



# CADIZ CITY WATER DISTRICT

Burgos Street, Cadiz City, Negros Occidental  
Tel. Nos. (034) 4930688 / 4930788 / 4930075

## SUPPLEMENTAL BID BULLETIN

No: 03\_2022\_01

PROCUREMENT OF INFRASTRUCTURE PROJECT FOR THE  
CONSTRUCTION OF WATER SUPPLY SYSTEM (PHASE 1) FOR CADIZ  
CITY WATER DISTRICT (Project No. PPMP No. 02-2022-01)

March 9, 2022

This supplemental bid bulletin is being used to clarify, modify, and amend items  
in the bidding documents.

Item No.	Page No.	Reference	Original	Amendment/Clarification/Addendum
1		IRR		Amendment: GPPB resolution No. 15 2021 will be applied (see attachment 1 below)
2	125-127	Section IX Checklist of Technical and Financial Documents		Clarification: <b>Checklist of Technical and Financial Documents of the bidding document will prevail.</b>  (The Checklist of Technical and Financial Documents of the bidding document already includes what is in the GPPB resolution No. 15 2021 with additional documents.)
3		Section VI Specifications		Additional Specification: <b>DIVISION 08 – REINFORCED CONCRETE (FOUNDATION WORKS)</b> (see attachment 2 below)
4	98	Section VII Bill of Quantities		Clarification on: Soil Sub-Surface Investigation  Soil Sub-Surface Investigation will be conducted during the project implementation. This is to verify the initial assumption of the foundation design of the elevated steel tank. In case the result of the actual Soil Sub-Surface Investigation requires to modify or increase the initial foundation design of the elevated steel tank, then a variation order will be executed.  Bidders are only required to specify in their proposed bids the costing of Soil Sub-Surface Investigation.



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By the authority of CCWD Bids and Awards Committee, we hereby amend the bidding documents to include the changes provided above.

This Supplemental Bid Bulletin shall form an integral part of the bidding documents.

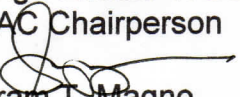
For guidance and information of all concerned.

Prepared by:


  
Alyanna G. Razonable – BAC Secretariat

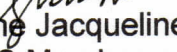
Approved by:

  
Engr. Rensis V. Dayot BAC Chairperson  
BAC Chairperson

  
Aram T. Magno  
BAC Vice Chairperson

  
Julien Dorliac  
BAC Member, Regular

  
Sheryl M. Ybañez  
BAC Member, provisional

  
Anne Jacqueline G. Escudero  
BAC Member, provisional



**LIFTING THE SUSPENSION ON THE IMPLEMENTATION OF THE MANDATORY SUBMISSION OF PHILGEPS CERTIFICATE OF PLATINUM REGISTRATION AND MEMBERSHIP IN COMPETITIVE BIDDING AND LIMITED SOURCE BIDDING; AMENDING SECTIONS 8.5.2, 23.1(a)(ii), 23.3, 24.1(a)(ii), 24.4.3, 34.3 AND 54.6 OF THE 2016 REVISED IRR OF RA NO. 9184, ITEMS IV(G)(1) AND V(D)(1)(b) AS WELL AS APPENDIX "A" OF ANNEX "H" THEREOF, ITEMS 4 AND 6 OF THE GUIDELINES FOR THE USE OF THE GOVERNMENT OF THE PHILIPPINES - OFFICIAL MERCHANTS REGISTRY, AND ITEM 1 OF SECTIONS VIII AND IX OF THE 6TH EDITION OF THE PHILIPPINE BIDDING DOCUMENTS FOR GOODS AND INFRASTRUCTURE PROJECTS**

**WHEREAS**, Republic Act (RA) No. 9184, otherwise known as the "Government Procurement Reform Act" and the 2016 revised Implementing Rules and Regulations (IRR) took effect on 26 January 2003 and 28 October 2016, respectively;

**WHEREAS**, Section 63 of RA No. 9184 and its 2016 revised IRR authorizes the Government Procurement Policy Board (GPPB) to formulate public procurement policies, and rules and regulations, and amend its IRR, whenever necessary;

**WHEREAS**, Section 8.5.2 of the 2016 revised IRR of RA No. 9184 mandates all prospective bidders to upload in the Philippine Government Electronic Procurement System (PhilGEPS) and maintain current and updated the following Class "A" Eligibility Documents under Section 23.1(a) and 24.1(a) of the same IRR:

1. Registration Certificate;
2. Mayor's/ Business Permit or its Equivalent Document;
3. Tax Clearance;
4. Philippine Contractors Accreditation Board (PCAB) license and registration;  
and
5. Audited Financial Statements;

**WHEREAS**, the same Section provides that upon receipt of the said documents, the PhilGEPS shall process the same in accordance with the Guidelines for the Use of the Government of the Philippines-Official Merchants Registry (GoP-OMR), which requires the PhilGEPS, among others, to develop a merchant's membership classification that will define the extent of a merchant's access to and use of the PhilGEPS website and generate a Certificate of Registration and Membership, valid and effective for a period of one (1) year from the date of its issuance, for which the merchant is entitled to receive depending on the chosen classification and payment of the corresponding membership fee;

**WHEREAS**, Sections 23.1(a)(ii) and 24.1(a)(ii) of the 2016 revised IRR of RA No. 9184 allow the submission of a recently expired Mayor's permit together with the official receipt as proof that the prospective bidder has applied for renewal within the period prescribed by the concerned local government unit for the purpose of eligibility check, subject to the submission of the renewed Mayor's Permit as a post-qualification requirement;

**WHEREAS**, Section 24.4.3 of the 2016 revised IRR of RA No. 9184 provides that the Bids and Awards Committee (BAC) of a Procuring Entity (PE) shall use the contents of the PhilGEPS electronic registry of manufacturers, suppliers, distributors, contractors, and/or

consultants, in accordance with Section 8.5.2 of the IRR to facilitate determination of eligibility of the prospective bidders;

**WHEREAS**, Sections 25.2(a)(i) and 25.2(b)(i) of the 2016 revised IRR of RA No. 9184 provide that the first envelope shall contain the PhilGEPS Certificate of Registration and Membership in accordance with Section 8.5.2 of the same revised IRR for the procurement of goods and infrastructure projects, respectively;

**WHEREAS**, Item I of Sections VIII and IX of the 6th Edition of the Philippine Bidding Documents (PBDs) for Goods and Infrastructure Projects, respectively, the use of which became effective on 6 October 2020, provides that the legal documents included in the Checklist of Technical and Financial Documents shall be the valid PhilGEPS Certificate of Platinum Registration and Membership or any of the Class “A” Eligibility Documents;

**WHEREAS**, Section 54.6 of the 2016 revised IRR of RA No. 9184, provides that for purposes of Limited Source Bidding under Section 49 and Negotiated Procurement under Two-Failed Biddings under Section 53.1, the BAC shall require the submission of a PhilGEPS Certificate of Platinum Registration and Membership following Section 8.5.2 of the said IRR. The same provision was reiterated for Negotiated Procurement under Two-Failed Biddings under Item IV(G) of Annex “H” of the said IRR;

**WHEREAS**, Item V(D)(1)(b)(1) of Annex “H” of the 2016 revised IRR of RA No. 9184 provides that for Negotiated Procurement under Two-Failed Biddings, after the conduct of the mandatory review of the terms, conditions, specifications, and cost estimates, the BAC, based on its findings, may revise and agree on the technical, legal, and financial eligibility requirements and technical specifications or terms of reference, and if necessary, adjust the ABC, subject to the required approvals;

**WHEREAS**, during its 11<sup>th</sup> Regular Meeting on 27 October 2016, the GPPB, through Resolution No. 26-2016, approved the issuance of Circular No. 03-2016 informing all PEs about the deferred implementation of the mandatory submission of the PhilGEPS Certificate of Platinum Registration and Membership in Competitive Bidding under the 2016 revised IRR of RA No. 9184 from 28 October 2016 until 30 April 2017 to allow ample time to all prospective bidders to register with the PhilGEPS under the Platinum Registration and Membership category and provide a transitory period to all PEs;

**WHEREAS**, during its 4<sup>th</sup> Regular Meeting on 31 July 2017, the GPPB, through Resolution No. 26-2017, approved the issuance of Circular No. 07-2017 providing for the following:

1. Deferment of the implementation of the mandatory submission of PhilGEPS Certificate of Platinum Registration and Membership in the 2016 revised IRR of RA No. 9184 until further notice; and
2. Clarification that the deferment of implementation of the mandatory submission of PhilGEPS Certificate of Platinum Registration and Membership under the 2016 revised IRR of RA No. 9184 likewise applies to Limited Source Bidding and Negotiated Procurement under Two-Failed Biddings modalities;

**WHEREAS**, pursuant to the above-stated deferment, the same Circular directed prospective bidders to submit either their PhilGEPS Certificate of Platinum Registration and Membership in lieu of the uploaded file of Class “A” Eligibility Documents; or their Class “A” Eligibility Documents in lieu of the PhilGEPS Certificate of Platinum Registration and Membership, if unable to obtain such; or a combination thereof;

**WHEREAS**, taking into account the ongoing PhilGEPS Modernization and review of the Electronic Bidding Guidelines, the GPPB - Technical Support Office (TSO) met with the PhilGEPS on 25 June 2021 to discuss, among others, the status of the implementation of the PhilGEPS Certificate of Platinum Registration and Membership, particularly the capacity of PhilGEPS to timely process the updating of the Platinum Certificate once the renewed or updated Class "A" Eligibility Documents have been uploaded;

**WHEREAS**, the PhilGEPS, in response thereto, represented that its system and management capacities have improved such that they are better equipped and capable to handle the updating of the PhilGEPS Certificate of Platinum Registration and Membership, which includes the uploading of Class "A" Eligibility Documents, more efficiently. Accordingly, the PhilGEPS supported to lift the suspension of the implementation of mandatory submission of the PhilGEPS Certificate of Platinum Registration and Membership;

**WHEREAS**, to validate the effectiveness, efficiency, and capacity of the PhilGEPS to implement the mandatory submission of the PhilGEPS Certificate of Platinum Registration and Membership, the GPPB-TSO requested for: (i) agency and merchant test accounts to validate the process of registration and issuance of Certificates of Platinum Registration and Membership as well as verify the number of issued certificates; (ii) data on the number of registrants from 2017 to present for comparison; and (iii) other relevant information to show the capacity of the PhilGEPS in the issuance of Certificates of Platinum Registration and Membership;

**WHEREAS**, after evaluation and validation of the data submitted and the registration process, the following were noted:

1. For 4 years, from 2017 until 8 May 2021, the number of Platinum registrations processed by PhilGEPS totalled to 104,075 registrations. An assessment of the volume of registrations per year shows an increasing trend of registrations. PhilGEPS processed 19,533 Platinum Registrations in 2017; 22,522 Platinum Registrations in 2018; 25,488 Platinum Registrations in 2019; 23,631 Platinum Registrations in 2020; and 12,901 Platinum Registrations as of 31 May 2021;
2. The 2021 Updated Citizen's Charter, process flowcharts, and instructional videos of the PhilGEPS reveal that the processing period to upgrade the PhilGEPS Registration from Red to Platinum, from application stage to issuance of the Platinum Certificate, whether made online or through walk-in, is completed within a maximum of 3 working days;
3. A test run of the Modernized PhilGEPS accounts provided by PhilGEPS shows that the uploading time for the audited financial statements is around 18 to 21 minutes, while for the other Class "A" Eligibility Documents, around 2 to 4 minutes per file. It was also found that an updated Certificate of Platinum Registration and Membership is processed after uploading the documents and entering the data on PhilGEPS and once completed, the Certificate of Platinum Registration and Membership can be automatically downloaded with the updated information as reflected under Annex A. The entire process may be accomplished in as fast as an hour and a half; and
4. Moreover, the 2019 Client Feedback Report states that 75% of PhilGEPS' total number of surveyed clients found its service "Excellent", while 21% found the same service "Very Good". Similarly, survey responses as reflected in the Client Feedback Summaries for the Year 2020 and as of May 31, 2021 also show that the excellent satisfactory rating given by clients have been maintained;

**WHEREAS**, during the 2<sup>nd</sup> Joint Meeting of the GPPB and its Inter-Agency Technical Working Group (IATWG) held on 28 July 2021, some of the members echoed the persisting issues on the updating of the PhilGEPS Certificate of Platinum Registration and Membership, such as: (i) the policy of allowing the submission of the recently expired Mayor's permit together with the official receipt as proof that the prospective bidder has applied for renewal of the Mayor's Permit within the period prescribed by the concerned local government unit; and (ii) the requirement for PEs to verify, validate and ascertain during post-qualification the veracity, authenticity and validity of all the Class "A" Eligibility Documents attached to the PhilGEPS Certificate of Platinum Registration and Membership of the Bidder;

**WHEREAS**, in addressing the first issue, the GPPB-TSO recommended that with the lifting of the suspension in the implementation of the mandatory submission of the PhilGEPS Certificate of Platinum Registration and Membership, prospective bidders need only to submit with PhilGEPS their recently expired Mayor's Permit together with the official receipt, as proof that they have applied for renewal of the permit for the purpose of updating their Certificate of Platinum Registration and Membership. Notably, according to PhilGEPS, the acceptability of the official receipt as a legal eligibility requirement to prove the renewal of the requirement for a Mayor's Permit has been its practice based on an earlier Resolution No. 02-2015 issued by the GPPB;

**WHEREAS**, in addressing the second issue, the GPPB-TSO recommended the inclusion of an additional caveat in the PhilGEPS Certificate of Platinum Registration and Membership to reflect that that through the submission of said Certificate, the Bidder certifies (i) the authenticity, genuineness, validity, and completeness of the copy of the original eligibility documents submitted; (ii) the veracity of the statements and information contained therein; (iii) that the Certificate is neither a guaranty that the named registrant will be declared eligible without first being determined to be such for that particular bidding nor is it evidence of validation; and (iv) that any finding of concealment, falsification or misrepresentation on the part of the Bidder of any of the eligibility documents submitted or the contents thereof shall be a ground for disqualification from further participation in the bidding process, without prejudice to the imposition of appropriate administrative, civil and criminal penalty in accordance with the laws;

**WHEREAS**, in the interest of administrative due process, the GPPB-TSO further recommended to direct the PhilGEPS to issue an Advisory informing all PEs and prospective bidders regarding the new PhilGEPS Certificate of Platinum Registration and Membership using the revised caveat, and requiring all PhilGEPS Certificate of Platinum Registration and Membership merchants to update and reprint their Platinum Certificate to reflect the revised caveat on or before 2 November 2021;

**WHEREAS**, in consideration of the foregoing, the GPPB-TSO, during the same Joint Meeting held on 28 July 2021, recommended to the Board the following:

1. Lift the suspension on the implementation of mandatory submission of the PhilGEPS Certificate of Platinum Registration and Membership and necessarily amend Sections 8.5.2, 23.1(a)(ii), 23.3, 24.1(a)(ii), 24.4.3 and 54.6 of the 2016 revised IRR of RA 9184 and Items IV(G) and V(D)(1)(b) as well as Appendix "A" of Annex H thereof, Item I of Sections VIII and IX of the 6<sup>th</sup> Edition of the PBDs for Goods and Infrastructure Projects, respectively, and Items 4 and 6 of the Guidelines for the Use of the GoP-OMR;
2. Revise the PhilGEPS Certificate of Platinum Registration and Membership to reflect the abovementioned additional caveat;

3. Direct the PhilGEPS to issue an Advisory in the interest of administrative due process; and
4. Set the effectivity of the foregoing amendments on 2 November 2021;

**WHEREAS**, the Board, after its careful review and deliberation, likewise resolved to approve the foregoing recommendations on the same Joint Meeting held on 28 July 2021;

**WHEREAS**, during the 2nd Joint Meeting of the GPPB and its IATWG on 12 August 2021, the GPPB-TSO requested the Board for the adjustment of the implementation of the foregoing approved recommendations from 2 November 2021 to 15 November 2021, to conduct further validation of the updating process of the PhilGEPS Certificate, which the Board likewise approved on the same Joint Meeting;

**WHEREAS**, the GPPB-TSO, in order to conduct further validation, requested the PhilGEPS data on the expected number of merchants that would need to update their Certificate of Platinum Registration and Membership. The data gathered reveals that approximately 24,686 merchants, or 18% of the total number of registered merchants, are expected to upgrade their registrations from Red to Platinum and 109,981 Platinum Certificate holders, or 82% of the total number of registered merchants, will be required to regularly update their merchant information upon full implementation of the approved recommendation;

**WHEREAS**, the GPPB-TSO found it necessary to further adjust the implementation of the approved recommendations from 15 November 2021 to 01 January 2022 to address the influx of expected applications for updating of the PhilGEPS Certificate of Platinum Registration and Membership and give PhilGEPS more time to properly transition in view of the changes required to be done in the PhilGEPS website to reflect the additional caveat in the Certificate of Platinum Registration and Membership, as well as inform all PEs and prospective bidders regarding the required updating and reprinting of Platinum Certificates on or before 01 January 2022;

**WHEREAS**, during the 8th Meeting of the GPPB held on 14 October 2021, the GPPB-TSO sought the approval of the GPPB to adjust the period of implementation from 15 November 2022 to 01 January 2022. In the course of the discussion, some members of the GPPB raised additional concerns and proposed further amendments, as follows:

1. Clarify and improve the language used in the revised caveat in the Certificate of Platinum Registration and Membership specifically part *iii* thereof to reflect that by submitting the PhilGEPS Certificate of Platinum Registration and Membership the Bidder certifies that the same is neither a guaranty that the named registrant will be declared eligible without first being determined to be such for that particular bidding nor is it evidence that the Bidder has passed the post-qualification stage;
2. Include an additional clause in the 2016 revised IRR of RA 9184 and the PhilGEPS Certificate of Platinum Registration and Membership to state that for the purpose of updating the PhilGEPS Certificate of Platinum Registration and Membership, all Class "A" Eligibility Documents attached to the Certificate shall remain current and updated, and that failure by the prospective bidder to update its PhilGEPS Certificate of Platinum Registration and Membership with the current and updated Class "A" Eligibility Documents covered by Section 8.5.2 of the 2016 revised IRR of RA 9184 shall result in the automatic suspension of the validity of its Certificate of Platinum Registration and Membership until such time that any of the expired Class "A" Eligibility Documents has been updated. The implementation of which should be

monitored by the PhilGEPS, the representatives of which are present during the meeting;<sup>1</sup> and

3. Strengthen the provision on post-qualification in the revised IRR of RA 9184 by emphasizing that notwithstanding the submission of the PhilGEPS Certificate of Platinum Registration and Membership, the PEs must validate the veracity, authenticity and validity of Class “A” Eligibility Documents covered by Section 8.5.2 of the 2016 revised IRR of RA 9184 attached to the Certificate;

**WHEREAS**, in consideration of the foregoing, the GPPB-TSO, during the 8th Meeting of the GPPB held on 14 October 2021, recommended to the Board the following:

1. Lift the suspension on the implementation of mandatory submission of the PhilGEPS Certificate of Platinum Registration and Membership in Competitive Bidding and Limited Source Bidding; thus, fully enforcing Sections 8.5.2 and 54.6 of the 2016 revised IRR of RA No. 9184 starting 01 January 2022;
2. Approve the amendments in Section 8.5.2 of the 2016 revised IRR of RA 9184 and Items 4 and 6 of the Guidelines for the Use of the GoP-OMR to include the following additional *caveat* in the Platinum Certificate of Registration and Membership: (i) that for the purpose of updating the PhilGEPS Certificate of Platinum Registration and Membership, all Class “A” Eligibility Documents covered by Section 8.5.2 of the 2016 revised IRR of RA 9184 supporting the veracity, authenticity and validity of the Certificate shall remain current and updated, and that failure by the prospective bidder to update its PhilGEPS Certificate of Platinum Registration and Membership with the current and updated Class “A” Eligibility Documents covered by Section 8.5.2 of the 2016 revised IRR of RA 9184 shall result in the automatic suspension of the validity of its Certificate of Platinum Registration and Membership until such time that all of the expired Class “A” Eligibility Documents has been updated; and (ii) to reflect that through the submission of said Certificate, the Bidder certifies:
  - a. the authenticity, genuineness, validity, and completeness of the copy of the original eligibility documents submitted;
  - b. the veracity of the statements and information contained therein;
  - c. that the Certificate is neither a guaranty that the named registrant will be declared eligible without first being determined to be such for that particular bidding nor is it evidence that the Bidder has passed the post-qualification stage; and
  - d. that any finding of concealment, falsification or misrepresentation on the part of the Bidder of any of the eligibility documents submitted or the contents thereof shall be a ground for disqualification from further participation in the bidding process, without prejudice to the imposition of appropriate administrative, civil and criminal penalty in accordance with the laws;
3. Amend Sections 23.3 and 24.4.3 of the 2016 revised IRR of RA 9184 and the Checklist of the Technical and Financial Documents listed under Item I of Sections VIII and IX of the 6<sup>th</sup> Edition of the PBD for Goods and the PBD for Infrastructure Projects, respectively, in order to reflect that in lieu of the Class “A” Eligibility Documents mentioned in Section 8.5.2 of the 2016 revised IRR of RA 9184, the

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<sup>1</sup> The following are the representatives of the PhilGEPS who attended the 8<sup>th</sup> Joint Meeting of the GPPB and its IATWG held on 14 October 2021: 1. Executive Director Rosa Maria M. Clemente; 2. Mr. Ron Obniala; 3. Ms. Joanna Makalinaw; 4. Ms. Princess Sabio; and 5. Mr. Brian Gerona.



Bidder shall only submit a valid and updated PhilGEPS Certificate of Platinum Registration and Membership for purposes of determining eligibility;

4. Amend Sections 23.1(a)(ii) and 24.1(a)(ii) of the 2016 revised IRR of RA No. 9184 to reflect that the submission of the recently expired Mayor's Permit together with the official receipt as proof that the prospective bidder has applied for renewal within the period prescribed by the concerned local government unit shall be accepted by the PhilGEPS for the purpose of updating the PhilGEPS Certificate of Platinum Registration and Membership in accordance with Section 8.5.2 of the 2016 revised IRR of RA 9184;
5. Amend Section 54.6 of the 2016 revised IRR of RA No. 9184 and Items IV(G) and V(D)(1)(b) as well as Appendix "A" of Annex "H," otherwise known as the Consolidated Guidelines for the Alternative Methods of Procurement in order to reflect that if after the conduct of the mandatory review, the BAC finds that there is no need to revise the Class "A" Eligibility Documents covered by Section 8.5.2 for the Procurement Project, the submission of the PhilGEPS Certificate of Platinum Registration and Membership shall be mandatory in accordance with Section 8.5.2 of the IRR for the purpose of Negotiated Procurement under Two-Failed Bidding;
6. Strengthen the provision on post-qualification in the revised IRR of RA 9184 by incorporating in Section 34.3 of the 2016 revised IRR of RA No. 9184 that the conduct of post-qualification includes the verification, validation and ascertainment of the veracity, authenticity and validity of all the Class "A" Eligibility Documents attached to the PhilGEPS Certificate of Platinum Registration and Membership;
7. Direct the PhilGEPS to issue an Advisory informing all PEs and prospective bidders regarding the new PhilGEPS Certificate of Platinum Registration and Membership using the revised caveat, and requiring all PhilGEPS Certificate of Platinum Registration and Membership merchants to update and reprint their Platinum Certificate to reflect the revised caveat on or before 01 January 2022; and
8. Set the effectivity of the foregoing amendments on 01 January 2022 to address the influx of expected applications for updating of the PhilGEPS Certificate of Platinum Registration and Membership and give PhilGEPS more time to properly transition in view of the changes required to be done in the PhilGEPS website to reflect the additional caveat in the Certificate of Platinum Registration and Membership, as well as inform all PEs and prospective bidders regarding the required updating and reprinting of Platinum Certificates on or before 01 January 2022;

**NOW, THEREFORE**, for and in view of all the foregoing, **We**, the Members of the **Government Procurement Policy Board**, by the powers vested on **Us** by law and other executive issuances, hereby **RESOLVE** to confirm, adopt, and approve, as **We** hereby confirm, adopt, and approve the following:

1. **LIFT** the suspension on the implementation of mandatory submission of the PhilGEPS Certificate of Platinum Registration and Membership in Competitive Bidding and Limited Source Bidding; thus, fully enforcing Sections 8.5.2 and 54.6 of the 2016 revised IRR of RA No. 9184 starting 01 January 2022;
2. **APPROVE** the amendments in Section 8.5.2 of the 2016 revised IRR of RA 9184 and Items 4 and 6 of the Guidelines for the Use of the GoP-OMR to include the following additional *caveat* in the Platinum Certificate of Registration and Membership: (i) to state that for the purpose of updating the PhilGEPS Certificate of Platinum Registration and Membership, all Class "A" Eligibility Documents covered

by Section 8.5.2 of the 2016 revised IRR of RA 9184 supporting the veracity, authenticity and validity of the Certificate shall remain current and updated, and that failure by the prospective bidder to update its PhilGEPS Certificate of Platinum Registration and Membership with the current and updated Class "A" Eligibility Documents covered by Section 8.5.2 of the 2016 revised IRR of RA 9184 shall result in the automatic suspension of the validity of its Certificate of Platinum Registration and Membership until such time that all of the expired Class "A" Eligibility Documents has been updated; and (ii) to reflect that through the submission of said Certificate, the Bidder certifies:

- a. the authenticity, genuineness, validity, and completeness of the copy of the original eligibility documents submitted;
  - b. the veracity of the statements and information contained therein;
  - c. that the Certificate is neither a guaranty that the named registrant will be declared eligible without first being determined to be such for that particular bidding nor is it evidence that the Bidder has passed the post-qualification stage; and
  - d. that any finding of concealment, falsification or misrepresentation on the part of the Bidder of any of the eligibility documents submitted or the contents thereof shall be a ground for disqualification from further participation in the bidding process, without prejudice to the imposition of appropriate administrative, civil and criminal penalty in accordance with the laws;
3. **AMEND** Sections 23.3 and 24.4.3 of the 2016 revised IRR of RA 9184 and the Checklist of the Technical and Financial Documents listed under Item I of Sections VIII and IX of the 6<sup>th</sup> Edition of the PBD for Goods and the PBD for Infrastructure Projects, respectively, in order to reflect that in lieu of the Class "A" Eligibility Documents mentioned in Section 8.5.2 of the 2016 revised IRR of RA 9184, the Bidder shall only submit a valid and updated PhilGEPS Certificate of Platinum Registration and Membership for purposes of determining eligibility;
4. **AMEND** Sections 23.1(a)(ii) and 24.1(a)(ii) of the 2016 revised IRR of RA No. 9184 to reflect that the submission of the recently expired Mayor's Permit together with the official receipt as proof that the prospective bidder has applied for renewal within the period prescribed by the concerned local government unit shall be accepted by the PhilGEPS for the purpose of updating the PhilGEPS Certificate of Platinum Registration and Membership in accordance with Section 8.5.2 of the 2016 revised IRR of RA 9184;
5. **AMEND** Section 54.6 of the 2016 revised IRR of RA No. 9184 and Items IV(G) and V(D)(1)(b) as well as Appendix "A" of Annex "H," otherwise known as the Consolidated Guidelines for the Alternative Methods of Procurement ~~to~~ in order to reflect that if after the conduct of the mandatory review, the BAC finds that there is no need to revise the Class "A" Eligibility Documents covered by Section 8.5.2 for the Procurement Project, the submission of the PhilGEPS Certificate of Platinum Registration and Membership shall be mandatory in accordance with Section 8.5.2 of the IRR for the purpose of Negotiated Procurement under Two-Failed Bidding;
6. **STRENGTHEN** the provision on post-qualification in the revised IRR of RA 9184 by incorporating in Section 34.3 of the 2016 revised IRR of RA No. 9184 that the conduct of post-qualification includes the verification, validation and ascertainment of the veracity, authenticity and validity of all the Class "A" Eligibility Documents attached to the PhilGEPS Certificate of Platinum Registration and Membership;

7. **DIRECT** the PhilGEPS to issue an Advisory informing all PEs and prospective bidders regarding the new PhilGEPS Certificate of Platinum Registration and Membership using the revised caveat, and requiring all PhilGEPS Certificate of Platinum Registration and Membership merchants to update and reprint their Platinum Certificate to reflect the revised caveat on or before 01 January 2022; and
8. **SET** the effectivity of the foregoing amendments on 01 January 2022 to address the influx of expected applications for updating of the PhilGEPS Certificate of Platinum Registration and Membership and give PhilGEPS more time to properly transition in view of the changes required to be done in the PhilGEPS website to reflect the additional caveat in the Certificate of Platinum Registration and Membership, as well as inform all PEs and prospective bidders regarding the required updating and reprinting of Platinum Certificates on or before 01 January 2022.

A list of the pertinent provisions and their amendments is attached as Annex "A."

This Resolution shall take effect immediately.

**APPROVED** this 14<sup>th</sup> day of October 2021 at Pasig City, Philippines.

Sgd.

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**TINA ROSE MARIE L. CANDA**  
*GPPB, Chairperson*  
**DEPARTMENT OF BUDGET AND  
MANAGEMENT**

Sgd.

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**ROLANDO U. TOLEDO**  
*Alternate to the Chairperson*  
**DEPARTMENT OF BUDGET AND  
MANAGEMENT**

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**NATIONAL ECONOMIC AND  
DEVELOPMENT AUTHORITY**

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**DEPARTMENT OF EDUCATION**

Sgd.

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**DEPARTMENT OF ENERGY**

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**DEPARTMENT OF FINANCE**

Sgd.

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**DEPARTMENT OF HEALTH**

Sgd.

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**DEPARTMENT OF THE INTERIOR AND  
LOCAL GOVERNMENT**

Sgd.

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**DEPARTMENT OF NATIONAL  
DEFENSE**

Sgd.

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**DEPARTMENT OF PUBLIC WORKS AND  
HIGHWAYS**

Sgd.

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**DEPARTMENT OF SCIENCE AND  
TECHNOLOGY**

Sgd.

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**DEPARTMENT OF TRADE AND INDUSTRY**

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**DEPARTMENT OF TRANSPORTATION**

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**DEPARTMENT OF INFORMATION AND  
COMMUNICATIONS TECHNOLOGY**

Sgd.

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**PHILIPPINE SPACE AGENCY**

Sgd.

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**PRIVATE SECTOR REPRESENTATIVE**

## 2016 REVISED IRR OF RA NO. 9184

ORIGINAL	AMENDED
<p>Section 8.5. Registration, Eligibility Requirements and Submission of Bids under the PhilGEPS</p> <p>xxx</p> <p>8.5.2. All bidders shall upload and maintain in PhilGEPS a current and updated file of the following Class "A" eligibility documents under Sections 23.1(a) and 24.1(a):<sup>17</sup></p> <p>a) Registration Certificate;</p> <p>b) Mayor's/Business Permit or its Equivalent Document;</p> <p>c) Tax Clearance;</p> <p>d) Philippine Contractors Accreditation Board (PCAB) license and registration; and</p> <p>e) Audited Financial Statements.</p> <p>xxx</p> <p>xxx</p> <p>xxx</p> <p>xxx</p> <p>These documents shall be accompanied by a Sworn Statement in a form prescribed by the GPPB stating that the documents submitted are complete and authentic copies of the original, and all statements and information provided therein are true and correct. Upon receipt of the said documents, the PhilGEPS shall process the same in accordance with the guidelines on the Government of the Philippines – Official Merchants Registry (GoP-OMR).<sup>22</sup> (a) 8.5.3. Registered bidders determined to be</p>	<p>Section 8.5. Registration, Eligibility Requirements, and Submission of Bids under the PhilGEPS</p> <p>xxx</p> <p>8.5.2. All bidders shall upload and maintain in PhilGEPS a current and updated file of the following Class "A" eligibility documents under Sections 23.1(a) and 24.1(a):</p> <p>a) Registration Certificate;</p> <p>b) Mayor's/Business Permit or its Equivalent Document;</p> <p>c) Tax Clearance;</p> <p>d) Philippine Contractors Accreditation Board (PCAB) license and registration; and</p> <p>e) Audited Financial Statements.</p> <p>xxx</p> <p>xxx</p> <p>xxx</p> <p>xxx</p> <p>These documents shall be accompanied by a Sworn Statement in a form prescribed by the GPPB stating that the documents submitted are complete and authentic copies of the original, and all statements and information provided therein are true and correct. Upon receipt of the said documents, the PhilGEPS shall process the same in accordance with the guidelines on the Government of the Philippines – Official Merchants Registry (GoP-OMR) <b><u>and shall issue a Certificate of Platinum Registration</u></b></p>

eligible may submit their bids at any time before the closing date specified in the Bidding Documents. The PhilGEPS shall bar all incoming bids after such prescribed date and time.

**and Membership.**

**The said Certificate shall include the following certification by the Bidder:**

- a. **the authenticity, genuineness, validity, and completeness of the copy of the original eligibility documents submitted;**
- b. **the veracity of the statements and information contained therein;**
- c. **that the Certificate is neither a guaranty that the named registrant will be declared eligible without first being determined to be such for that particular bidding nor is it evidence that the same has passed the post-qualification stage; and**
- d. **that any finding of concealment, falsification, or misrepresentation of any of the eligibility documents submitted, or the contents thereof shall be a ground for disqualification of the Bidder from further participation in the bidding process, without prejudice to the imposition of appropriate administrative, civil and criminal penalty in accordance with the laws.**

**For the purpose of updating the Certificate of Registration and Membership, all Class "A" eligibility documents mentioned in this section supporting the veracity, authenticity and validity of the Certificate shall remain current and updated. The failure by the prospective bidder to update its Certificate with the current and updated Class "A" eligibility documents shall result in the automatic suspension of the validity of its Certificate until such time that all of the expired Class "A" eligibility documents has been updated.**

<p><b>Section 23. Eligibility Requirements for the Procurement of Goods and Infrastructure Projects.</b></p> <p>23.1 For purposes of determining the eligibility of bidders using the criteria stated in Section 23.4 of this IRR, only the following documents shall be required by the BAC, using the forms prescribed in the Bidding Documents:</p> <p>a) Class “A” Documents</p> <p>Legal Documents</p> <p>i) Registration certificate from SEC, Department of Trade and Industry (DTI) for sole proprietorship, or CDA for cooperatives.</p> <p>ii) Mayor’s/Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas.</p> <p>In cases of recently expired Mayor’s/Business permits, it shall be accepted together with the official receipt as proof that the bidder has applied for renewal within the period prescribed by the concerned local government unit, provided that the renewed permit shall be submitted as a post-qualification requirement in accordance with Section 34.2 of this IRR.</p> <p>iii) Tax clearance per E.O. 398, s. 2005, as finally reviewed and approved by the Bureau of Internal Revenue (BIR).</p>	<p><b>Section 23. Eligibility Requirements for the Procurement of Goods and Infrastructure Projects.</b></p> <p>23.1 For purposes of determining the eligibility of bidders using the criteria stated in Section 23.4 of this IRR, only the following documents shall be required by the BAC using the forms prescribed in the Bidding Documents:</p> <p>a) Class “A” Documents</p> <p>Legal Documents</p> <p>i) Registration certificate from SEC, Department of Trade and Industry (DTI) for sole proprietorship, or CDA for cooperatives.</p> <p>ii) Mayor’s/Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas.</p> <p>In <del>cases of</del> <b>A</b> recently expired Mayor’s/Business permits, <del>it shall be accepted together with the official receipt as proof that the</del> <b>prospective bidder</b> has applied for renewal within the period prescribed by the concerned local government unit, <del>provided that the renewed permit shall be submitted as a post-qualification requirement in accordance with Section 34.2 of this IRR.</del> <b><u>accepted by the PhilGEPS for the purpose of updating the PhilGEPS Certificate of Registration and Membership in accordance with Section 8.5.2 of this IRR.</u></b></p> <p>iii) Tax clearance per E.O. 398, s. 2005, as finally reviewed and approved by the Bureau of Internal Revenue (BIR).</p>
<p>23.3. To facilitate the determination of eligibility, the BAC of a Procuring Entity shall use the contents of the PhilGEPS electronic registry of manufacturers, suppliers, distributors, contractors, and/or</p>	<p>23.3. To facilitate the determination of eligibility, the BAC of a Procuring Entity shall use the contents of the PhilGEPS electronic registry of manufacturers, suppliers, distributors, contractors,</p>

<p>consultants, in accordance with Section 8.5.2 of this IRR.</p>	<p>and/or consultants, in accordance with Section 8.5.2 of this IRR.</p> <p><b><u>In lieu of the Class “A” eligibility documents mentioned under Section 8.5.2 of this IRR, the Bidder shall only submit a valid and updated PhilGEPs Certificate of Registration and Membership in accordance with Section 8.5.2 of this IRR for purposes of determining eligibility.</u></b></p>
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<p><b>Section 24. Eligibility Requirements and Short Listing for Consulting Services</b></p> <p>24.1 For purposes of determining the eligibility and short list of bidders in accordance with Sections 24.4 and 24.5 of this IRR, only the following documents shall be required by the BAC, using the forms prescribed in the Bidding Documents:</p> <p>a) Class “A” Documents</p> <p>Legal Documents</p> <p>i) Registration certificate from SEC, DTI for sole proprietorship, or CDA for cooperatives.</p> <p>ii) Mayor’s/Business permit issued by the city or municipality where the principal place of business of the bidder is located, or the equivalent document for Exclusive Economic Zones or Areas.</p> <p>In cases of recently expired Mayor’s/Business permits, it shall be accepted together with the official receipt as proof that the bidder has applied for renewal within the period prescribed by the concerned local government unit: Provided, That the renewed permit shall be submitted as a post-qualification requirement in accordance with Section 34.2 of this IRR.</p> <p>For individual consultants not registered under a sole proprietorship, a BIR Certificate of Registration shall be submitted, in lieu of DTI registration and Mayor’s/Business permit.</p>	<p><b>Section 24. Eligibility Requirements and Short Listing for Consulting Services</b></p> <p>24.1 For purposes of determining the eligibility and short list of bidders in accordance with Sections 24.4 and 24.5 of this IRR, only the following documents shall be required by the BAC, using the forms prescribed in the Bidding Documents:</p> <p>a) Class “A” Documents</p> <p>Legal Documents</p> <p>i) Registration certificate from SEC, DTI for sole proprietorship, or CDA for cooperatives.</p> <p>ii) Mayor’s/Business permit issued by the city or municipality where the principal place of business of the bidder is located, or the equivalent document for Exclusive Economic Zones or Areas.</p> <p><del>In cases of</del> <b>A</b> recently expired Mayor’s/Business permits, <del>it shall be accepted together with the official receipt as proof that the</del> <b>prospective bidder</b> has applied for renewal within the period prescribed by the concerned local government unit, <del>provided that the renewed permit shall be submitted as a post-qualification requirement in accordance with Section 34.2 of this IRR.</del> <b><u>accepted by the PhilGEPS for the purpose of updating the PhilGEPS Certificate of Registration and Membership in accordance with Section 8.5.2 of this IRR.</u></b></p> <p>For individual consultants not registered under a sole proprietorship, a BIR Certificate of Registration shall be submitted, in lieu of DTI registration and Mayor’s/Business permit.</p>
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<p><b>24.4.3</b> To facilitate the determination of eligibility, the BAC of a Procuring Entity shall use the contents of the PhilGEPS electronic registry of manufacturers, suppliers, distributors, contractors, and/or consultants, in accordance with Section 8.5.2 of this IRR. For procurement to be performed overseas, it shall be subject to the Guidelines to be issued by the GPPB.</p>	<p><b>24.4.3</b> To facilitate the determination of eligibility, the BAC of a Procuring Entity shall use the contents of the PhilGEPS electronic registry of manufacturers, suppliers, distributors, contractors, and/or consultants, in accordance with Section 8.5.2 of this IRR. For procurement to be performed overseas, it shall be subject to the Guidelines to be issued by the GPPB.</p> <p><b><u>In lieu of the Class “A” eligibility documents mentioned under Section 8.5.2 of this IRR, the Bidder shall only submit a valid and updated PhilGEPS Certificate of Registration and Membership in accordance with Section 8.5.2 of this IRR for purposes of determining eligibility.</u></b></p>
<p><b>Section 34. Objective and Process of Post-Qualification</b></p> <p>xxx</p> <p>34.3 The post-qualification shall verify, validate and ascertain all statements made and documents submitted by the bidder with the Lowest Calculated Bid/ Highest Rated Bid, using non-discretionary criteria, as stated in the Bidding Documents. These criteria shall consider, but shall not be limited to, the following:</p> <p>xxx</p>	<p><b>Section 34. Objective and Process of Post-Qualification</b></p> <p>xxx</p> <p>34.3 The post-qualification shall verify, validate and ascertain <b><u>the veracity, authenticity and validity of all the Class “A” eligibility documents supporting the PhilGEPS Certificate of Registration and Membership in accordance with Section 8.5.2 of this IRR, and</u></b> all <b><u>the other</u></b> statements made and documents submitted by the bidder with the Lowest Calculated Bid/ Highest Rated Bid, using non-discretionary criteria, as stated in the Bidding Documents. These criteria shall consider, but shall not be limited to, the following:</p> <p>xxx</p>
<p><b>Section 54. Terms and Conditions for the Use of Alternative Methods</b></p> <p>54.6 Manufacturers, suppliers, distributors, contractors, and/or consultants are mandated to register with PhilGEPS and provide a PhilGEPS Registration Number in the following</p>	<p><b>Section 54. Terms and Conditions for the Use of Alternative Methods</b></p> <p>54.6 Manufacturers, suppliers, distributors, contractors, and/or consultants are mandated to register with PhilGEPS and provide a PhilGEPS Registration Number in the following</p>

<p>alternative methods of procurement as a condition for award of the contract:</p> <p>a. Section 50 - Direct Contracting</p> <p>xxx</p> <p>For purposes of Limited Source Bidding under Section 49 and Two Failed Biddings under Section 53.1, the BAC shall require the submission of a certificate of PhilGEPS registration in accordance with Section 8.5.2 of this IRR. (a)</p>	<p>alternative methods of procurement as a condition for the award of the contract:</p> <p>a. Section 50 - Direct Contracting</p> <p>xxx</p> <p>For purposes of Limited Source Bidding under Section 49 and <del>Two Failed Biddings under Section 53.1</del>, the BAC shall require the submission of a certificate of PhilGEPS registration in accordance with Section 8.5.2 of this IRR.(a)</p>
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**ANNEX “H” OR CONSOLIDATED GUIDELINES FOR THE ALTERNATIVE METHODS OF PROCUREMENT**

ORIGINAL	AMENDED
<p><b>IV. General Guidelines</b></p> <p>xxx</p> <p><b>G. PhilGEPS Registration</b> Manufacturers, suppliers, distributors, contractors, and/or consultants are mandated to register with the PhilGEPS and provide a PhilGEPS Registration number in the following alternative methods of procurement as a condition for award of the contract:</p> <p>1) Section 50 – Direct Contracting;</p> <p>xxx</p> <p>For purposes of Negotiated Procurement under Section 53.1 (Two Failed Biddings), the BAC shall require the submission of a Certificate of PhilGEPS Registration in accordance with Section 8.5.2 of the IRR of R.A. 9184.</p>	<p><b>IV. General Guidelines</b></p> <p>xxx</p> <p><b>G. PhilGEPS Registration</b> Manufacturers, suppliers, distributors, contractors, and/or consultants are mandated to register with the PhilGEPS and provide a PhilGEPS Registration number in the following alternative methods of procurement as a condition for the award of the contract:</p> <p>1) Section 50 – Direct Contracting;</p> <p>xxx</p> <p><del>For purposes of Negotiated Procurement under Section 53.1 (Two Failed Biddings), the BAC shall require the submission of a Certificate of PhilGEPS Registration in accordance with Section 8.5.2 of the IRR of R.A. 9184.</del></p>

<p><b>V. Specific Guidelines</b></p> <p>xxxx</p> <p><b>D. Negotiated Procurement</b></p> <p><b>1. Two-Failed Biddings</b></p> <p>xxx</p> <p><b>b) Procedures</b></p> <p>i. After the conduct of the mandatory review of the terms, conditions, specifications, and cost estimates, as prescribed in Section 35 of the IRR, the BAC, based on its findings, as assisted by its Secretariat, TWG and End-User unit may revise and agree on the technical, legal and financial eligibility requirements, specifications or terms of reference, and if necessary, adjust the ABC, subject to the required approvals. However, the ABC cannot be increased by more than twenty (20%) of the ABC for the last failed bidding.</p> <p>xxx</p> <p>iv. Following completion of the negotiations, the BAC shall request all suppliers, contractors, or consultants in the proceedings to submit, on a specified date, a best offer based on the final technical and financial requirements. Pursuant to Section IV(G) of this Guidelines, the Procuring Entity shall require the submission of a Certificate of PhilGEPS Registration in accordance with Section 8.5.2 of the IRR of RA 9184.</p>	<p><b>V. Specific Guidelines</b></p> <p>xxxx</p> <p><b>D. Negotiated Procurement</b></p> <p><b>1. Two-Failed Biddings</b></p> <p>xxx</p> <p><b>b) Procedures</b></p> <p>i. After the conduct of the mandatory review of the terms, conditions, specifications, and cost estimates, as prescribed in Section 35 of the IRR, the BAC, based on its findings, as assisted by its Secretariat, TWG and End-User unit may revise and agree on the technical, legal, and financial eligibility requirements, specifications or terms of reference, and if necessary, adjust the ABC, subject to the required approvals. However, the ABC cannot be increased by more than twenty (20%) of the ABC for the last failed bidding. <b><u>In case no revision of the Class “A” Eligibility Document covered by Section 8.5.2 of this IRR is found necessary by the BAC after the conduct of the mandatory review, the submission of the PhilGEPS Certificate of Registration and Membership in accordance with Section 8.5.2 of this IRR shall likewise be mandatory.</u></b></p> <p>xxx</p> <p>iv. Following completion of the negotiations, the BAC shall request all suppliers, contractors, or consultants in the proceedings to submit, on a specified date, the best offer based on the final technical and financial requirements. <del>Pursuant to Section IV(G) of this Guidelines, the Procuring Entity shall require the submission of a Certificate of PhilGEPS Registration in accordance with Section 8.5.2 of the IRR of RA 9184.</del></p>
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**ANNEX “H”, APPENDIX “A,” DOCUMENTARY REQUIREMENT,  
ALTERNATIVE METHODS OF PROCUREMENT**

ORIGINAL	AMENDED
<p>I. This Appendix prescribes for the documents that the BAC shall require from suppliers, contractors and consultants for Alternative Methods of Procurement, except for Repeat Order, Shopping under Section 52.1(a), and Negotiated Procurement under Sections 53.1(Two-Failed Biddings), and 53.5 (Agency-to-Agency) of the IRR of RA 9184.</p> <p>xxx</p>	<p>I. This Appendix prescribes for the documents that the BAC shall require from suppliers, contractors, and consultants for Alternative Methods of Procurement, except for Repeat Order, Shopping under Section 52.1(a), and Negotiated Procurement under <del>Sections 53.1(Two-Failed Biddings), and</del> 53.5 (Agency-to-Agency) of the IRR of RA 9184.</p> <p>xxx</p>

Alternative Modality	Mayor's Permit/ Business Permit	Professional License/ Curriculum Vitae (Consulting Services)	PhilGEPS Reg. Number	PCAB License (Infra.)	NFCC (Infra.)	Income/ Business Tax Return	Omnibus Sworn Statement
I. Direct Contracting [Section 50]	✓		✓			✓  For ABCs above P500K	
II. Shopping [Section [52.1(b)]	✓		✓				
III. Negotiated Procurement							

A. Two-Failed Biddings [(Section 53.1)]			✓  <u>****PhilGEPS Platinum if legal eligibility requirements are not subject to revision after the conduct of the mandatory review</u>				
B. Emergency Cases [(Section 53.2)]	✓			✓	✓	✓	✓
					For ABCs above P500K	For ABCs above P500K	For ABCs above P500K
C. Take-Over of Contracts (Section 53.3.2 for new bidders)	✓	✓	✓	✓	✓		
D. Adjacent/ Contiguous (Section 53.4)				✓	✓		
E. Scientific, Scholarly or Artistic Work, Exclusive Technology and Media Services (Section 53.6)	✓	✓	✓			✓	
						For ABCs above P500K	
F. Highly Technical Consultant (Section 53.7)	✓	✓	✓				
G. Small Value Procurement (Section 53.9)	✓	✓	✓	✓			
						For ABC's	For ABC's

						✓ above P500K	✓ above P500K
H. Lease of Real Property or Venue (Section 53.10)	✓  Except for gov't agencies as lessors		✓  Except for gov't agencies as lessors			✓  Except for gov't agencies as lessors	

\* For individuals engaged under Section 53.6, 53.7, and 53.9 of the IRR of RA No. 9184, only the BIR Certificate of Registration shall be submitted in lieu of DTI Registration and Mayor's Permit.

\*\* Requirements under Section 53.6 of the IRR of RA No. 9184 will not apply to artists such as singers, performers, poets, writers, painters, and sculptors who are not engaged in business.

\*\*\* For methods of procurement requiring Mayor's Permit and PhilGEPS Registration, Certificate of Platinum Membership may be submitted in lieu of the said documents.

**\*\*\*\* For purposes of Two-Failed Biddings under Section 53.1 of the IRR of RA No. 9184, the PhilGEPS Certificate of Registration and Membership in accordance with Section 8.5.2 shall be submitted pursuant to Item V(D)(1)(b) of this Guidelines, subject to the qualification stated in Item V(D)(1)(b)(i).**

### GUIDELINES FOR THE USE OF THE GOVERNMENT OF THE PHILIPPINES-OFFICIAL MERCHANTS REGISTRY (GoP-OMR)

ORIGINAL	AMENDED
<p><b>4.0 GENERAL PROVISIONS</b></p> <p>4.4 The determination of the eligibility of merchants, whether registered with the GoP-OMR or not, shall remain with the Bids and Awards Committee (BAC). The BAC's determination of validity of the eligibility requirements shall be conclusive to enable the merchant to participate in the public bidding process.</p>	<p><b>4.0 GENERAL PROVISIONS</b></p> <p>4.4 The determination of the eligibility of merchants, whether registered with the GoP-OMR or not, shall remain with the Bids and Awards Committee (BAC). The BAC's determination of the validity <u>of the Certificate of Registration and Membership in accordance with Section 8.5.2 of the 2016 revised Implementing Rules and Regulations (IRR) of Republic Act (RA) No. 9184, in lieu of the submission of, and supported by, the current and updated Class "A" eligibility requirements covered by the same aforementioned Section of the same IRR and other eligibility documents covered by Section 23 and 24 of the same IRR</u> shall be conclusive to enable the merchant to participate in the public bidding process.</p>

## 6.0 MEMBERSHIP CLASSIFICATION

6.3 A Certificate of Registration and Membership shall be valid and effective for a period of one (1) year from the date of issuance as indicated therein. This Certificate may be renewed; provided, that the merchant maintains its records in the GoP-OMR current and updated at least once a year or more frequently as may be necessary; provided further, that the merchant's failure to maintain its records current and updated shall result in the downgrading of the merchant's membership classification in accordance with the procedures of the PhilGEPS office, notwithstanding the fact that the one-year validity of the Certificate of Membership has not yet expired.

## 6.0 MEMBERSHIP CLASSIFICATION

6.3 **The** Certificate of Registration and Membership **in accordance with Section 8.5.2 of the 2016 revised IRR of RA 9184** shall be valid and effective for a period of one (1) year from the date of issuance as indicated therein. The said Certificate may be **either renewed, in case of expiration, or updated within the period for its validity;** provided, that the merchant maintains its records in the GoP-OMR current and updated at least once a year or more frequently as may be necessary **and complies with the procedures laid down by the PhilGEPS office for processing its renewal or updating, respectively.**

**For the purpose of updating the said Certificate,** the merchant's failure to maintain its records current and updated shall result in the **automatic suspension of validity of its Certificate of Registration and Membership in accordance with Section 8.5.2 of the 2016 revised IRR of RA 9184 until such time that the records have been updated** in accordance with the procedures of the PhilGEPS office, notwithstanding the fact that the one-year validity of the Certificate of Membership has not yet expired.

### **(NEW)**

**6.4 The Certificate of Registration and Membership in accordance with Section 8.5.2 of the 2016 revised IRR of RA 9184 contains the following caveat to reflect that through the submission of said Certificate, the Bidder certifies:**

- a. **the authenticity, genuineness, validity, and completeness of the copy of the original eligibility documents submitted;**
- b. **the veracity of the statements and information contained therein;**
- c. **that the Certificate is not a guaranty that the named registrant will be declared eligible without first being determined to be such for that particular bidding nor is it evidence that the same has passed the post-qualification**



	<p><u>stage; and</u></p> <p>d. <u>that any finding of concealment, falsification, or misrepresentation of any of the eligibility documents submitted, or the contents thereof shall be a ground for disqualification of the Bidder from further participation in the bidding process, without prejudice to the imposition of appropriate administrative, civil and criminal penalty in accordance with the laws.</u></p> <p><u>It shall likewise state that for the purpose of updating the said Certificate, all Class "A" Eligibility Documents covered by Section 8.5.2 of the 2016 revised IRR of RA 9184 supporting the veracity, authenticity and validity of the Certificate shall remain current and updated, and that failure by the prospective bidder to update its Certificate with the current and updated Class "A" Eligibility Documents covered by the afore-cited Section of the same IRR shall result in the automatic suspension of the validity of its Certificate until such time that all of the expired Class "A" Eligibility Documents has been updated.</u></p>
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**6<sup>th</sup> EDITION PHILIPPINE BIDDING DOCUMENTS FOR GOODS**

ORIGINAL	AMENDED
<b>Section VIII. Checklist of Technical and Financial Documents</b>	
<p>I. TECHNICAL COMPONENT ENVELOPE</p> <p align="center"><b>Class "A" Documents</b></p> <p><u>Legal Documents</u></p> <p>(a) Valid PhilGEPS Registration Certificate (Platinum Membership) (all pages); <b><u>or</u></b></p> <p>(b) Registration certificate from Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives or its equivalent document; <b><u>and</u></b></p> <p>(c) Mayor's or Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas; <b><u>or</u></b></p> <p>(d) Tax clearance per E.O. No. 398, s. 2005, as finally reviewed and approved by the Bureau of Internal Revenue (BIR).</p> <p><u>Technical Documents</u></p> <p>(e) Statement of the prospective bidder of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid; <b><u>and</u></b></p> <p>(f) Statement of the bidder's Single</p>	<p>I. TECHNICAL COMPONENT ENVELOPE</p> <p align="center"><b>Class "A" Documents</b></p> <p><u>Legal Document</u></p> <p>(a) Valid PhilGEPS Registration Certificate (Platinum Membership) (all pages) <b><i>in accordance with Section 8.5.2 of the IRR;</i></b></p> <p><del>(b) Registration certificate from Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives or its equivalent document; <b><u>and</u></b></del></p> <p><del>(c) Mayor's or Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas;</del></p> <p align="center"><del><b><u>or</u></b></del></p> <p><del>(d) Tax clearance per E.O. No. 398, s. 2005, as finally reviewed and approved by the Bureau of Internal Revenue (BIR).</del></p> <p align="center"><b>(re-sequenced)</b></p> <p><u>Technical Documents</u></p> <p><b>(b)</b> Statement of the prospective bidder of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid; <b><u>and</u></b></p> <p><b>(c)</b> Statement of the bidder's Single</p>

<p>Largest Completed Contract (SLCC) similar to the contract to be bid, except under conditions provided for in Sections 23.4.1.3 and 23.4.2.4 of the 2016 revised IRR of RA No. 9184, within the relevant period as provided in the Bidding Documents; <b><u>and</u></b></p> <p>(g) Original copy of Bid Security. If in the form of a Surety Bond, submit also a certification issued by the Insurance Commission; <b><u>or</u></b> Original copy of Notarized Bid Securing Declaration; <b><u>and</u></b></p> <p>(h) Conformity with the Technical Specifications, which may include production/delivery schedule, manpower requirements, and/or after-sales/parts, if applicable; <b><u>and</u></b></p> <p>(i) Original duly signed Omnibus Sworn Statement (OSS); <b><u>and</u></b> if applicable, Original Notarized Secretary's Certificate in case of a corporation, partnership, or cooperative; or Original Special Power of Attorney of all members of the joint venture giving full power and authority to its officer to sign the OSS and do acts to represent the Bidder.</p> <p><b><u>Financial Documents</u></b></p> <p>(j) The Supplier's audited financial statements, showing, among others, the Supplier's total and current assets and liabilities, stamped "received" by the BIR or its duly accredited and authorized institutions, for the preceding calendar year which should not be earlier than two (2) years from the date of bid submission; <b><u>and</u></b></p> <p>(k) The prospective bidder's computation of Net Financial Contracting Capacity (NFCC); <b><u>or</u></b> A committed Line of Credit from a Universal or Commercial Bank in lieu of its NFCC computation.</p>	<p>Largest Completed Contract (SLCC) similar to the contract to be bid, except under conditions provided for in Sections 23.4.1.3 and 23.4.2.4 of the 2016 revised IRR of RA No. 9184, within the relevant period as provided in the Bidding Documents; <b><u>and</u></b></p> <p><b>(d)</b> Original copy of Bid Security. If in the form of a Surety Bond, submit also a certification issued by the Insurance Commission; <b><u>or</u></b> Original copy of Notarized Bid Securing Declaration; <b><u>and</u></b></p> <p><b>(e)</b> Conformity with the Technical Specifications, which may include production/delivery schedule, manpower requirements, and/or after-sales/parts, if applicable; <b><u>and</u></b></p> <p><b>(f)</b> Original duly signed Omnibus Sworn Statement (OSS); <b><u>and</u></b> if applicable, Original Notarized Secretary's Certificate in case of a corporation, partnership, or cooperative; or Original Special Power of Attorney of all members of the joint venture giving full power and authority to its officer to sign the OSS and do acts to represent the Bidder.</p> <p><b><u>Financial Documents</u></b></p> <p><del><b>(g)</b> The Supplier's audited financial statements, showing, among others, the Supplier's total and current assets and liabilities, stamped "received" by the BIR or its duly accredited and authorized institutions, for the preceding calendar year which should not be earlier than two (2) years from the date of bid submission; <b><u>and</u></b></del></p> <p><b>(g)</b> The prospective bidder's computation of Net Financial Contracting Capacity (NFCC); <b><u>or</u></b> A committed Line of Credit from a Universal or Commercial Bank in lieu of its NFCC computation.</p>
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<b>Class “B” Documents</b>	<b>Class “B” Documents</b>
<p>(l) If applicable, a duly signed joint venture agreement (JVA) in case the joint venture is already in existence; <b>or</b> duly notarized statements from all the potential joint venture partners stating that they will enter into and abide by the provisions of the JVA in the instance that the bid is successful.</p>	<p>(h) If applicable, a duly signed joint venture agreement (JVA) in case the joint venture is already in existence; <b>or</b> duly notarized statements from all the potential joint venture partners stating that they will enter into and abide by the provisions of the JVA in the instance that the bid is successful.</p>

**6<sup>th</sup> EDITION PHILIPPINE BIDDING DOCUMENTS FOR INFRASTRUCTURE PROJECTS**

<b>ORIGINAL</b>	<b>AMENDED</b>
<b>Section IX. Checklist of Technical and Financial Documents</b>	
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<p>Revenue (BIR).</p> <p><u>Technical Documents</u></p> <p>(f) Statement of the prospective bidder of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid; <b><u>and</u></b></p> <p>(g) Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid, except under conditions provided under the rules; <b><u>and</u></b></p> <p>(h) Philippine Contractors Accreditation Board (PCAB) License; <b><u>or</u></b> Special PCAB License in case of Joint Ventures; <b><u>and</u></b> registration for the type and cost of the contract to be bid; <b><u>and</u></b></p> <p>(i) Original copy of Bid Security. If in the form of a Surety Bond, submit also a certification issued by the Insurance Commission; <b><u>or</u></b> Original copy of Notarized Bid Securing Declaration; <b><u>and</u></b></p> <p>(j) Project Requirements, which shall include the following:</p> <ol style="list-style-type: none"> <li>a. Organizational chart for the contract to be bid;</li> <li>b. List of contractor's key personnel (e.g., Project Manager, Project Engineers, Materials Engineers, and Foremen), to be assigned to the contract to be bid, with their complete qualification and experience data;</li> <li>c. List of contractor's major equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership or certification of availability of equipment from the equipment lessor/vendor for the duration of</li> </ol>	<p><del>Revenue (BIR).</del></p> <p><b>(re-sequenced)</b></p> <p><u>Technical Documents</u></p> <p><b>(b)</b> Statement of the prospective bidder of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid; <b><u>and</u></b></p> <p><b>(c)</b> Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid, except under conditions provided under the rules; <b><u>and</u></b></p> <p><b>(d)</b> <del>Philippine Contractors Accreditation Board (PCAB) License;</del> <b><u>or</u></b> Special PCAB License in case of Joint Ventures; <b><u>and</u></b> registration for the type and cost of the contract to be bid; <b><u>and</u></b></p> <p><b>(e)</b> Original copy of Bid Security. If in the form of a Surety Bond, submit also a certification issued by the Insurance Commission; <b><u>or</u></b> Original copy of Notarized Bid Securing Declaration; <b><u>and</u></b></p> <p><b>(f)</b> Project Requirements, which shall include the following:</p> <ol style="list-style-type: none"> <li>a. Organizational chart for the contract to be bid;</li> <li>b. List of contractor's key personnel (e.g., Project Manager, Project Engineers, Materials Engineers, and Foremen), to be assigned to the contract to be bid, with their complete qualification and experience data;</li> <li>c. List of contractor's major equipment units, which are owned, leased, and/or under purchase agreements, supported by proof of ownership or certification of availability of equipment from the equipment lessor/vendor for the duration of</li> </ol>
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<p>the project, as the case may be; <b>and</b></p> <p>(k) Original duly signed Omnibus Sworn Statement (OSS); <b>and</b> if applicable, Original Notarized Secretary's Certificate in case of a corporation, partnership, or cooperative; or Original Special Power of Attorney of all members of the joint venture giving full power and authority to its officer to sign the OSS and do acts to represent the Bidder.</p> <p><u>Financial Documents</u></p> <p>(l) The prospective bidder's audited financial statements, showing, among others, the prospective bidder's total and current assets and liabilities, stamped "received" by the BIR or its duly accredited and authorized institutions, for the preceding calendar year which should not be earlier than two (2) years from the date of bid submission; <b>and</b></p> <p>(m) The prospective bidder's computation of Net Financial Contracting Capacity (NFCC).</p> <p><b>Class "B" Documents</b></p> <p>(n) If applicable, duly signed joint venture agreement (JVA) in accordance with RA No. 4566 and its IRR in case the joint venture is already in existence; <b>or</b> duly notarized statements from all the potential joint venture partners stating that they will enter into and abide by the provisions of the JVA in the instance that the bid is successful.</p>	<p>the project, as the case may be; <b>and</b></p> <p>(g) Original duly signed Omnibus Sworn Statement (OSS); <b>and</b> if applicable, Original Notarized Secretary's Certificate in case of a corporation, partnership, or cooperative; or Original Special Power of Attorney of all members of the joint venture giving full power and authority to its officer to sign the OSS and do acts to represent the Bidder.</p> <p><u>Financial Documents</u></p> <p><del>(g) The prospective bidder's audited financial statements, showing, among others, the prospective bidder's total and current assets and liabilities, stamped "received" by the BIR or its duly accredited and authorized institutions, for the preceding calendar year which should not be earlier than two (2) years from the date of bid submission; <b>and</b></del></p> <p>(h) The prospective bidder's computation of Net Financial Contracting Capacity (NFCC).</p> <p><b>Class "B" Documents</b></p> <p>(i) If applicable, duly signed joint venture agreement (JVA) in accordance with RA No. 4566 and its IRR in case the joint venture is already in existence; <b>or</b> duly notarized statements from all the potential joint venture partners stating that they will enter into and abide by the provisions of the JVA in the instance that the bid is successful.</p>
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**REVISED PhilGEPS CERTIFICATE OF PLATINUM REGISTRATION AND MEMBERSHIP  
(First Page Only)**

Republic of the Philippines  
Department of Budget and Management  
PROCUREMENT SERVICE

**CERTIFICATE OF PHILGEPS REGISTRATION  
(Platinum Membership)**

*THIS IS TO CERTIFY THAT*

(NAME OF BIDDER)  
Address

is registered in the Philippine Government Electronic Procurement System (PhilGEPS) on (date of registration) pursuant to Section 8.5.2 of the Revised Implementing Rules and Regulations of Republic Act No. 9184, otherwise known as the Government Procurement Reform Act.

This further certifies that (name of the prospective bidder) has submitted the required eligibility documents in the PhilGEPS Supplier Registry as listed in Annex A which document is attached hereto and made an integral part hereof.

**For the purpose of updating this Certificate, all Class "A" eligibility documents covered by Section 8.5.2 of the Revised Implementing Rules and Regulations of Republic Act No. 9184 supporting the veracity, authenticity and validity of this Certificate shall remain current and updated. The failure by the prospective bidder to update this Certificate with the current and updated Class "A" eligibility documents shall result in the automatic suspension of its validity until such time that all of the expired Class "A" eligibility documents has been updated.**

**By submitting this Certificate, the Bidder certifies:**

- 1. the authenticity, genuineness, validity, and completeness of the copy of the original eligibility documents submitted;**
- 2. the veracity of the statements and information contained therein;**
- 3. that the Certificate is not a guaranty that the named registrant will be declared eligible without first being determined to be such for that particular bidding, nor is it evidence that the Bidder has passed the post-qualification stage; and**
- 4. that any finding of concealment, falsification, or misrepresentation of any of the eligibility documents submitted, or the contents thereof shall be a ground for disqualification from further participation in the bidding process, without prejudice to the imposition of appropriate administrative, civil and criminal penalty in accordance with the laws.**

This Certificate is valid until (date of expiration).

Issued this (date) day of (month), year.  
This is a system-generated certificate. No signature is required.

Documentary Stamp Tax Paid 30.00  
Certificate Reference No:

(QR Code)

Page 1 of 3

# ATTACHMENT 2

## DIVISION 08 – REINFORCED CONCRETE (FOUNDATION WORKS)

### 8.1 WORK INCLUDED

The work to be undertaken under this Clause shall include all labor, materials, equipment, plant and other facilities and the satisfactory performance of all work necessary to complete all concrete work show on the Drawings and specified herein. All work included under this Clause shall be subject to the General Conditions accompanying these specifications. The Contractor is required to refer especially thereto.

### 8.2 MATERIALS

#### a. Cement

Except as may be otherwise provided in these specifications, cement shall conform with the "Standard Specifications for Portland Cement" (ASTM C-150-Latest Revision) and shall be Type I. The cement shall be of one brand and shall not be more than three (3) months from date of manufacture.

#### b. Concrete-Aggregates

1. Concrete aggregates shall be well-graded, clean, hard particles of gravel or crushed rock conforming with the "Standard Specifications for Concrete Aggregates" (ASTM C-33 Latest Revision).
2. The maximum size of the aggregates 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, or bundles of bars, and in no case larger than 38 mm (1-1/2 in.) in diameter except that larger diameter may be allowed in massive concreting with written permission from the Engineer.

#### c. Water

Water used in mixing concrete shall be clean and free from injurious amounts of oils, acids, alkali, organic materials, or other substances that may be deleterious to concrete or steel.

#### d. Reinforcing Steel

All reinforcing steel bars used shall be of deformed type, new, free from rust, oil, defects, greases, or kinks. They shall conform with the latest edition of National Structural Code for Buildings with a minimum grade equal to 275 MPa unless otherwise shown on the plans.



**e. Admixture**

At the Contractor's option or at the request of the Engineer, but in either case at the expense of the Contractor, an admixture may be added to the concrete to control the set, effect water reduction, and increase workability. Such admixture may be either a hydroxylated carboxylic and acid type or a hydroxylated polymer type, but shall contain no calcium chloride. The required quantities of cement shall be used in the mix regardless of whether or not any admixture is used. The quantity of admixture used and the method of mixing shall be in accordance with the manufacturer's instructions. Where the air temperature at the time of placement is expected to be consistently over 26.7°C (80°F) such admixture shall be Super Concrete Emulsions' "Plastiment", "Master Builder's", "Pozzolith 300R", or substitute.

**f. Calcium Chloride**

Except as otherwise specified for Architectural finish, the use of calcium chloride in concrete will not be permitted.

**8.3 STORAGE OF MATERIALS**

Cement and aggregates shall be stored in such a manner as to prevent deterioration or intrusion by foreign matter. Any material which has deteriorated or which has been damaged shall not be used for concrete. Steel shall be stored under cover or otherwise prevented from rusting.

**8.4 TESTING OF MATERIALS**

The Owner or his duly authorized representative or the Engineer shall periodically order the test of any material supplied by the Contractor entering into concrete or reinforced concrete to determine its suitability for the intended purpose. Such tests shall be in accordance with the standards of the American Society for Testing and Materials, as noted elsewhere in these Specifications. Samples shall be provided by the Contractor without cost to the Owner. Expenses for the testing and cost of transporting samples to testing laboratory shall be borne by the Owner. Copies of results of tests shall be furnished to the Owner promptly. Compressive strength specimens for tests of concrete during construction shall be according to "Making and Curing of Concrete Compression and Flexural Strength Test Specimens in the Field" (ASTM C-31).

**8.5 CONTROLLED STRENGTHS OF CONCRETE**

- a. Concrete for structural elements, including slabs on grade within water-retaining structures and stairs shall develop a minimum 28-day compressive cylinder strength of 20.68 megapascal (3,000 psi), unless otherwise specified in the plans.

- b. Concrete for non-structural elements such as cradles, unreinforced encasements, thrust blocks, and partition walls shall develop a minimum 28-day cylinder strength of 17.25 MPa (2500 psi), unless otherwise specified in the plans.
- c. Leveling concrete under reservoir base slabs/foundations shall have a minimum 28-day cylinder strength of MPa (2,000) psi.

## **8.6 METHODS OF DETERMINING STRENGTH: TRIAL BATCH**

The Contractor shall submit design mixes and test results of samples made in accordance with the "Standard Method of Making and Curing Concrete Compression and Flexure Test Specimens in the Laboratory" (ASTM C-192-Latest Revision) and "Standard Method of Test for Compressive Strength of Molded Concrete Cylinders" (ASTM Designation C-39) for each strength required, stating the proposed slump and the proportional weights of cement, saturated surface dry aggregates, and water. These mixes shall be proved by preliminary tests thirty (30) days before concreting and shall show a 28-day strength of fifteen percent (15%) higher than the ultimate strength required. No substitution shall be made in the materials or mixed without additional tests to show that the quality of concrete is satisfactory.

## **8.7 CONCRETE PROPORTION AND CONSISTENCY**

- a. The proportions of aggregate to cement for any concrete shall be such as to produce a mixture which will work readily into the corners and angles of the forms and around reinforcement with the method of placing employed on the work but without permitting the materials to segregate, or excess free water to collect on the surface. The combined aggregates shall be of such composition of sizes that when separated on the No. 4 standard sieve, the weight passing the sieve (fine aggregate) shall not be less than thirty percent (30%) of the total, except that these proportions do not necessarily apply to lightweight aggregates.
- b. The methods of measuring concrete materials shall be such that the proportions can be accurately controlled and easily checked at any time during the work. Measurement of materials for ready-mixed concrete shall conform with the "Standard Specifications for Ready-Mixed Concrete" (ASTM C-94, Latest Revision) where applicable.
- c. Aggregates shall be measured out by weight and to within one percent (1%). Cement shall conform with 40 kg. (88 lb.) per bag and this is to be verified from time to time. Water shall be measured by weight or volume to within one and one-half percent (1-1/2%).
- d. The water shall in no case exceed 21.24 liters, and 25.67 liters (5.62 and 6.79 US gallons) per bag of cement for all concrete with specified strength of  $f'_c = 20.68$  MPa (3000 psi) and 17.25 MPa (2500 psi), respectively. Slumps shall be within the following limits:

Portion of Structure	Slump	
	Millimeters	Inches
Columns and end supported beams, girders	50 - 100	2 - 4
Walls and thin vertical sections	75 - 125	3 - 5
Footings, slabs on grade and cantilevered beams and slabs	50 - 80	2 - 3

Slumps shall be according to "Test of Slump for Portland Cement Concrete" (ASTM C-143).

- e. The minimum cement content for 20.68 MPa (3000 psi) concrete shall be 8.39 sacks per cubic meter of concrete.
- f. Job mix adjustments on water content shall be allowed only with the Engineer's permission and provided that cement is also added to maintain the original water-cement ratio of the design mix.

## 8.8 EXCLUSION OF WATER

No concrete shall be placed in any structure until all water entering the space to be filled with concrete has been properly cut off or has been diverted by pipes, or other means, and carried out of the forms, clear of the work. No concrete shall be deposited under water without the explicit permission of the Engineer, and then only in strict accordance with his directions; nor shall the Contractor, without explicit permission, allow still water to rise on any concrete until the concrete has attained its initial set. Water shall not be permitted to flow over the surface of any concrete in such manner and at such velocity as will injure the surface finish of the concrete. Pumping or other necessary dewatering operations for removing ground water, if required, will be subject to the approval of the Engineer.

## 8.9 MIXING CONCRETE

- a. No hand mixing shall be allowed, except in emergency such as mixer breakdown during concreting operations and this shall stop as soon as the pour is completed, at a construction joint shown or otherwise designated by the Engineer. All concrete shall be machine mixed for at

least one and one-half (1-1/2) minutes after all materials, including water, are in the mixing drum.

- b. The mixer shall be of an approved size and type which will insure a uniform distribution of materials throughout the mass. It shall be equipped with a device for accurately measuring and controlling the amount of mixing water in each batch.
- c. The first batch of the concrete materials placed in the mixer shall contain a sufficient excess of cement, sand, and water to coat the inside of the drum without reducing the cement of the mix to be discharged.
- d. Retempering, i.e., remixing with the addition of water to concrete that has been partially hardened will not be permitted.

#### **8.10 PREPARATION OF SURFACES FOR CONCRETING**

- a. Earth surfaces shall be thoroughly wetted by sprinkling prior to the placing of any concrete, and these surfaces shall be kept moist by frequent sprinkling up to the time of placing concrete thereon. The surface shall be free from standing water, mud and debris at the time of placing concrete.
- b. Concrete surfaces upon or against which concrete is to be placed, where the placement of the old concrete has been stopped or interrupted so that, in the opinion of the Engineer, the new concrete cannot be incorporated integrally with the previously placed, are defined as construction joints. The surfaces of horizontal joints shall be leveled with a wooden float to provide a reasonable smooth surface. A surface consisting largely of coarse aggregate shall be avoided. Except where the drawings call for, joint surfaces to be painted, the joint surfaces shall be cleaned of all laitance, loose or defective concrete and foreign material. Such cleaning shall be accomplished by sandblasting followed by thorough washing. All pools of water shall be removed from the surface of the construction joints before the new concrete is placed. After the surface has been prepared to the satisfaction of the Engineer, all approximately horizontal construction joints shall be covered with a layer of mortar approximately 25 mm. (1 in.) thick. The mortar in place shall have the same proportion of cement and sand as the regular concrete mixture, unless otherwise directed by the Engineer. The water-cement ratio of the mortar in place shall not exceed that of the concrete to be placed upon it, and the consistency of the mortar shall be suitable for placing and working in a manner herein-after specified. The mortar shall be spread uniformly and shall be worked thoroughly into all irregularities of the surface, and wire brooms shall be used where possible to scrub the mortar into the surface. Concrete shall be placed immediately upon the fresh mortar.
- c. When the placing of concrete is to be interrupted long enough for the concrete to take a set, the working face shall be given a shape by the use of forms or other means that will secure proper union with subsequent work, provided that construction joints shall be made only where approved by the Engineer.

## **8.11 PLACING CONCRETE**

- a. Concrete which upon or before placing is found not to conform with the requirements specified herein shall be rejected and immediately removed from the work. Concrete which is not placed in accordance with these specifications, or which is of inferior quality, as determined by the Engineer, shall be removed and replaced by and at the expense of the Contractor. No concrete shall be placed except in the presence of a duly authorized representative of the Engineer. Concrete shall not be placed under unsuitable heat or wind conditions which will prevent proper placement and curing, as determined by the Engineer. Prior to placing any concrete, the Contractor shall give the Engineer twenty-four (24) hours written notice.
- b. Concrete shall be deposited in its final position without segregation, re-handling, or flowing. Placing shall be done preferably with buggies, buckets, or wheelbarrows. No chutes will be allowed except to transfer concrete from hoppers to buggies, wheelbarrows or buckets, in which case they shall not exceed six (6) meters (20 ft.) in aggregate length.
- c. Placing of concrete with a free drop or fall more than 1.20 meters (4 ft.) shall not be allowed, except when approved by the Engineer and when approved sheet metal conduits, pipes, or "elephant trunks" are employed. When employed, these conveyors shall be kept full of concrete and the ends kept buried in the newly placed concrete as pouring progresses.
- d. Concrete in forms shall be deposited in uniform horizontal layers not deeper than 450 mm (18 in.) and care shall be taken to avoid inclined layers or inclined construction joints except where such are required for sloping members. Each layer shall be placed while the previous layer is still soft. The rate of placing concrete in forms shall not exceed 1.5 meters (5 ft.) of vertical rise per hour.

## **8.12 FORMS**

### **a. General**

The Contractor shall provide forms to confine the concrete and shape it to the required lines. Plastering, in general, shall not be allowed. The Contractor shall assume full responsibility for the adequate design of all forms. However, forms which in the opinion of the Engineer are unsafe or inadequate in any respect may at any time be condemned by the

Engineer; and the Contractor shall promptly remove the condemned forms from the work and replace them at his own expense. A sufficient number of forms of each shall be provided to permit the required rate of progress to be maintained. Whenever, in the opinion of the Engineer, additional forms are necessary to maintain the progress schedule such additional forms shall be provided by the Contractor at his own expense. The design and inspection of the concrete forms,

false work, and shoring shall comply with applicable safety regulations, and as may be specified in the General Conditions of these Specifications.

**b. Material**

Except as otherwise expressly approved by the Engineer, all lumber brought at the job site for use as forms, shoring, or bracing shall be new material.

All forms shall be smooth surface forms and shall be of the following materials,

- Walls - steel or plywood panels
- Columns - steel, plywood or surface lumber
- Roof - plywood
- All other work - steel panels, plywood or surfaced lumber

Plywood shall be manufactured especially for concrete form work and shall be oiled with an approved form oil and edge sealed.

- c. Column forms shall be checked for plumbness before concrete is deposited. Hand holes shall be provided in column forms at lowest points of pour lifts to render this space accessible for cleaning.
- d. All girder, beam, and slab centerlines shall be crowned at least 6.3 mm (1/4 in.) in all directions for every 4.57 meters (15 ft.) span. However, cambers from all cantilevers shall be indicated on the plans or obtained from the Engineer by the Contractor.
- e. The following are the tolerance limits for form work:

1. Variation from plumb:

In lines and surfaces of columns, piers, walls and risers:

In 3.05 m (10 ft)	6.3 mm (1/4 in.)
6.10 m (20 ft) max	9.5 mm (3/8 in.)
12.20 m (40 ft)	19.0 mm (3/4 in.)
or more	

For exposed corner columns and/or piers, control joint grooves and other conspicuous lines:

In any bay 6.10 m (20 ft) max	6.3 mm (1/4 in.)
In 12.20 m (40 ft) or more	13.0 mm (1/2 in.)

2. Variation in cross-sectional dimensions of columns and piers, beams, and thickness of walls and slabs:

Minus	6.3 mm (1/4 in.)
Plus	13.0 mm (1/2 in.)

3. Footings

Variations in dimensions on drawings (applied to concrete only and not to reinforcing bars or dowels):

Minus	13.0 mm (1/2 in.)
Plus	50.0 mm (2 in.)

Misplacement of eccentricity, two percent (2%) of the footing's width in the direction of misplacement but not to exceed 50.0 mm (2 in.). Reduction in thickness five percent (5%) at specified thickness.

4. Variation in steps:

(1)	In a flight of steps	
	Rise	3.2 mm (1/8 in.)
	Tread	6.3 mm (1/4 in.)
(2)	In consecutive steps	
	Rise	1.6 mm (1/16 in.)
	Tread	3.2 mm (1/9 in.)

When required for another work, or when requested by the Owner or his Engineer, the Contractor shall remove or relocate shoring; but existing shoring shall not be disturbed until new shores are in position.

**f. Design**

1. All forms shall be true in every respect to the required shape and size, shall conform with the established alignment and grade, and shall be of sufficient strength and rigidity to maintain their position and shape under the loads and operations incident to placing and vibrating the concrete. Suitable and effective means shall be provided on all forms for holding adjacent edges and ends of panels and sections tightly together and in accurate alignment so as to prevent the formation of ridges, fins, or offsets, or similar surface defects in the finished concrete. Plywood, 16.0 mm (5/8 in.) and greater in thickness, may be fastened directly to studding if the studs are close enough to prevent visible deflection marks in concrete. The forms shall be tight so as to prevent the loss of water, cement, and fins during the placing and vibrating of the concrete. Adequate clean-out holes shall be provided at the bottom of each lift of forms. The size, number, and location of such clean-outs shall be subject to the approval of the Engineer.
2. Concrete construction joints will not be permitted on locations other than those shown or specified, except as may be approved by the Engineer. When a second lift is placed on hardened concrete, special precaution shall be taken in the way of the number, location, and tightening of ties at the top of

the old lift and bottom of the new to prevent any unsatisfactory effect whatsoever on the concrete. Pipe stubs and anchor bolts shall be set in the form where required.

3. Unless otherwise shown, exterior corners in concrete members shall be provided with 19.0 mm (3/4 in.) chamfers. Re-entrant corners in concrete members shall not have fillets unless otherwise shown.
4. Reservoir forms and false work supporting the roof slab shall be designed for a minimum additional live load or 0.96 KPa (20 psf).

**g. Form Ties**

Form ties with integral water stops shall be provided with a cork or other suitable means for forming a conical hole to ensure that the form-tie may be broken off back of the face of the concrete. The maximum diameter or removable cones for rod ties, or of other removable form-tie fasteners having a circular cross-section, shall not exceed 38 mm (1-1/2 in.) and all such fasteners shall be such as to leave holes of regular shape for reaming. Holes left by the removal of fasteners from the ends of snap-ties or form-ties shall be reamed with suitable toothed reamers so as to leave the surfaces of the holes clean and rough before being filled with mortar as provided in Clause 8.20. Wire ties for holding forms will not be permitted. No form tying device or part thereof, other than metal, shall be left embedded in the concrete, nor shall any tie be removed in such manner as to leave a hole extending through the interior of the concrete member. The use of snap-ties which cause spilling of the concrete upon form stripping or tie removal

will not be permitted. If steel panel forms are used, rubber grommets shall be provided where the ties pass through the form in order to prevent loss of cement paste. Where metal rods extending through the concrete are used to support or to strengthen forms, the rod shall remain embedded and shall terminate not less than 25 mm (1 in.) back from the formed faces or faces of the concrete. Form ties or metal rods left embedded in concrete of water-retaining tanks shall be equipped with an integral metal water stop of not less than 38 mm (1-1/2 in.) in diameter.

**h. Vertical Surfaces**

All vertical surfaces of concrete members shall be formed, except where placement of the concrete against the ground is called for in the drawings or explicitly authorized by the Engineer. Not less than 25 mm (1 in.) of concrete shall be added to the thickness of the concrete member as shown where concrete is permitted to be placed against trimmed ground in lieu of forms. Such permission will be granted only for members of comparatively limited height and where the character of the ground is such that it can be trimmed to the required lines and will stand securely without caving or sloughing until the concrete has been placed.



**i. Maintenance of Forms**

Forms shall be maintained at all times in good condition particularly as to size, shape, strength, rigidity, tightness, and smoothness of the surface. Forms, when in place, shall conform to the established alignment and grades. Before concrete is placed, the forms shall be thoroughly cleaned. The forms surfaces shall be treated with a non-staining mineral oil or other lubricant approved by the Engineer. Any excess lubricant shall be satisfactorily removed before placing the concrete. In addition, all forms shall be given a preliminary oil treatment by the manufacturer or shall be oiled by the Contractor at least two (2) weeks in advance of their use. Care shall be exercised to keep oil off the surfaces of steel reinforcement and other metal items to be embodied in the concrete. Forms may be reused if in good condition and if approved by the Engineer. Light sanding between uses will be required whenever necessary in the opinion of the Engineer to obtain uniform surfaces texture on all exposed concrete surfaces. Exposed concrete surfaces are defined as surfaces which are permanently exposed to view. In the case of forms for the inside wall surfaces of hydraulic structures, unused tie rod holes shall be covered with metal caps or shall be filled by other methods approved by the Engineer.

**j. Removal of Forms**

Directions of the Engineer concerning the removal of forms shall be strictly followed, and this work shall be done with care so as to avoid injury to the concrete. No heavy loading on green concrete will be permitted. In this case of roof slab and above-ground floor slabs, forms shall remain in place until test cylinders for the roof concrete attain a minimum of compressive strength of 15.52 MPa (2,250 psi) provided that no forms shall be disturbed or removed under an individual panel or unit before the concrete in the adjacent panel or unit has attained a strength of 15.52 MPa (2,250 psi) and has been in place for a minimum of seven (7) days. The time required to establish said strength will be determined by the Engineer who will make several test cylinders for this purpose from concrete used in the first group of roof panels placed. If the time so determined is more than the seven-day minimum, then it shall be used as the minimum length of time. Forms for all vertical walls and columns shall remain in place at least three (3) days after the concrete has been placed. Forms for all parts of the work not specifically mentioned herein shall remain in place for periods of time as ordered by the Engineer.

**8.13 CONSTRUCTION JOINTS**

**a. General**

Construction joints shall be provided where shown on the drawings. Special care shall be used to prepare concrete surfaces at joints where bonding between the two sections of concrete is required. Unless otherwise indicated on the drawings, such bonding will be required at all horizontal joints in walls. Surfaces shall be prepared

in accordance with Section 8.10. Except where otherwise shown or specified, at all joints where water stops are required, the joint face of the first pour shall be coated with an approved bond breaker applied in accordance with the recommendations of the manufacturer. It shall contain a coloring agent so that areas of applications will be readily distinguishable for a six-month period in sunlight. The surfaces of the groove for the sealant shall not be coated. Concrete next to water stops shall be placed in accordance with Clause 8.16 (b).

**b. Construction Joint Sealant**

Where shown, construction joints in floor slabs shall be provided with tapered grooves which shall be filled with a construction joint sealant. The material used for forming the tapered grooves shall be left in the grooves until just before the grooves are cleaned and filled with joint sealant. After removing the forms from the grooves, all laitance and fins shall be removed, and the grooves shall be sandblasted. The grooves shall be allowed to become thoroughly dry, after which they shall be blown out; immediately thereafter, they shall be primed and filled with the construction joint sealant. The primer used shall be supplied by the same manufacturer supplying the sealant. No sealant will be permitted to be used without a primer. Care shall be used to completely fill the sealant grooves. Areas designated to receive a sealant fillet shall be thoroughly cleaned, as outlined for the tapered grooves, prior to application of the sealant. The sealant shall be polyurethane polymer designed for bonding to concrete which is continuously submerged in water. No material will be acceptable which has an unsatisfactory history as to bond or durability when used in the joints of hydraulic structures. Prior to ordering the sealant material, the Contractor shall submit to the Engineer for approval sufficient data to show general compliance with the specification requirements. The material shall meet the following requirements:

Work Life	45-90 minutes
Time to Reach 20 Shore "A" Hardness (at 25°C)	
Ultimate hardness	30 - 40 Shore "A"
Tensile Strength	1.73 MPa (250 psi) min.
Ultimate Elongation	400 percent, min.
Tear Resistance (Die C ASTM D624)	13.4 kg per cm (75 lb. per inch) of thickness min.
Color	Light Gray

In addition, the material shows no signs of adhesive or cohesive failure when tested in accordance with the following procedure:

1. Sealant specimen shall be prepared between two concrete blocks 25 mm x 50 mm x 76 mm (1 in. x 2 in. x 3 in.) in size. Spacing between the blocks

shall be 13 mm (1/2 in.). Coated spacers 50 mm x 38 mm x 13 mm (2 in. x 1-1/2 in, x 1/2 in.) shall be used to insure sealant cross-section of 13 mm x 50 mm (1/2 in. x 2 in.) with a width of 13 mm (1/2 in.).

2. Sealant shall be cast and cured according to manufacturer's recommendations except that curing period shall not exceed twenty-four (24) hours.
3. Following the curing period, the gap between blocks shall be widened to 31.7 mm (1-1/4 in.). Spacers shall be used to maintain this gap for twenty-four (24) hours prior to inspection for failure.

Certified test reports from the sealant manufacturer on the actual batch of material being supplied indicating compliance with the above requirements shall be furnished to the Engineer before the sealant is used on the job. The primer and sealant shall be placed strictly in accordance with the recommendations of the manufacturer, taking special care to properly mix the sealant prior to application. Before any sealant is placed, the crew doing the work shall be carefully instructed as to the proper method of application by a representative of the sealant manufacturer. All sealant shall cure at least seven (7) days before the structure is filled with water.

**c. Waterstops**

1. Material and Manufacture

Waterstops shall be extruded from an elastomeric polyvinylchloride compound containing the necessary plasticizers, resins, stabilizers, and other materials necessary to meet the requirements of these specifications. No reclaimed or scrap material shall be used. The waterstop manufacturer shall furnish to the Engineer current test reports and a written certification that the material to be shipped to the job site meets the following physical requirements:

<u>Physical Property, Sheet Material</u>	<u>Value</u>	<u>ASTM Std.</u>
Tensile Strength - minimum	12. 07 MPa (1750 psi)	D412, Die C
Ultimate Elongation minimum	350 %	D412, Die C
Low Temp. Brittleness - max	-37 °C (-35 °C)	D746
Stiffness in Flexure minimum	2.76 MPa (400 psi)	D747
<u>Accelerate Extraction</u>		
Tensile Strength - minimum	10.35 MPa (1500 psi)	D412 Die C

Ultimate Elongation minimum	300 %	D412 Die C
<u>Effect of Alkalines</u>		
Change in Weight (%)	+0.25/ -0.10	-
Change in Durometer, Shore A	+5	
<u>Finished Waterstops</u>		
Tensile strength - minimum MPa	0.67	D412, Die C
Ultimate Elongation - minimum (%)	280	D412, Die C

## 2. Qualification Sample

Prior to production of the material required under this Contract, qualification samples shall be submitted. Such samples shall consist of extruded or molded sections of each size or shape to be used, and shall be accomplished so that the material and workmanship represents in all respects the materials to be furnished under this Contract. The balance of the material to be used under this Contract shall not be produced until after the Engineer has approved the qualification samples.

## 3. Splices and Joints

Prior to the use of the waterstop material in the field, a sample of fabricated cross constructed of each size or shape of material to be used shall be submitted to the Engineer for approval. These samples shall be fabricated so that the material and workmanship represent in all respects the fittings to the furnished under this Contract, Field samples of fabricated fittings (crosses, tees, etc.) will be selected by random by the Engineer for testing by a laboratory at the Owner's expense. When tested, they shall have tensile strength across the joints equal to at least

4.14 MPa (600 psi). Field splices and joints shall be made in accordance with the waterstop manufacturer's instruction using a thermostatically-controlled heating iron.

## 4. Flat-Strip Waterstops

Flat-strip waterstops, where required, shall be as shown. At no place shall the thickness be less than 4.76 mm (0.1875 in.). Adequate means shall be provided for anchoring the waterstop in concrete. In placing flat-strip waterstops in the forms, means shall be provided to prevent them from being folded over by the concrete as it is placed. Horizontal waterstops shall be held in place with continuous supports to which the top edge of the waterstop shall be tackled. Vertical waterstops shall be held in place with a

light wire tie on 450 mm (18 in.) centers which shall be passed through the edge of the waterstop and tied to the two curtains of reinforcing steel. In placing concrete among waterstops, concrete shall be worked under the waterstops by hand so as to avoid the formation of air and rock pockets.

**d. Expansion Joint Filler**

Where expansion joint filler is indicated on the drawings, the material shall be of the performed non-extruding type joint filler which may be constructed of open cellular sponge rubber, or closed cellular sponge rubber of firm texture. Bituminous fiber type will not be permitted. All non-extruding and resilient-type performed expansion joint filler shall conform with the requirements and test set forth in "Specifications for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction", Type (ASTM Designation D-1752), except as otherwise provided herein.

**8.14 CORROSION PROTECTION REQUIREMENTS**

Pipes, conduits, dowels, and other ferrous items required to be embedded in concrete construction shall be so positioned and supported prior to placement of concrete that there will be a minimum of 50 mm (2-in.) clearance between said items and any part of the concrete reinforcement. Securing such item in position by wiring or welding those to the reinforcement will not be permitted.

**8.15 ORDER OF PLACING CONCRETE**

- a. The order of placing concrete in all parts of the work shall be subject to the approval of the Engineer. In order to minimize the effects of shrinkage, the concrete shall be placed in units as bounded by construction joints shown on the drawings. The placing of units shall be done by placing alternate units in a manner such that each unit placed shall have cured at least seven (7) days before the contiguous unit or units are placed, except the vertical walls shall be placed until the wall

footings have cured at least fourteen (14) days, and the corner sections of vertical walls shall not be placed until the adjacent wall panels have cured at least fourteen (14) days.

- b. The surface of the concrete shall be level whenever a run of concrete is stopped. To insure a level, straight joint on the exposed surface of walls, a wood strip at least 19.0 mm (0.75-in.) thick shall be tacked to the forms on these surfaces. The concrete shall be carried about 13.0 mm (0.50-in.) above the underside of the strip. About one hour after the concrete is placed, the strip shall be removed and any irregularities in the edge formed by the strip shall be leveled with a trowel and all laitance shall be removed.

## 8.16 TAMPING AND VIBRATING

- a. As concrete is placed in the forms or in excavations, it shall be thoroughly settled and compacted throughout the entire depth of the layer which is being consolidated, into a dense, homogeneous mass, filling all corners and angles, thoroughly embedding the reinforcement, eliminating rock pockets, and bringing only a slight excess of water to the exposed surface of concrete during placement.
- b. Care shall be used in placing concrete around waterstops. The concrete shall be carefully worked by rodding and vibrating to make sure that all air and rock pockets have been eliminated. Where flat-strip type waterstops are used., the concrete shall be worked under the waterstops by hand, making sure that all air and rock pockets have been eliminated.
- c. Concrete in walls shall be internally vibrated and at the same time rammed, stirred, or worked with suitable appliances, tamping bars, shoves, or forked tools until it completely fills the forms or excavations and closes snugly against all surfaces. Subsequent layers of concrete shall not be placed until the layers previously placed have been worked thoroughly as specified. Except in special cases where their use is deemed impracticable by the Engineer, the Contractor shall not use internally vibrated, high speed power vibrators not less than 8000 rpm of an approved immersion type in sufficient numbers, within fifteen (15) minutes after concrete of the prescribed consistency is placed in the forms. The vibrating head shall be kept from contact with the surface of the forms. Care shall be taken not to vibrate concrete excessively or to work it in any manner that causes segregation of its face.

## 8.17 CURING AND WATERPROOFING

### a. General

All concrete shall be cured for not less than fourteen (14) days after placing, in accordance with the methods specified herein for the

different parts of the work, and described in detail in the following Clauses.

<u>Surface to be cured or waterproofed</u>	<u>Method</u>
Unstripped wooden forms	1
Construction joints between footing and walls, and floor slabs and columns	2
Encasement concrete and thrust blocks	3
All concrete surfaces not specifically provided for elsewhere in the Clause	4

Floor slabs in hydraulic structures and exterior surfaces of exposed roof slabs	5
Exterior buried surfaces of walls	6

**b. Method 1**

Wooden forms shall be wetted immediately after concrete has been poured and shall be kept wet with water until removed. If forms are removed within fourteen (14) days of placing the concrete, curing shall be continued in accordance with the applicable method for the particular structure as set out in Methods 2, 4, 5, and 6 below.

**c. Method 2**

The surface shall be covered with burlap mats which shall be kept wet with water for the duration of the curing period, until the concrete in the walls has been placed. No curing compound shall be applied to surfaces cured under Method 2.

**d. Method 3**

The surface shall be covered with moist earth, not less than four (4) hours or more than twenty-four (24) hours, after the concrete is placed.

**e. Method 4**

1. The surface shall be sprayed with a liquid curing compound, which will not affect the bond or paint to the concrete surface. It shall be applied in accordance with the manufacturer's instruction at a maximum coverage rate of 4.91 m<sup>2</sup>/L (200 ft<sup>2</sup>/gal) in such a manner as to cover the surface with a uniform film which will seal thoroughly.
2. Where the curing compound method is used, care shall be exercised to avoid damage to the seal during the curing period. Should the seal be damaged or broken before the expiration of the curing period, the break shall be repaired immediately by the application of additional curing compound over the damaged portion.
3. Whenever curing compound may have applied by mistake to surfaces against which concrete subsequently is to be placed and to which it is to adhere, said compound shall be entirely removed by sandblasting prior to the placing of new concrete.
4. Whenever curing compound is specified, it shall be applied within two (2) hours after completion of the finish or unformed surfaces, and within two

(2) hours after removal of forms on formed surfaces. Repairs required to be made to formed surfaces shall be made within the said two (2) hour period; provided, however, that any such repairs which cannot be made within the said two (2) hour period shall be delayed until after the curing compound has been applied. When repairs are to be made to an area on which curing compound has been applied, the area involved shall first be sandblasted to remove the curing compound, following which repair shall be made as provided under the Clause 21.20.

**f. Method 5**

Immediately after the concrete has been trowelled, it shall be given a coat of curing compound in accordance with Clause (e) herein. Not less than one (1) hour or more than four (4) hours after the coat of curing compound has been applied, the surface shall be wetted with water delivered through a fog nozzle and concrete curing blankets shall be placed on the slabs. The curing blankets shall consist of one of the following two types:

1. Sheets of heavy, waterproof sisalkraft paper laid with edges butted together with the joints between strips sealed with 50 mm (2-in.) wide strips of sealing tape or with the edges lapped not less than 76 mm (3-in.) and fastened together with a waterproof cement to form a continuous watertight joint.
2. Sheets of clear polyethylene having a thickness of not less than six (6) mils laid with edges butted together and with the joints between sheets sealed with 25 mm (1 in.) wide strips of acetate tape.

The curing blankets shall be left in place during the 14-day curing and shall not be removed until after concrete for adjacent work has been placed. Should the curing blankets become torn or otherwise ineffective, the Contractor shall repair damaged sections. During the first seven (7) days of the curing period, no traffic of any nature and no depositing, temporary or otherwise, of any materials shall be permitted on the curing blankets. During the remainder of the curing period, foot traffic and temporary depositing of materials that impose light pressure will be permitted only on top of plywood sheets 16 mm (5/8 in.) minimum thickness laid over the curing blanket.

**g. Method 6**

1. The surface shall be sprayed with a waterproofing agent consisting of an asphalt emulsion immediately after the wall forms have been removed. Application shall be in two coats. The first coat shall be diluted to 1/2 strength by the addition of water and shall be sprayed on so as to provide maximum coverage rate of 2.45 m<sup>2</sup>/L (100 ft<sup>2</sup>/gal) of diluted solution. The second coat shall consist of an application of the specification of the



specified material undiluted, and shall be sprayed on to surface so as to provide a maximum coverage rate of 2.45 m<sup>2</sup>/L (100 ft<sup>2</sup>/gal).

2. As soon as the asphalt emulsion applied in accordance with Clause 21.17 (g) (1), has taken an initial set, the entire area thus coated shall be coated with whitewash. Any formula for mixing the whitewash may be used which produces a uniformly coated white surface and which so remains until placing of the backfill. Should the whitewash fail to remain on the surface until backfill is placed, the Contractor shall apply additional whitewash as ordered by the Engineer.

## **8.18 CARE AND REPAIR OF CONCRETE**

The Contractor shall protect all concrete against injury or damage from excessive heat, lack of moisture, overstress, or any other cause until final acceptance by the Owner. Particular care shall be taken to prevent drying of concrete and to avoid roughening or otherwise damaging the surface. Any concrete found to be damaged or which have been originally defective or which becomes defective at any time prior to the final acceptance of the complete work, or which departs from the established line or grade, or which for any other reason does not conform with the specifications, shall be satisfactorily repaired or removed and replaced with acceptable concrete at the Contractor's expense.

## **8.19 FINISH OF CONCRETE SURFACES**

- a. All finished or formed surfaces shall conform accurately with the shape, alignment, grades and sections as indicated on the plans or as prescribed by the Engineer. Surfaces shall be free from fins, bulges, ridges, offsets, honeycombing, or roughness of any kind, and shall present a finished, smooth, continuous hard surface.
- b. Except as otherwise provided herein, unformed top surfaces of the concrete shall be brought to uniform surfaces and worked with suitable tools to a reasonably smooth woodfloat finish. Excessive floating of surfaces while the concrete is plastic will not be permitted. All surfaces shall be placed monolithically with the base slab. Dusting of dry cement and sand on the concrete surface to absorb excessive moisture will not be permitted. Floor slabs and exposed tops of walls and curbs shall be given a steel trowel finish. At the Contractor's option, the above-mentioned floor slabs may be finished with a power float after screeding. Subsequent to aforementioned finish, all sloping surfaces of floor slabs shall be lightly broomed to provide a skid-resistant surface.

## **8.20 TREATMENT OF SURFACE DEFECTS**

- a. As soon as forms are removed, all exposed surfaces shall be carefully examined and any irregularities shall be immediately rubbed or ground in a satisfactory

manner in order to secure a smooth, uniform, and continuous surface. Plastering or coating of surfaces to be smoothed will not be permitted. No repairs shall be made until after inspection by the Engineer, and then only in strict accordance with his directions. Concrete containing voids, holes, honeycombing, or similar depression defects shall be repaired with gunite or with cement mortar placed by an approved compressed air mortar gun. In no case will extensively patching of honeycombed concrete be permitted. All repairs and replacements herein specified shall be promptly executed by the Contractor at his own expense.

- b. Defective surfaces to be repaired as specified in Clause (a) herein, shall be cut back from true line to a minimum depth of 13.0 mm (1/2 in.) over the entire area. Feathered edges shall be avoided. Where chipping or cutting tools are not required in order to deepen the area properly, the surface shall be prepared for bonding by the removal of the laitance or soft material, and not less than 0.79 mm (1/32 in.) depth of the surface film from all hard portions, by means of an efficient sandblast. After cutting and sandblasting, the surface shall be wetted sufficiently in advance of shooting with gunite or with cement mortar so that while the repair material is being applied, the surfaces under repair will remain moist, but not so wet as to overcome the suction upon which a good bond depends. The material used for repair purposes shall consist of mixture of one (1) bag of cement to 0.08 m<sup>3</sup> (3 ft<sup>3</sup>) of sand. For exposed walls, the cement shall contain such a proportion of white portland cement as is required to make the color or the patch match the color of the surrounding concrete.
- c. Holes left by tie-rod cones shall be reamed with suitable toothed reamers so as to leave the surfaces of the holes clean and rough. These holes then shall be repaired in an approved manner with dry packed mortar. Holes left by form-typing devices having a rectangular cross-section and other imperfections having a depth greater than their least surface dimension shall not be reamed but shall be repaired in an approved manner with dry-packed mortar.
- d. All repairs shall be built up and shaped in a manner that the completed work will conform with the requirements of Clause 21.19 using approved methods which will not disturb the bond, cause sagging, or horizontal fractures. Surfaces of said repairs shall receive the same kind and amount of curing treatment as required for concrete in the repaired section.
- e. Prior to filling any structure with water, any cracks that may have developed shall be "vee'd" as shown on the drawings and filled with sealant conforming with the requirements of Clause 21.13 (b).

## **8.21 ARCHITECTURAL FINISH**

All prominently exposed exterior, vertical, above-ground concrete surfaces shall be given an architectural finish as follows:

Immediately after the forms are stripped, the concrete surface shall be inspected and any poor joints, voids, rock pockets, or other defective areas shall be repaired and all formtie fastener holes filled as required in Clause 21.20. After the concrete has been cured for at least fourteen (14) days, wet the surface and apply with a brush a grout made by mixing one (1) part portland cement and one (1) part of fine sand that will pass a No. 16 sieve with sufficient water to give it the consistency of thick paint. The cement used in said grout shall be one-half gray and one-half white portland cement, or as directed by the Engineer. Calcium Chloride in the amount of five percent (5%) by volume of the cement shall be used in the brush coat. The freshly applied grout shall be vigorously rubbed into the concrete surface with a wood float filling all small air holes. The surface shall then be kept moist for an hour or more, depending on the weather, until the grout hardens sufficiently so that it can be scraped from the surface with the edge of a steel trowel without disturbing grout in the air holes. After all the surface grout has been removed with steel trowel, the surface shall be allowed to dry and, when dry, shall be vigorously rubbed with burlap to remove completely all surface grout so that there is no visible paint-like film of grout on the concrete. The entire cleaning operation for any area must be completed the day it is started, and no grout shall be left on the surface overnight. Cleaning operations for any given day shall be terminated at panel joints. It is essential that the various operations be carefully timed to secure the desired effect which is a light-colored concrete surface of uniform color and texture without any appearance of paint or a grout film.

In the event that the improper manipulation results in an inferior finish, the Contractor shall rub such inferior areas with carborundum bricks as directed by the Engineer. Before beginning any of the final treatment on exposed surfaces, the Contractor shall treat in a satisfactory manner an area of at least 18.6 m<sup>2</sup> (200 ft<sup>2</sup>) in some inconspicuous place selected by the Engineer and shall preserve said treated area undisturbed until the completion of the job. All architecturally-treated concrete surfaces shall conform with the approved sample in texture, color and quality. It shall be the Contractor's responsibility to maintain and protect the concrete finish.

## **8.22 READY-MIXED CONCRETE**

- a. At the Contractor's option, ready-mixed concrete may be used, meeting the requirements as to materials, batching, mixing, transporting, and placing as specified herein and in the requirements of the "Specifications for Ready-Mixed Concrete" (ASTM C-94), including the supplementary requirements specified in Clause (b) through (g) herein.
- b. Ready-mixed concrete shall be delivered to the site of the work, and discharge shall be completed within one hour after the addition of the cement to the aggregates or before the drum has been revolved 250 revolutions, whichever is first. In hot weather, or under conditions contributing to quick stiffening of the concrete or when the temperature of the concrete is 29.44°C (85°F) or above, the time between the introduction of the cement to the aggregates and discharge shall not exceed forty-five (45) minutes.

- c. Truck mixers shall be equipped with electrically-actuated counters by which the number of revolutions of the drum or blades may be readily verified. The counter shall be of the resettable, recording type and shall be mounted in the driver's cab. The counters shall be actuated at the time of starting mixers at the mixing speeds.
- d. Each batch of concrete shall be mixed in a truck mixer for not less than seventy (70) revolutions of the drum or blades at the rate of the rotation designated by the manufacturer of the equipment. Additional mixing, if any, shall be at the speed designated by the manufacturer of the equipment as agitating speed. All materials including mixing water shall be in the mixer drum before actuating the revolution counter for determining the number of revolutions of mixing.
- e. Truck mixers and their operation must be such that the concrete throughout the mixed batch as discharged is within acceptable limits of uniformity with respect to consistency, mix, and grading. If slump tests taken at approximately the 1/4 and 3/4 points of the load during discharge give slumps differing by more than 25 mm (1 in.) when the specified slump is 76 mm (3 in.) or less, or if they differ by more than 50 mm (2 in.) when the specified slump is more than 76 mm (3 in.), the mixer shall not be used on the work unless the causing condition is corrected and satisfactory performance is verified by additional slump tests. All mechanical details of the mixer, such as water measuring and discharge apparatus, condition of the blades, speed rotation, general mechanical condition of the unit, and clearance of the drum, shall be checked before further attempt to use the unit will be permitted.
- f. Each batch of ready-mixed concrete delivered at the job site shall be accompanied by a ticket furnished to the Engineer and showing volume of concrete, the weight of cement in kilograms (pounds), and total weight of all ingredients in kilograms (pounds). The ticket shall also show the time of the day at which the materials were batched.
- g. The use of non-agitating equipment for transporting ready-mixed concrete will not be permitted. Combination truck and trailer equipment for transporting ready-mixed concrete will not be permitted. The quality and quantity of material used in ready-mixed concrete and in batch concrete shall be subject to continuous inspection at the batching plant by the Engineer.

## **8.23 SLIP FORM PROCESS IN CONCRETE WORK**

### **a. General**

The use of slipform in concrete work is optional for this project. However, should the Contractor decide to adopt slipform in concreting, the procedures/guidelines outlined below shall be followed:

**b. Form Material**

Either steel, plywood, or timber sheeting shall be used.

**c. Depth of Forms**

The effective depth of any slip form shall be a minimum of 1.00 m (39 in.) and a maximum of 2.00 m (78 in.).

**d. Yokes**

Additional supports shall be provided in order to prevent buckling of the jack rods.

**e. Bracing and Working Platform**

The Contractor shall provide adequate bracing which shall be a part of the working platform. Plywood not less than 19 mm (0.75 in.) thick may be used as the working platform. The top of the working platform shall be in the same level as the tops of the inside forms, to permit direct shoveling of concrete from the deck into the forms.

**f. Jacking System**

The Contractor shall use hydraulic lifting gear with hydraulic jacks bearing against rods buried in the concrete. Alternately, the forms may

be lifted by winches and cable, rack and pinion, or hung from steel rods. Hydraulically operated jacks with capacities ranging from 3,000, 4,500, and 6,000 kilograms shall be used. Jacks shall be cylindrical in shape with hole in the center through which the jack rod passes, with two sets of jaws which alternately lift and grip.

**g. Jack Rods**

The Contractor shall use 25 mm (1 in.) diameter smooth mild steel bars with threaded ends for easy coupling for extension. Jack rods shall remain in place as part of the reinforcement. Unsupported length of the jack rods shall not be more than 0.60 m (2 ft.) on maximum load. Where rods pass through large formed openings, they must be braced adequately.

**h. Control of the Jacking Process**

A suitable process distribution system from a control hydraulic pump shall be used. The contractor shall operate all jacks at the same speed to give uniform lift, care being taken that the jacks carry the same loads. All jacks shall be provided with the

same hydraulic pressure to avoid cases where some will lift more slowly than others.

To control the level of the forms during the jacking process, plastic pipes with colored water may be used, care being taken to purge out or remove entrapped air in the plastic pipe.

**i. Control and Tolerance**

As jacking proceeds, provisions shall be made to limit any deviations from the vertical. A plumb bob shall be used during the entire operation.

**j. Reinforcement**

1. Vertical reinforcement placed shall be held in position by templates mounted on the forms and moving with them. Steel shall be lapped and tied to the rod below and shall be held at the top by the templates at heights of from 1.20 to 3.00 m (3.94 to 9.84 ft.) from the deck. Where difficulties are encountered in the use of templates, the Contractor shall weld a piece of steel to the yokes just above the top of the forms to guide the reinforcement into the correct position.

2. Horizontal reinforcement shall be placed as work progresses. The Contractor shall thread the bars through the yokes and tie or weld these to the vertical steel to control buckling. Steel should be of short lengths, say 3.00 m (9.37 ft) to permit easy handling. The reinforcing steel should be placed on the working platform in the correct order for placement.

**k. Forming Openings and Recesses**

The Contractor shall employ special techniques to form openings for doors, for connections of beams and floors, and for provisions of nibs and haunches. Toothed or dovetailed connections shall be used.

**l. Handling Concrete**

The Contractor shall use the common method for slipforming structural cores by depositing the concrete on the working platform and shoveling it into its final position. Crane and bucket or hoist and barrows may be used.

**m. Normal Concreting Operations**

After the slip process has started, the workmen shall place the concrete continuously around the structure in 150 mm to 220 mm (6 to 8.8 in.) layers by shoveling same into forms. On ceasing concreting, the form shall be kept moving to prevent formation of excessive adhesion. The "hack-off" process shall involve jacking at decreasing rate, about 2-3 hours after placing or until the freeboard is

about 450 mm to 500 mm (18 to 20 in.). When concreting resumes again, the workers shall jack the forms up about 25 to 50 mm (1 to 2 in.) before pouring concrete.

**n. Care and Maintenance of Formwork**

After concreting has ceased, the exposed form must be cleaned and oiled. Care should be taken to prevent coating of reinforcing steel and spillage onto the set concrete.

**o. Finishing and Curing**

1. Finishing

Where small holes and depression occur, a sponge float to fill small holes shall be used to improve the overall appearance of the finished surface.

2. Curing

Potable water shall be used for curing. Wherever possible, water shall be sprayed directly into the surface. The Contractor shall provide suitable and adequate water supply at the working platform. Workers shall apply water to the concrete surface intermittently. Where the finished structure is to be exposed to the elements, the wetting action of the rain to complete the cement hydration may be used as a curing method.

Covering of the interior and exterior surfaces of the formed structure with plastic sheets to keep the moisture always in contact with the concrete surface will be an acceptable method of curing.

**8.24 PLACING REINFORCEMENT**

- a. All reinforcement shall be placed in accordance with the plans furnished by the Engineer. In case of any doubt or ambiguity in placing of steel, the Contractor shall consult with the Engineer whose decision shall be final in such cases.
- b. All loose rust or scale, all adhering materials, and all oil or other materials which tend to destroy bond between the concrete and the reinforcement shall be removed before placing the steel and before concreting begins.
- c. Metal reinforcement shall be accurately placed and adequately secured by using annealed iron wire ties or suitable clips at intersections and shall be supported by concrete or metal supports, spacers or metal hangers. The minimum clear distance between parallel bars shall be one and one-half (1-1/2) times the diameter for round bars, and twice the side dimension for square bars. In no case shall the clear distance between bars be less than 25 mm (1 in.) nor less than one and one-third (1-1/3)

times the maximum size of the coarse aggregate. Where bars are used in two or more layers, the bars in the upper layers shall be placed directly above those in the lower layers at the clear distance of not less than 25 mm (1 in.).

- d. Bends for stirrups and ties shall be made around a pin having a diameter not less than six (6) times the minimum thickness of the bar, except that for bars larger than 25 mm (1 in.), the pin shall not be less than eight (8) times the minimum thickness of the bar. All bars shall be bent cold.
- e. Reinforcement steel shall not be straightened or rebent in a manner that will injure the material. Bars with kinks or bends not shown on the drawings shall not be used. Heating of the reinforcement will be permitted only when approved by the Engineer.

## **8.25 OFFSETS AND SPLICES IN REINFORCEMENT**

- a. In slabs, beams, and girders, splices or reinforcement at points of maximum stress shall be generally avoided, and may be allowed only upon written approval of splice details by the Engineer. Splices shall provide sufficient lap to transfer stress between bars by bonding shear or by butt welding to develop in tension at least one hundred twenty-five percent (125%) of the specified yield strength of the reinforcing bar. Splices in adjacent bars shall be generally staggered.
- b. Where changes in the cross-section of a column occur, the longitudinal bars shall be offset in a region where lateral support is afforded. Where offset, the slope of the inclined portion of the bar with the axis of the column shall not be more than one in six; in the case of tied columns,

the ties shall be spaced not over 76 mm (3 in.) on the center for a distance of 300 mm (12 in.) below the actual point of offset unless otherwise shown on the plans.

## **8.26 TEST ON CONCRETE**

- a. The Owner or the Engineer may require a reasonable number of tests on the concrete to be made during the progress of work. Not less than four (4) cylindrical specimens shall be made for each test of which at least two (2) shall be reserved for 28-day rest. Not less than one test shall be made for every fifty (50) cubic meters of concrete and in no case less than one test for each day's concreting. Samples shall be secured and molded in accordance with "Standard Method of Sampling Fresh Concrete" (ASTM C-172-Latest Revision) and "Standard Method of Making and Curing Test Specimens in the Field" (ASTM C-31-Latest Revision). 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).

The Contractor shall provide the samples to be taken at the place of deposit and as specified by the Engineer and shall also box samples for shipment, packing them



to prevent damage from sharp blows. The Owner or his duly authorized representative shall transport the test cylinders to a laboratory for testing. The owner shall pay costs of said transportation and testing of samples.

- b. To conform with the requirements of these Specifications, the average strength of test samples representing each class of concrete as well as the average of any five (5) consecutive strength tests representing each class of concrete, shall be equal to or greater than the specified strength and not more than one strength test in ten shall have an average value less than ninety percent (90%) the specimen strength.
- c. 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 the structure.

#### **8.27 LIQUIDATED DAMAGES (FOR FAILURE TO MEET CONCRETE STRENGTH REQUIREMENTS)**

For failure to meet the specified strengths of concrete which has been designed, prepared, and deposited by the Contractor, the Contractor shall pay the Owner as liquidated damages, not as penalty or forfeiture, the following schedule applied on the amount of the concrete represented by the samples.

- a. For concrete less than one hundred percent (100%) but greater than or equal to ninety percent (90%) of specified strengths, payment of ten percent (10%) of the unit bid cost per cubic metre of concrete.
- b. For concrete less than ninety percent (90%) but greater than or equal to eighty percent (80%) of the specified strengths, payment of fifteen percent (15%) of the unit bid cost per cubic meter of concrete.
- c. For concrete less than eighty percent (80%) of the specified strength, removal of the concrete so deposited and replacement of same at the expense of the Contractor.
  - 1. In any case of failure to meet specified strength, the Contractor may, at his expense, obtain concrete core samples from the poured concrete and the compressive strength of same, as determined by a competent testing authority, shall be taken as conclusive evidence of its strength and integrity, provided the corings will not impair the safety of the structure and can be satisfactorily replaced.

To determine adequacy of the affected parts, the Owner shall have the option to order load tests on parts of the structure where concrete strength tests are below eighty percent (80%) of specified. These tests shall be in accordance with ACI-318, latest revision; recommendations and their costs shall be borne by the Contractor.

2. In case of failure samples to meet specified strengths to the extent mentioned in (a) or (b) or (c) above, the Contractor shall be required to prolong the curing of the poured concrete as directed by the Engineer, in addition to payment of the liquidated damages mentioned above.

## **DIVISION 09 – STEEL AND MISCELLANEOUS METAL WORKS (ELEVATED STEEL TANK)**

### **9.1 GENERAL**

- a. The Contractor shall furnish, fabricate, and install all steel and miscellaneous metalworks as specified herein and as shown in the drawings. Miscellaneous metalwork is defined as all items required to be fabricated from structural steel shapes, plates, bars, and their products. He shall provide the necessary labor, supervision, tools, materials, supplies, and appurtenances for the proper construction and operation of the elevated steel reservoir. The Contractor shall accomplish the work in a complete and finished manner and ensure the highest quality of workmanship in accordance with the drawings and specifications and to the satisfaction of the Engineer.
- b. Structural steel straps, plates, bars and their products shall conform with the "Standard Specification for Structural Steel" (ASTM Designation A36).
- c. Unless otherwise shown, all miscellaneous metalworks of fabricated steel shall be galvanized after fabrication in accordance with Clause 9.3. Unless otherwise indicated, stainless steel metalwork shall be of Type 18-8 stainless steel. Items fabricated on stainless steel shall not be galvanized.
- d. All materials to be used shall be new, previously unused, and in first class condition. Steel materials of unidentified analysis may be used, provided they are tested and properly certified by a qualified testing laboratory.
- e. Painting of all steel metalwork, unless otherwise specified, shall be in accordance Clause 14 - "Painting and Coating".
- f. Testing and disinfecting shall be undertaken as specified in Clause 12 - Pressure and Leakage Testing and Disinfecting.
- g. Shop drawing for all steel and miscellaneous metalwork shall be submitted to the Engineer for review in accordance with Clause 2.2 - Shop Drawings.
- h. The work and equipment to be provided by the Contractor under this Contract shall conform with the U.S. Standards as mentioned in the following Clauses or with any International Standards of equal value.
- i. Welding terms used in this specification shall be interpreted according to the definition given in AWS A3.0.

## **9.2 MATERIALS**

### **a. Structural Shapes**

All structural shapes for use shall be produced by the open-hearth, basic oxygen, or electric-furnace process. Open or non-tubular structural shapes shall conform with ASTM A36. When structural shapes are fabricated from steel plates, the plates shall conform with Item (b).

### **b. Plates**

Plate material shall be open-hearth, electric-furnace, or basic-oxygen process steel conforming with the latest revision of any of the following applicable ASTM specifications: A36; A131, Grades A and B; A283, Grades A, B, C and D; or A573, Grade 58.

### **c. Anchor Bolts, Rods, and Reinforcing Steel**

1. The Contractor shall furnish and set all bolts, anchor bolts, rods and reinforcing steel. Except where otherwise shown or specified, all bolts, anchor bolts, washers, and nuts shall be steel, galvanized after fabrication in accordance with Clause 9.3.
2. Except as otherwise provides herein, steel for bolts, anchor bolts, and cap screws shall be in accordance with "Specifications for Low Carbon Steel Externally and Internally Threaded Standard Fasteners", Grade B (ASTM Designation A307), or "Specifications for Carbon Steel Bars Subject to Mechanical Property Requirements" (ASTM Designation A306) or threaded parts of ASTM A36 and shall meet the following additional requirements: (1) the nut material shall be free-cutting steel, and (2) the nuts shall be capable of developing the full strength of the bolts. Threads shall be Coarse Thread Series conforming with the requirements of the American Standard for Screw Threads. All bolts and cap screws shall have hexagon heads, and nuts shall be Heavy Hexagon Series.
3. Threads of galvanized bolts and nuts shall be formed with suitable taps and dies such that they retain the normal clearance after hot-dip galvanizing.
4. Unless otherwise shown, all bolts, anchor bolts, and nuts which are buried, submerged, or inside a covered hydraulic structure shall be Hot-Dip galvanized as per TS-20 and then coated with two coats of coal tar epoxy after installation.

### **d. Ladders**

All ladders shall be fabricated of carbon steel and galvanized after fabrication.

**e. Steel Pipe Handrails**

Steel pipe handrails shall be standard 38 mm (1-1/2 in.) black steel pipe made up by welding. Railing shall be shop-fabricated into easily handled units and hot-dip galvanized after fabrication. Field welding of pipe handrail joints will be permitted only if approved by the Engineer, and then only in accordance with his instructions. Submerged steel pipe shall be coated with two coats of coal tar epoxy after installation.

**f. Pipe Columns**

Pipe column steel shall conform with the "Specifications for Welded and Seamless Steel Pipe," (ASTM A53), Grade B. Pipe columns that would be submerged shall be coated with two coats of coal tar epoxy.

**g. Metal Decking**

Metal decking shall be of the size and gage shown in the drawings and shall meet the requirements of the Specification for the "Design of Light Gage,

Cold-formed Steel Structural Members" of the American Iron and Steel Institute. The steel shall be galvanized after fabrication.

**h. Safety Stair Treads**

Aluminum safety stair treads 100 mm (4 in.) wide shall be provided on all stairs, and elsewhere where shown.

**i. Metal Grating and Floor Hatches**

1. General

Metal grating and floor hatches shall be of the design, sizes, and types shown. Aluminum in contact with other metals or concrete shall be painted with one (1) coat of zinc chromate and two (2) coats of approved aluminum metal-and-masonry paint.

2. Metal Grating

Metal grating shall be fabricated of aluminum, stainless steel, or galvanized steel as shown. No single piece of grating shall weigh more than 25 kg (55 lb) unless specifically detailed otherwise. Aluminum shall be 6061T6 Alloy Bearing Bars and 6063T5 Alloy Cross Bars. Stainless steel shall be Type 18-8. All grating shall be completely banded.

3. Floor Hatches

Floor hatches shall be fabricated of steel or aluminum as shown. Hatches shall be double-swing, and shall be furnished with two (2) stay bars designed to hold the covers in an open position and provide a railing around the opening, stay bar brackets designed to provide storage for the bars when the latch is closed, four (4) flush handles, joint gutter, and moat-type edge drain complete with drain connection. Steel hatches shall be galvanized after fabrication. Drain connection size and location shall be as shown.

**j. Iron Castings**

Iron Casting shall conform with the "Specification for Gray Iron Casting" (ASTM A48), unless otherwise shown.

**k. Seat Angles, Supports, and Guides**

Seat angles for grating shall be aluminum or steel as shown and of a size as shown. Guides for slide gates shall be steel, of a size shown, hot-dip galvanized after fabrication.

**9.3 GALVANIZING**

All Structural steel plates, shapes, bars, and fabricated assemblies required to be galvanized shall, after the steel has been thoroughly cleaned of rust and scale, be galvanized in accordance with the "Specification for Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed and Forged Steel Shapes, Plates, Bars and Strip" (ASTM A123). Any galvanized part that becomes warped during the galvanizing operation shall be straightened. Bolts, anchor bolts, nuts, and similar threaded fasteners, after being properly cleaned, shall be galvanized in accordance with the "Specifications for Zinc Coating (Hot Dip) on Iron and Steel Hardware" (ASTM A153). Field repairs to galvanizing shall be made using "Galvano," "Galvo-Weld," or approved equal.

**9.4 SHOP FABRICATION - STEEL WORKS**

**a. General**

All work required of the Contractor shall be of the highest quality workmanship. Laying out of shop-fabricated material shall be done only by experienced workmen.

**b. Straightening**

Any required straightening of material shall be done by methods that will not harm the steel material. Minor cold straightening may be performed by hammering or preferably by rolling or pressing. Heat may be used in straightening for more severe deformations.

**c. Finish of Plates Edges - Welded Work**

The plate edges to be welded may be universal mill edges or they may be prepared by shearing, machining, chipping, or by mechanically guided oxygen or plasma arc

cutting. Edges of irregular contour may be prepared by manually guided oxygen or plasma arc cutting.

1. Oxygen or plasma arc cutting. When edges of plates are oxygen or plasma arc cut, the surface obtained shall be uniform and smooth and shall be cleared of slag accumulation before welding. All cutting shall follow closely the lines prescribed.
2. Shearing. Shearing may be used for materials 13 mm (1/2 in.) or less in thickness to be joined by butt joints, and for all thickness of materials permitted to be joined by lap joints.

**d. Rolling**

Plates shall be cold-rolled to suit the curvature of tank.

**e. Double - Curves Plates**

Plates that are curved in two directions may be pressed either cold or hot or may be dished with a "mortar and pestle" die by repeated application.

**f. Milling of Columns**

The ends of columns shall be milled to provide a satisfactory bearing unless the design calls for sufficient welding to resist the total calculated loads.

**g. Shop Assembly**

Double-curved tank bottoms, shell, and roofs shall be assembled in the shop, if necessary, to ensure that they will fit properly in the field.

**h. Shipping/Transporting**

All materials shall be loaded, transported to the site, unloaded and stored in such a manner as to prevent damage.

**9.5 WELDING**

**a. General**

All welding shall be the shielded arc method and shall conform with the AWS "Code for Arc and Gas Welding in Building Construction". Qualification of welders shall be in accordance with the specifications for Standard Qualification Procedure of the AWS.

**b. Butt Joints**

1. Subject to primary stress due to weight or pressure of the tank contents: Butt joints subject to primary stress such as longitudinal joints of cylindrical tank shells and

all joints below the point of support in suspended bottoms of elevated tanks shall have complete joint penetration welds, which may be double welded from both sides or welded from one side only using a backing strip or equivalent means to ensure complete joint penetration welds. Butt joints may be used for all thickness permitted to be welded under this specification.

2. Subject to secondary stress: In butt joints subject to secondary stress, such as circumferential joints of cylindrical tank shells, materials 10 mm (3/8 in.) or less in thickness and single-groove welded joints shall have complete joint penetration welds. Joints in materials of thickness greater than 10 mm (3/8 in.) with square groove or double-groove welds shall be either partial joint penetration or complete joint penetration is specified by the Engineer. In partial joint penetration welds, the unwelded portion plus any under cutting, shall not exceed one-third of the thickness of the thinner plate; the unwelded portion shall be located near the center of the thinner plate, and partial joint penetration welds shall have complete joint penetration welds for a distance of at least 75 mm (3 in.) on each side of intersecting sides of intersecting joints. Partial joint penetration welds shall have a strength equivalent to at least two-thirds that of a double-groove butt weld having complete joint penetration. If complete joint penetration welds are desired, they shall be specified by the Engineer.
3. Butt joints may be used for welding all thickness of material permitted to be welded under this specification.

**c. Lap Joints**

1. Subject to primary stress due to weight or pressure of tank contents: Lap joints subject to primary stress, such as longitudinal joints of cylindrical tank shells and all joints below the point of supports in suspended bottoms of elevated tanks, shall have continuous full fillet welds on both edges of the joints. The maximum thickness permitted for this type shall be 12 mm (1/2 in.).
2. Subject to secondary stress: Lap joints subject to secondary stress, such as circumferential joints of cylindrical tank shells, shall be welded on both sides with continuous fillet welds. The maximum thickness permitted for this type shall be 16 mm (5/8 in.).
3. In any case, welded lap joints, except when shown on the plans, shall be lapped not less than five times the nominal thickness of the thinner plate joined (5T); but in double-welded lap joints, the lap need not exceed 50 mm (2 in.), and in single-welded lap joints, the lap need not exceed 25 mm (1 in.).

**d. Plates**

The maximum thickness of plates, except structural components and base plates permitted to be welded under the specification shall be 50 mm (2 in.) or otherwise as shown in the plans.

**e. Roof Plates**

For roof plates which are not subject to hydrostatic pressure from tank contents, lap joints may be welded on the top side only with continuous full fillet welds. Butt joints shall be single-groove welds, using suitable backing or equivalent means to ensure at least ninety percent (90%) joint penetration.

**f. Minimum Size of Fillet and Seal Welds**

1. Fillet Welds: Plates 5 mm (3/16 in.) and less in thickness shall have full fillet welds. Plates more than 5 mm (3/16 in.) thick shall have welds of a size not less than one-third the thickness of the thinner plate at the joint, with a minimum of 5 mm (3/16 in.)
2. Seal Welds: Seal welding, when desired, shall be accomplished by a continuous weld combining the functions of sealing and strength, changing section only as the required strength necessitate.

**g. Minimum Length of Welds**

The minimum length of any weld shall be four times the size but not less than 38 mm (1-1/2 in.), or else the size of the weld shall be considered not to exceed one-fourth of its length.

The effective length of a fillet weld shall not include the length of the tapered ends. A deduction of at least 6.35 mm (1/4 in.) shall be made from the overall length as an allowance for tapered ends.

**h. Intermittent Welding**

Intermittent welding shall not be used on tank shell plating in contact with tank contents or on surfaces exposed to external weathering. Intermittent groove welds shall not be used.

1. Length: The length of any segment of intermittent weld shall not be less than four times the weld size but never less than 38 mm (1-1/2 in.).
2. Seams: All seams that are to have intermittent weld shall have continuous length of welds at each end for a distance of at least 150 mm (6 in.).



**i. Safety in Welding and Cutting**

Operations involving welding, cutting, brazing or allied processes shall conform with ANSI Z49.1 for the protection of welders, welding operation, and nearby personnel.

**j. Safe Usage of Cutting and Welding Processes**

Procedures shall conform with ANSI Z49.2 (NFPA 51B) for the prevention of fire and property damage.

**9.6 ERECTION OF STEEL RESERVOIR STRUCTURE**

**a. General**

The Contractor shall furnish all labor tools, falsework, scaffolding, and other equipment necessary and shall erect the tank so that it is completely ready for use.

**b. Welds**

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

1. Weather Conditions: 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.
2. Peening: 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.
3. Contour: The surface bends shall merge smoothly into each other in all welds.
4. Reinforcement: The reinforcement of butt welds shall, as practicable, be preferably not more than 1.6 mm (1/16 in.). In no case shall the face of the weld lie below the surface of the plates being joined.
5. Gouging: 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.
6. Cleaning between beads: Each bead of multiple-pass weld shall be cleared of slag and other loose deposits before the next bead is applied.

**c. 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 dealuminate 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.

**d. Tack Welds**

Tack weld used in assembly of joints subject to primary stress from the weight or pressure of the tank contents shall be thoroughly cleared of all welding slag, but need not be removed, provided they are visually inspected for soundness (no cracks, complete fusion, filled craters, and acceptable profiles) and metal.

**e. Tank Assembly**

All shell, bottom and roof plates subjected to stress by the weight or pressure of the contained liquid shall be assembled and welded in such a manner that the proper curvature of the plates in both directions is maintained.

1. Clips, jigs, and lugs: Clips, jigs or lugs welded to the shell plates for erection purposes shall be removed without damaging the plates, and any portion of the weld beads remaining shall be chipped or ground smooth.
2. Bottom plates for elevated tanks: The bottom plates for elevated tanks shall be assembled and welded together by a procedure that will result in a minimum of distortion from weld shrinkage.
3. Tank Shell: For welding in the vertical position, the progression of welding shall be either upward or downward.

The shell plates shall be joined by welding the joints in a sequence that the Contractor has found to result in the least distortion due to shrinkage of the weld and that will avoid kinks at the longitudinal joints.

**f. Matching Plates**

1. Lap Joints: The plates forming a lap joint shall be held in as close contact as possible during welding and in no case shall the separation be more than 1.6 mm (1/16 in.). Where separation occur, the size of the weld shall be increased by the amount of separation.
2. Butt joints under primary stress: In butt joints subject to primary stress from weight or pressure of tank contents, the adjoining plates shall be aligned accurately and

retained in position during welding, so that in the finished joint, the centerlines of adjoining plates edges shall not have an offset from each other at any point in excess of ten percent (10%) of the plate thickness (using the thickness of the thinner plate if of different thickness) or 1.6 mm (1/16 in.) whichever is smaller.

3. Butt joints under secondary stress: In butt joints subject to secondary stress, the adjoining plates shall be aligned accurately and retained in the position during welding so that in the finished joint, the thinner plate (if one is thinner than the other) shall not project beyond its adjoining plate by more than twenty percent (20%) of the plate thickness (using thickness of thinner plate if of different thickness) or 3 mm (1/8 in.) whichever is smaller.
4. Cleaning of Welds: The Contractor's crew shall remove weld scale or slag, spatters, burrs, and other sharp or rough projections in a manner that will leave the surface suitable for the subsequent cleaning and painting operation. Weld seams need not be chipped or ground, provided they may be satisfactorily cleaned and painted.

**g. Grouting of Column and Riser Bases**

After the tank has been completely erected and "trued up", a minimum of 25 mm (1 in.) space between the column and the riser bases and the foundation shall be provided for grouting. The space shall be wetted thoroughly and fitted with a 1:15 cement-sand grout, which is forced under the base plates until the space is filled completely. The Contractor shall furnish materials and labor for grouting.