not in the other, or vice versa, shall be interpreted to be applicable in both.</p> <p>If no numerical label of the dimension(s) of any part of details appeared on the plan, the drawings shall be carefully followed in accordance to the scale thus indicated, otherwise all numerical data of dimensions of details when so provided must be followed and not the scale of the drawing.</p>	

#### TECHNICAL WORKING GROUP FOR INFRASTRUCTURE

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