This tender floated in GeM Portal with GeM Bid No. GEM/2025/B/6766600 dt. 08-10-2025. The due date for submission is 22/10/2025 at 02:00 PM.

हिंदुस्तान ऑर्गेनिक केमिकल्स लिमिटेड
HINDUSTAN ORGANIC CHEMICALS LIMITED
(भारत सरकार का एक उद्यम)
(A Government of India Enterprise)
अंबालामुगल, एर्नाकुलम जिला, पिन - 682 302
AMBALAMUGAL, Ernakulam District, PIN – 682 302.
फोन: (0484) 2720911, फैक्स नंबर (0484) 2720893
Phone: (0484) 2720911, FAX No. (0484) 2720893

ई-निविदा सूचना
E- TENDER NOTICE

HOCL निम्नलिखित कार्य के लिए दो बोली प्रणाली के तहत ई-बोली आमंत्रित करता है:
HOCL Invites e-Bids under the **Two Bid system** for the following work:

Sl. No.	Description of Item and Tender No.
1	कार्य का नाम : **हीट एक्सचेंजर्स (एआरसी) का रखरखाव** **HOCL** निविदा संदर्भ **: MEC30469** **Name of Work : MAINTENANCE OF HEAT EXCHANGERS (ARC)** **HOCL Tender Ref : MEC30469**

निविदा दस्तावेज **www.hoclkochi.com**, **https://mkp.gem.gov.in/market** **&** **https://eprocure.gov.in/eprocure/app** से डाउनलोड किए जा सकते हैं।

Tender documents may be downloaded from **www.hoclkochi.com**, **https://mkp.gem.gov.in/market** **&** **https://eprocure.gov.in/eprocure/app.**

इच्छुक पार्टियां निविदा में भाग लेने के लिए कृपया एनआईसी ई प्रोक्योरमेंट पोर्टल (यूआरएल: **https://eprocure.gov.in/eprocure/app.** & **https://mkp.gem.gov.in/market**) पर पंजीकृत हो सकती हैं। निर्दिष्ट ऑनलाइन प्रक्रिया के अलावा अन्य प्रस्तुत निविदाएं स्वीकार नहीं की जाएंगी। कृपया प्रस्ताव जमा करने से पहले किसी भी परिशिष्ट/शुद्धिपत्र/विस्तार के लिए नियमित रूप से उपरोक्त साइटों पर जाएँ।

Interested parties may please get registered with NIC e procurement portal (URL: **https://eprocure.gov.in/eprocure/app.** & **https://mkp.gem.gov.in/market**) to participate in the tender. Tenders submitted other than through online procedure specified will not be accepted. Please visit the above sites regularly for any addendum/ corrigendum/ extension before submitting the offers.

कृपया विशिष्टताओं और नियमों और शर्तों की पुष्टि करते हुए दो बोली प्रणाली के तहत अपनी ई-बोली जमा करें।

Please submit your E-bids under the **Two Bid system** confirming to the specifications and the terms and conditions.

हिंदुस्तान ऑर्गेनिक केमिकल्स लिमिटेड के लिए और उनकी ओर से
For and on behalf of Hindustan Organic Chemicals Limited
(GSTN:32AAACH2663P1ZG),(CIN:l99999MN1960GOI011895**)**

मंगेश वी. शहासने MANGESH V. SHAHASANE

महाप्रबंधक (यांत्रिक/ उपयोगि सेवाएँ) GM (MECH/UTL)

INDEX

MAINTENANCE OF HEAT EXCHANGERS (ARC)

ANNEXURE-I

GENERAL TERMS AND CONDITIONS OF THE TENDER

EARNEST MONEY DEPOSIT - NOT APPLICABLE TO MSME / SSI Units /PSUs

Quotation shall accompany an EMD of **₹26,900 shall be paid by crossed DD/Bankers Cheque/thro' NEFT.**

Bank Details - Central Bank of India, Tripunithura
- A/c No. 3580607136
- IFSC - CBIN0284515

Details of bank transfer should be indicated in your technical offer. Quotations not accompanied with EMD, are liable to be rejected.

EMD of the tenderer will be forfeited under the following conditions:-

1. If after opening of the tender, the tenderer revokes his tender or increase his quoted rates.
2. If the tenderer does not commence the work after awarding the contract.
3. No interest on EMD will be paid.
4. EMD of the successful tenderer will be adjusted against the security deposit.
5. EMD of unsuccessful bidders shall be refunded after finalization of the contract and no interest shall be payable.
6. The tender is revoked or varied during its validity period.
7. The Prices are increased unilaterally after the tender opening and during its validity.
8. The tenderer after intimation of acceptance of the tender fails to execute the agreement/or furnish security deposit within the stipulated time.

PRE-QUALIFICATION CRITERIA (TO BE INCLUDED IN THE TECHNICAL BID)

The Tenderers shall submit the following in the Technical bid (Un priced Bid) without which the tender will be rejected.

a. Complete set of Tender Document duly filled in and signed by the Tenderer as prescribed in different clauses of the Tender Document.

b. GCC duly filled in the relevant portions, signed and stamped all the pages by the tenderer (The tenderers have to download the GCC (General Conditions of Contract) from our web site www.hoclkochi.com and the same has to be returned along with the technical bid duly signed and stamped in all pages.

Pre-qualification Criteria (Not applicable to already registered vendor of HOCL)

a. Experience on similar works executed during the last five years and details like monetary value, proof of satisfactory completion of works etc.

b. Earnest Money in the manner specified in the Tender document.

c. Organization chart giving details of field management at SITE, the tenderer proposes to have for this work including bio-data of the Site-in Charge and key personnel.

d. The bidder should have well qualified workforce in adequate numbers for handling various stages of the work. The staff/workers details are to be furnished.

e. The bidder should have adequate number of equipments/tools/tackles/scaffolding pipe/clamps/ staging materials in sound condition for the execution of the work within the stipulated time. The equipment details should be furnished.

f. Details of current commitments with copies of Work Orders to be submitted.

g. Copies of work orders already completed or in progress

h. Tender should accompany the details asked in A, B,C, D, E , F, H, Q, R, S & AC

i. Completion certificates

j. GSTN registration

k. Information regarding tenderer as stipulated in Clause.1 .

l. Details of work of similar type and magnitude carried out by the tenderer as stipulated in Clause.3.

m. Exceptions and deviations, if any, with reference to the Clause No. and page No. of Tender shall be submitted as a separate statement (Deviation Statement)

Clause - 1 & 2 (not applicable to MSME)

1. Average annual financial turnover during the last 3 years, ending 31st March of the previous financial year, should be at least **₹3 Lakhs**. (Details of annual financial turnover to be submitted with Documentary proof).

2. Experience of having successfully completed similar works during last 7 years ending last day of month previous to the one in which applications are invited should be either of the following:

   Three similar completed works costing not less than the amount equal to **₹4.31 Lakhs.**

   OR

   Two similar completed works costing not less than the amount equal to **₹5.38 Lakhs.**

   OR

   One similar completed works costing not less than the amount equal to **₹8.62 Lakhs.**

3. The parties who have been blacklisted / put in holiday list or parties in respect of whom action has been initiated for Blacklisting / Holiday listing by HOCL/any government / Quasi government agencies or any PSUs shall not be considered for award of job. The tenderer should give a written declaration regarding the same.

4. In addition to Clause No.3.7 of our GCC, the tenderer who do not meet the basic requirements (technical / commercial) as per the tender enquiry document and any other important condition having significant bearing on the cost / utility / performance of the required goods, services etc. will be treated as unresponsive and the tender will be liable to rejection.

RATES

Rates quoted shall be inclusive of all taxes, duties, octroi and other levies etc. GST, in case applicable shall be paid extra. The bidder should have GST registration with Central Excise Department.

SECURITY DEPOSIT

Total security deposit shall be 5% of total contract value. This shall be recovered through deductions at the rate of 5% (Five percentage) of the value of each running account bill till the total security deposit amount is collected, after which no further deductions shall be made on this account.

OR

Security Deposit shall be furnished in the form of Insurance Surety Bond (ISB) issued from Insurance Company under IRDAI, Account Payee Demand Draft, Bank Guarantee issued from any Scheduled Bank in India having a branch in Kochi, Kerala / on online payment in an acceptable form.

Security Deposit shall be refunded not later than 60 days to the contractor without any interest after the completion of contract in all respects and completion of all such obligations under the contract.

PERFORMANCE SECURITY

Performance security shall be 5% of total work order value of the contract. It shall be furnished within 21 days after notification of award and it shall be released after the defect liability period.

Performance Security shall be furnished in the form of Insurance Surety Bond (ISB) issued from Insurance Company under IRDAI, Account Payee Demand Draft/ Bank Guarantee issued from any Scheduled Bank in India having a branch in Kochi, Kerala.

LIQUIDATED DAMAGES

In case the contractor fails to complete the work within the stipulated period, contractor shall be liable to pay a LD of **½%** (half percent) of the contract value **per day** for the delay or part thereof subject to a maximum of 5% (Five percent) of the contract value.

DEFECT LIABILITY PERIOD

The contractor shall guarantee the entire work for a period of **12 months** from the date of completion of entire works. Any damage or defect that may arise or lie undiscovered at the time of issue of completion certificate, connected in any way with the workmanship should be rectified by the contractor at his own expense as deemed necessary by the Engineer-in-Charge.

PERIOD OF CONTRACT

The period of the contract shall be **18 Months** from the date of issue of work order/issue of instruction to start the work.

SCOPE OF SUPPLY

Materials

a. HOCL's Scope

- HOCL shall issue hoses, gaskets, fasteners, pressure gauges, tube plugs, air, water, electricity at one point free of cost to the contractor.
- HOCL shall provide only the gasket sheets (CAF) (free of cost) to the contractor. The contractor has to make arrangements to cut the gaskets to the required size.
- Fasteners (if required) for the final box up work shall be issued by HOCL at free of cost.

b. Contractor's Scope

- All skilled & Unskilled manpower require for the work is to be arranged by the contractor. All machines, tools, tackles, lifting equipments such as crane, chain pulleys, slings, D shackles, Hydraulic test pumps and other tools and equipments required for the completion of the work is to be arranged by the contractor.

- **CRANE / DERRICK required for the successful completion of the entire work shall be arranged by the contractors at his own cost.** HOCL shall permit the contractor to hire the HOCL's mobile crane/Forklift on chargeable basis, if it is available and the rate shall be ₹1000/hr. + GST for mobile crane of capacity 18T and ₹600/hr. + GST for Forklift of 3T Capacity.

- **Scaffolding material (pipe, clamps and base plates) and its erection if required should be arranged by the contractor.**

TOOLS AND TACKLES

a. Contractor's Scope

All machines, tools, tackles, lifting equipments such as crane, chain pulleys, slings, D-shackles, hydraulic test pumps and other tools and equipments required for the satisfactory completion of the work shall be arranged by the contractor.

CRANE / DERRICK required for the successful completion of the entire work shall be arranged by the contractors at his own cost. HOCL shall permit the contractor to hire the HOCL's mobile crane/Forklift on chargeable basis, if it is available and the rate shall be ₹1000/hr. + GST for mobile crane of capacity 18T and ₹600/hr. + GST for Forklift of 3T Capacity.

NON-AVAILABILITY OF HOCL CRANE SHALL IN NO WAY RELIEVE THE VENDOR OF HIS RESPONSIBILITY IN MEETING ALL THE PROVISIONS OF THE ENQUIRY CONDITIONS.

b. HOCL's Scope

Calibrated pressure gauges for hydrotest shall be given by HOCL which shall be returned back without any damage.

WATER & POWER

HOC will provide water and power at one point free of cost.

TESTING & INSPECTION

HOCL shall inspect the equipments during the work in progress along with the 3rd party inspection agency arranged by HOCL. All the necessary assistance shall be provided by the contractor to the Inspectors during inspection of the equipments. Contractor has to follow all the instruction given by HOCL Engineer-in-Charge, Inspection Engineer & 3rd party Inspector.

GENERAL SITE CLEANING

Working site should always be kept cleaned up to the entire satisfaction of the Engineer/Officer-In-Charge. Upon completion of the work, all materials shall be transported to designated locations in HOCL premises as directed by the Engineer/Officer-In-Charge on daily basis. Material reconciliation has to be carried out before submitting the bill.

TIME OF COMPLETION

Time of Completion for each work shall be **1 to 4 days** from the date of clearance to start the job depending upon the size and urgency of job. Deviations will be permitted as per the work permits issued by HOCL. Works shall commence within 24 hrs. from the time of intimation.

VALIDITY OF THE TENDER

The tender shall be kept valid for acceptance for a period of **THREE months** from the last date prescribed for receipt of the tender.

A Tenderer shall not be entitled during the said period of three months without the consent in writing of the company to revoke or cancel his tender or to vary the tendered rate or any terms thereof.

PRICE

The Contract will be awarded on fixed all-inclusive price unless otherwise specified. All rates in the tender shall cover applicable taxes, levies and duties. However applicable GST will be paid by HOCL subject to the successful tenderer having GST registration with Central Excise.

The price shall be quoted both in figures and words. In case a tenderer has quoted two different prices in words and figures the lower of the two will be considered valid and binding on the tenderer.

Note: - Contractor has to put people as 12Hrs. shift basis (2 shifts-8:00AM to 8:00PM & 8:00PM to 8:00AM) in full strength.

Clause No. X : 50% of the quoted rate only will be paid to the party if the tube bundle is not pulled out and brought to the ground (ie. only hydro testing of the tube side and shell side and plugging of the leaking tube is done in position).

PAYMENT TERMS

- 95% payment will be made on pro rata basis after completion of work and certification by Engineer-in-Charge. (If the work is completed in all respective, otherwise **Clause 'X'** will be applicable.)

- Balance 5% payment will be kept as security deposit and it will be released after the completion of contract in all respects & completion of all obligations under the contract.

CONTRACT PREFERENCE

Contract / Price Preference or any other concessions applicable for **MSME / SSI Units /PSUs** will be as per latest Government of India Directives. For availing this benefit, the bidder shall make their claim in the Technical Bid itself and enclose necessary documentary evidence to prove their eligibility.

AGREEMENT

The contractor has to execute an agreement with HOCL in the prescribed format on a non judicial stamp paper of ₹200/- in case of placement of work order.

Arbitration of disputes

"All disputes, differences, questions and claims arising out of, under or touching upon this Tender /Agreement/ Purchase Order/ Work Order shall be settled amicably between the parties through mutual discussion and failing that, such disputes, difference, questions or claims shall be referred for resolution through arbitration to the India International Arbitration Centre or a Sole Arbitrator to be appointed by the Chairman-cum-Managing Director of HOCL and the award of Arbitration shall be final and binding on the parties. The seat of the Arbitration shall be at Kochi, Kerala, India and the proceedings of the arbitration shall be held at Kochi, Kerala, India in accordance with the India International Arbitration Centre Act 2019 / Indian Arbitration & Conciliation Act 1996 or any statutory modification or

OTHER TERMS AND CONDITIONS

General Conditions of Contract (GCC) of HOCL

The General Conditions of Contract of the company is applicable to, and forms part of the contract. The General Conditions of Contract of HOCL can be downloaded from our Web site www.hoclkochi.com.

Right to Issue Addendum

The company reserves the right to issue any addendum to the tender document to clarify/amend/supplement and/ or delete any of the conditions, clauses or terms stated in the tender documents. Each addendum issued shall be distributed to the tenderer or his authorized representative and each such addendum shall become part of the tender documents.

VALIDITY OF OFFER: Offer shall be valid for a minimum period of 90 days from the last date of submission stipulated for the tender.

RIGHT TO REJECT A BID: HOCL reserves the right to reject any bid due to reasons such as (a) Vendor not following above bidding procedures (b) Vendor not being technically acceptable to HOCL (c) Not enclosing EMD with the techno commercial bid or EMD paid being lesser than the stipulated amount (d) Vendor not agreeing with the general conditions of the tender. (e) Not enclosing any particular documents asked for (f) Any other valid reasons**.**

SIGNING & STAMPING ON ALL PAGES OF BIDS: The vendor shall sign and stamp on all the pages of the bids uploaded, failing which bids are liable to be rejected.

ASSISTANCE TO BIDDERS

Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.

Contact Person (for online submission)

Mr. Midhun Babu
Deputy Manager (Materials/MSS)
Mobile No. 8921387812, 8547196394

HOCL Work Co-ordinator

Mr. Rakesh C R
Deputy Manager (Mechanical)
Mobile No.8075107871
0484 2727291

ANNEXURE-II

SCOPE OF WORK

The scope of work includes maintenance of various Heat Exchangers on annual rate contract basis. The Period of Contract of the work will be 18 Months from the date of issue of work order/ issue of instruction of start the work Therefore the rate quoted by the party shall be valid for the above period. The Exchangers will be released for maintenance as per the requirement/ shutdown. Party must be ready to do the work at any point of time during the period of contract. Minimum No. of exchangers released for cleaning can be one at a time depending on plant requirement. However, and the party has to mobilize the crew within 24 hrs. from the time of intimation / instruction of start of work.

The scope of work includes, but not confined to the following-

General

1. Once the equipment is ready for maintenance, isolation of equipment by putting blinds/spectacle blinds in feed and outlet nozzles and all other nozzles indicated for the purpose and fix blind number tags.

2. Provide necessary hose connections (if required) for draining, purging, steaming and water washing and airing of the equipment as the case may be as per the instruction of Engineer-in-Charge.

3. Record the blind tag Nos. in the blind register and obtain signature in the register by Engineer-in-Charge.

4. Removal and refixing including to and fro transportation to central workshop of Pressure safety valve on the equipment and connected pipe lines as per the instruction of the Engineer in Charge.

5. Maintenance of the exchanger as explained in Clause No. 1 (see next page)

6. Assisting the inspecting team engaged in the inspection of Heat Exchanger.

7. HOCL shall provide only the gasket sheets (CAF) (free of cost) to the contractor. The contractor has to make arrangements to cut the gaskets to the required size.

8. **CRANE / DERRICK required for the successful completion of the entire work shall be arranged by the contractors at his own cost.** HOCL shall permit the contractor to hire the HOCL's mobile crane/Forklift on chargeable basis, if it is available and the rate shall be ₹1000/hr. + GST for mobile crane of capacity 18T and ₹600/hr. + GST for Forklift of 3T Capacity.

9. **Scaffolding material (pipe, clamps and base plates) and its erection if required should be arranged by the contractor.**

10. **Clause No.** X **: 50% of the quoted rate only will be paid to the party if the tube bundle is not pulled out and brought to the ground (ie. only hydro testing of the tube side and shell side and plugging of the leaking tube is done in position).**

    Note: - Contractor has to put people as 12Hrs. shift basis (2 shifts-8:00AM to 8:00PM & 8:00PM to 8:00AM) in full strength.

I. Heat Exchanger Maintenance

Floating Head Exchanger

1. Once the equipment is ready for maintenance, isolation of equipment by putting blinds/spectacle blinds in feed and out let nozzles and all other nozzles indicated for the purpose and fix blind number tags.

2. Open and remove channel head cover

3. Open and remove channel head

4. Open and remove shell cover and floating head cover.

5. Pull out the tube bundle as per the instruction of Engineer-in-Charge.

6. Clean the tubes and shell, channel head cover, channel head shell, floating head, floating head cover and dish end cover using hydro blasting machine (Karcher Pump) available in HOCL and all flange serration were cleaned by scrappers / wire brushes. If further cleaning by hydro blasting with higher capacity machine is required for cleaning, the same will be arranged by HOCL at their cost.

7. Preparation for man entry if required ie. provide necessary hose connections for draining, and water washing of the equipment as the case may be.

8. Blinding shell side and tube side in the required sequence and stages suitable for hydrotest of tube side and shell side separately.

9. Assemble the tube bundle, channel head shell, channel head cover, floating head, floating head cover and dish end cover in required sequence and stages suitable for Hydrotest of tube side and shell side separately.

10. Hydrotest the exchanger on shell side and tube side and floating head gasket, dish end cover gasket.

11. Leaking tubes if any noticed during hydrotest should be plugged using CS/SS/Brass plugs as per the instruction of Engineer-in-charge. Required plugs will be supplied by HOC at free of cost. Repeat the hydrotest if any leak at shell side / tube side.

12. You shall get the hydrotest witnessed by Engineer – in-charge / 3rd party Inspector.

13. Test rings should be used for testing floating head type exchangers tube bundle. Test rings are available in main store yard / maintenance workshop, the same has to be identified, cleaned, transported to the heat exchanger. After testing, the test rigs are to be transported back to the original location.

14. Test pressure for hydrotesting should be as per the inspection of the Inspector/Engineer-in-charge.

15. Removal of isolations (ie. blind, spectacle blinds, blind tags etc.) for normalizing the Heat Exchanger.

16. Hot bolting of the flanges after putting the equipment in line if it is required. However, this activity will not be counted for the completion time for the work.

17. In case of cleaning of heat exchanger tubes by hydro blasting (by HOCL through other agencies), there will be a gap of 1 or 2days (for cleaning) in between opening / boxing up of exchanger. However, time taken for this activity will not be counted for the completion of the work.

18. If any leak is observed after normalizing the equipment, the same has to be arrested by the contractor. However, this activity will not be counted for the completion time for the work.

19. Floating head testing is not applicable in case of straight tube heat exchanger

Clause No. X : 50% of the quoted rate only will be paid to the party if the tube bundle is not pulled out and brought to the ground (ie. only hydro testing of the tube side and shell side and plugging of the leaking tube is done in position)

'U' Tube Heat Exchanger

1. Once the equipment is ready for maintenance, isolation of equipment by putting blinds/spectacle blinds in feed and out let nozzles and all other nozzles indicated for the purpose and fix blind number tags.

2. Open and remove channel head cover

3. Open and remove channel head

4. Open and remove shell cover if available.

5. Pull out the tube bundle as per the instruction of Engineer-in-Charge.

6. Clean the tubes, channel head cover, channel head shell and end cover using hydro cleaning machine (Karcher Pump) available in HOCL and all flange serration by scrappers / wire brushes. If Hydroblasting is required for cleaning, the same will be arranged by HOCL at their cost.

7. Blinding shell side and tube side in the required sequence and stages suitable for hydrotest of tube side and shell side separately.

8. Assemble to tube bundle, channel head, channel head cover, shell cover (if available) etc., in the required sequence and stage. Leaking tubes if any noticed during hydrotest should be plugged using CS/SS/Brass plugs as per the instruction of Engineer-in-charge. Required plugs will be supplied by HOC at free of cost. Repeat the hydrotest if any leak at shell side / tube side.

9. You shall get the hydrotest witnessed by Engineer – in-charge / 3rd party Inspector.

10. Test pressure for hydro test should be as per the inspection of the Inspector/Engineer-in-charge.

11. Removal of isolations (ie. blind, spectacle blinds, blind tags etc.) for normalizing the Heat Exchanger.)

12. Test rings should be used for testing floating head type exchangers tube bundle.(Test rings are available in main store yard / maintenance workshop, the same has to be identified, cleaned, transported to the heat exchanger. After testing, the test rings are to be transported back to the original location).

13. Hot bolting of the flanges after putting the equipment in line if it is required. However, this activity will not be counted for the completion time for the work.

14. In case of cleaning of heat exchanger tubes by hydroblasting (by HOCL through other agencies), there will be a gap of 1 or 2 days (for cleaning) in between opening / boxing up of exchangers. However, this activity will not be counted for the completion of the work.

15. If any leak is observed after normalizing the equipment, the same has to be arrested by the contractor. However, this activity will not be counted for the completion time for the work.

Clause No. X : 50% of the quoted rate only will be paid to the party if the tube bundle is not pulled out and brought to the ground (ie. only hydro testing of the tube side and shell side and plugging of the leaking tube is done.)

Fixed Head Exchanger

1. Once the equipment is ready for maintenance, isolation of equipment by putting blinds/spectacle blinds in feed and out let nozzles and all other nozzles indicated for the purpose and fix blind number tags.

2. Open and remove channel head cover.

3. Open and remove channel heads.

4. Open and remove shell cover.

5. Clean the tubes, channel head cover, channel head shell and end cover using hydro cleaning machine (Karcher Pump) available in HOCL and all flange serration by scrappers / wire brushes. If Hydroblasting is required for cleaning, the same will be arranged by HOCL at their cost.

6. Blinding shell side and tube side in the required sequence and stages suitable for hydrotest of tube side and shell side separately.

7. Hydrotest the exchanger for any tube leak. Leaking tubes if any noticed during hydrotest should be plugged using CS/SS/Brass plugs as per the instruction of Engineer-in-charge. Required plugs will be supplied by HOC at free of cost. Repeat the hydrotest for any leak.

8. Assemble the channel head and covers and do the hydrotest.

9. You shall get the hydrotest witnessed by Engineer – in-charge / 3rd party Inspector.

10. Test pressure should be as per the inspection of the Inspector/Engineer-in-charge.

11. Removal of isolations ie. blind, spectacle blinds, blind tags and normalizing the Heat Exchanger.

12. If any leak is observed after normalizing the equipment, the same has to be arrested by the contractor. However, this activity will not be counted for the completion time for the work.

13. In case of cleaning of heat exchanger tubes by hydroblasting (by HOCL through other agencies), there will be a gap of 1 or 2 days (for cleaning) in between opening / boxing up of exchangers. However, this activity will not be counted for the completion of the work.

ANNEXURE- III

SPECIAL CONDITINOS OF CONTRACT

1. All manpower, tools, tackles, lifting tools, ropes, wire brushes, grinding machine, buffing machine, chain pulley block, wheel barrows etc. whatever required for the work are to be arranged by the contractor. A list of tools and tackles intended to be brought for the work by the contractor has to be kept along with the bid.

2. Safety Helmets, safety shoe, goggles, safety belts and other PPEs etc. for the workmen and supervisor employed for the work are to be arranged by the contractor.

3. No work to be carried out without wearing safety gadgets (PPE's), work order, confined space entry record and safety work permit by the employees of the contractor.

4. If the work is urgent, you have to deploy people on round the clock basis to complete the work on time as per the instruction of Engineer-in-Charge.

5. The entire work is to be carried out as per the standard engineering practice and subjected to stage inspection by HOCL.

6. All debris, waste etc. arising out of the job should be segregated weighed, transported and dumped into the scrap yard as per the instruction of Engineer-in-Charge at your cost. The contractor also has to abide by the guidelines for Environmental Protection.

7. HOC has every right to stop the work if the progress and quality of work is found unsatisfactory. The balance work will be carried out by HOC through another agency at the cost and risk of the first contractor.

8. Contractor has to mobilise the complete team with necessary tools and tackles **within 24 hours** from the time of intimation to start the work.

9. Either the contractor or his authorised supervisor should be available at work site throughout the work.

10. The quantity shown can vary i.e. Increase or decrease depending upon the situation. However, the rate and other terms and conditions are same throughout the pendency of the contract for which the contractor must be ready.

11. The Contractor should follow all clause in Annexure - A, B & C like ESI, Safety Regulations and General Conditions of Contract, Workmen Compensation, Personal Protective Equipments (PPE), Labour Laws, PF, Guidelines to contractors / suppliers for environmental protection & Confined Space Entry.

12. Contractor should get prior permission from the Engineer-in-Charge for bringing the material to HOC.

13. Contractor should ensure that a standby person is kept outside the man-way nozzle when the work is inside a confined space and maintain Confined space Entry Register.

ANNEXURE- IV

COMPLIANCE / NO-DEVIATION STATEMENT

It is hereby stated that the quotation/offer submitted by us is in full compliance with all the documents issued against the enquiry and also further confirmed that there is no deviation from all the terms and conditions as per the enquiry.

Signature of the Tenderer :

Name of the Tenderer :

Address :

Place : SEAL

Date :

ANNEXURE - V

COMPLIANCE OF GENERAL CONDITIONS OF CONTRACT (GCC)

It is hereby stated that we have read and understood General Conditions of Contract (GCC) and confirm that we abide by all the terms and conditions of GCC.

Signature of the Tenderer :

Name of the Tenderer :

Address :

Place : SEAL

Date :

ANNEXURE- VI

CHECK LIST

EMD - ₹26,900/- (Not applicable to MSME/NSIC/PSUs) shall be paid by through NEFT/RTGS/Bank Guarantee.

Bank Details - **State Bank of India**
- **A/c No. 37881840330**
- **IFSC - SBIN0013551**

Branch Name - **Belapur, Mumbai**

PRE-QUALIFICATION CRITERIA (TO BE INCLUDED IN THE TECHNICAL BID)

The Tenderers shall submit the following in the Technical bid (Un priced Bid) without which the tender will be rejected.

a. Complete set of Tender Document duly filled in and signed by the Tenderer as prescribed in different clauses of the Tender Document.

b. GCC duly filled in the relevant portions, signed and stamped all the pages by the tenderer (The tenderers have to download the GCC (General Conditions of Contract) from our web site www.hoclkochi.com and the same has to be returned along with the technical bid duly signed and stamped in all pages.

Pre-qualification Criteria (Not applicable to already registered vendor of HOCL)

a. Experience on similar works executed during the last five years and details like monetary value, proof of satisfactory completion of works etc.

b. Earnest Money in the manner specified in the Tender document.

c. Organization chart giving details of field management at SITE, the tenderer proposes to have for this work including bio-data of the Site-in Charge and key personnel.

d. The bidder should have well qualified workforce in adequate numbers for handling various stages of the work. The staff/workers details are to be furnished.

e. The bidder should have adequate number of equipment/tools/tackles/scaffolding pipe/clamps/ staging materials in sound condition for the execution of the work within the stipulated time. The equipment details should be furnished.

f. Details of current commitments with copies of Work Orders to be submitted.

g. Copies of work orders already completed or in progress

h. Tender should accompany the details asked in A, B,C, D, E , F, H, R, S & AC

i. Completion certificates

j. GSTN registration

k. Information regarding tenderer as stipulated in Clause.1 .

l. Details of work of similar type and magnitude carried out by the tenderer as stipulated in Clause.3.

m. Exceptions and deviations, if any, with reference to the Clause No. and page No. of Tender shall be submitted as a separate statement (Deviation Statement)

Clause - 1 & 2 (not applicable to MSME)

1. Average annual financial turnover during the last 3 years, ending 31st March of the previous financial year, should be at least **₹3 Lakhs**. (Details of annual financial turnover to be submitted with Documentary proof).

2. Experience of having successfully completed similar works during last 7 years ending last day of month previous to the one in which applications are invited should be either of the following:

   Three similar completed works costing not less than the amount equal to **₹4.31 Lakhs.**

   OR

   Two similar completed works costing not less than the amount equal to **₹5.38 Lakhs.**

   OR

   One similar completed works costing not less than the amount equal to **₹8.62 Lakhs.**

3. The parties who have been blacklisted / put in holiday list or parties in respect of whom action has been initiated for Blacklisting / Holiday listing by HOCL/any government / Quasi government agencies or any PSUs shall not be considered for award of job. The tenderer should give a written declaration regarding the same.

4. In addition to Clause No.3.7 of our GCC, the tenderer who do not meet the basic requirements (technical / commercial) as per the tender enquiry document and any other important condition having significant bearing on the cost / utility / performance of the required goods, services etc. will be treated as unresponsive and the tender will be liable to rejection.

Signature of the Tenderer :

Name of the Tenderer :

Address :

Place :

Date :

ANNEXURE – A

ESI, PF, LABOUR LAW ETC. – REQUIREMENTS

1. *ESI As per the ESI Act 1948*

The Contractor shall enroll all his men deployed for the work in the ESI scheme. Registration for all workmen under ESI scheme is also to be complied with.

2. *Safety Regulations and General Conditions of Contract*

The Contractor should be strictly abide all the safety regulation of HOC specified in GCC. Contractor should obtain necessary safety work permit from authorised officer before starting the work every day, in every shift.

3. *Workmen Compensation*

It will be your responsibility to meet all claims for compensation under workmen's Compensation Act 1923. ESI or under any other law in respect of sickness, accidents injury or death suffered by workmen engaged by you for carrying out the work. It shall be the sole responsibility of the contractor to comply with Employee's State Insurance Act 1948. You will also be responsible and liable in respect of claims for damage to property or persons arising from or in the course of execution of the contract work undertaken by you. You hereby agree that you shall keep HOC fully indemnified in respect of claims under the Workmen Compensation Act and all other claims aforesaid and you shall not under any circumstances raise any dispute with regard to the same.

4. *Personal Protective Equipments (PPE)*

You are requested to use personal protective equipment such as

1. Safety Helmet
2. Safety belts
3. Welder's Personal Protective equipment like goggles, gloves, shoes and face shield

As a measure to contain the spread of COVID-19, the following PPEs are essentially required to be provide to your workers:

1. Face Mask
2. Face Shield
3. Gloves

Also all your workers are to be subjected to temperature screening at Security, hand wash at the entrance, maintain physical distancing as far as possible.

You shall strictly instruct your workers not to spit in the public places and area of work.

It is the basic responsibility of the Contractor to provide all the safety gadgets (PPEs) as mentioned above to all their Supervisors/Workers.

And without these PPEs Contractor will not be allowed to carryout any job, which may please be noted.

5. *Labour Laws & Provident Fund*

You are requested to possess:

1. A License from the Labour Dept. under Contract Labour (Regulation and Abolition) Act 1970.

2. A separate PF Code under the Employee PF Act – 1952 and also furnish details of CPF Contribution payment made with the Regional PF Commissioner.

6. Guidelines to Contractors/Suppliers for Environmental Protection

- Contractors/suppliers shall ensure that impact due to the environmental aspects of goods and services is minimum.

- Effluent generated during the activity is to be routed to effluent treatment plant as per the instructions given by the Engineer-in-Charge.

- Hazardous waste generated during the activity is to be disposed in accordance with Hazardous Waste (Management & Handling) Rules as per the instructions given by the Engineer-in-Charge.

- All other solid wastes are to be disposed as per the instructions given by the Engineer-in-Charge.

- Avoid leaks and spills to minimise the impact on environment. In the case of any leaks/spills immediately inform Engineer-in-Charge to take appropriate corrective action.

- If the item handled falls under hazardous category, please ensure that:

  a. Product literature including MSDS/TREM Card etc. accompany the consignment.
  b. Packing and labeling are in accordance with the requirement of Manufacture, Storage & Import of Hazardous Chemicals Rules.

7. HOCL Company premises is declared as **"PLASTIC FREE ZONE".** Hence, plastic carry bags or any plastic item having thickness less than 75 microns should not be used/brought inside the Company. Violation of the same by the contractor or his employees will be an offence as per Company Rule.

8. B. Confined Space Entry

If entry into a confined space (like inside entry to columns, heat exchanger shells, vessels, filters, spheres, bullets, boilers etc.) is a part of the work, contractor should register the name and other details in the register kept for the purpose each time. All safety regulation has to be adhered and permit to be obtained before entering into a confined space. Also after coming out from the confined space, the worker/supervisor has to report to the Engineer-in-Charge each time without fail. Any deviation in this register will not be permitted in any case.

ANNEXURE - B

LABOUR LAWS – CHECK LIST

1. **Contract Labour (Regulation & Abolition) Act – 1970**

   Contractor should possess Labor License if he engages more than 19 workers at a time for a particular job.

2. **ESI Act 1948**

   A worker whose wages (excluding Overtime Wage) does not exceed ₹21,000/- per month will be covered under the Act. Please note that workers can be allowed to work inside the Factory Premises / Township only after completing the following procedures:

   a. Those labourers already registered under ESI should submit their ESI card along with a copy.

   b. For new cases, the following documents are to be produced for registering under the Act:

      1. Registration form duly filled in by the worker concerned.

      2. Proof of identity – Address and Age (SSLC / Birth Certificate / Driving License / Passport, etc.)

      3. Family photograph – 2 Nos.

   c. For those workers whose wages is claimed to be more than ₹21,000/- per month should produce the following documents:

      1. An undertaking from his employer that his wage is more than ₹21,000/- per month and he is not required to be covered under ESI Act is to be submitted.

      2. A copy of the Personal Accident Policy showing that the worker is covered under the policy.

3. **The EPF & MP Act – 1952**

   a. The concerned worker has to file nomination form

   b. If already covered under the Act and Scheme, the related document to be submitted.

4. **Interstate Migrant Workmen (Regulation of Employment and Conditions of Service) Act 1979**

   The contractor should possess License under this Act, if he engages 05 or more interstate migrant workmen on any day.

ANNEXURE - C

SAFETY, HEALTH & ENVIRONMENT (SHE) CONDITIONS

The following Safety, Health and Environment conditions shall apply to the Contractor those who are working at HOCL, Ambalamugal.

- Shall ensure the availability and suitability of qualified and experienced personnel at the site for effective and efficient SHE management.
- Shall ensure that the equipment, materials, consumables are in conformity with the requirements.
- Shall ensure that all equipments/scaffolding used are having adequate stability.
- Shall ensure that appropriate and adequate PPEs are provided and worn by the personnel involved.
- Shall ensure that safety signs are posted as appropriate to the activity/hazard as required.
- Shall ensure the removal of material from site, which do not conform to the requirements.
- Shall ensure no adverse impact on environment due to activities.
- Shall maintain proper close supervision over their employee's activities.
- Shall identify the hazards related to their nature of work being executed and develop methods to eliminate/control those hazards where required to prevent any unwanted incidents/accident.
- Shall educate/train the workers throughout the work and improve their SHE awareness.
- Shall ensure adequate hygiene, (i.e. cleanliness, environment free from dust and fume, proper lighting and drinking water to all worker employed by the contractor).
- Shall ensure regular controls are in place for the following by doing regular checks/inspections but not limited to the following:
    - Vehicles & equipments
    - Tools, equipments, lifting appliances
    - Safety equipments
    - Fire protection
- Shall at his own expenses from time to time and whenever required clear away and remove all rubbish/scrap/unwanted materials from its work area to designated area.
- Shall report all incidents/accidents occurring if any connected with the job. The Contractor shall prepare and submit an incident/accident report to OWNER's Safety Department.

ANNEXURE - D

PROFORMA OF DECLARATION OF BLACK LISTING/HOLIDAY LISTING

In the case of a Proprietary Concern:

I hereby declare that neither I in my personal name or in the name of my Proprietary concern M/s. _____ which is submitting neither the accompanying Bid/Tender nor any other concern in which I am proprietor nor any partnership firm in which I am involved as a Managing Partner have been placed on black list or holiday list declared by any Government Public Sector company (CPSU) or any of the administrative ministries, except as indicated below:

(Here give particulars of blacklisting or holiday listing, and in absence there of state "NIL")

In the case of a Partnership Firm:

We hereby declare that neither we, M/s. _____, submitting the accompanying Bid/Tender nor any partner involved in the management of the said firm either in his individual capacity or as proprietor or managing partner of any firm or concern have or has been placed on blacklist or holiday list declared by any Government Public Sector Company (CPSU) or any of the administrative ministries, except as indicated below:

(Here give particulars of blacklisting or holiday listing, and in absence there of state "NIL")

In the case of Company:

We hereby declare that we have not been placed on any holiday list or black list declared by any Government Pubic Sector Company (CPSU) or any of the administrative ministries, except as indicated below:

(Here give particulars of blacklisting or holiday listing, and in absence there of state "NIL")

It is understood that if this declaration is found to be false in any particular, Hindustan Organic Chemicals Limited or its Administrative Ministry, shall have the right to reject my/our bid, and if the bid has resulted in a contract, the contract is liable to be terminated.

PLACE:

DATE: SIGNATURE OF THE BIDDER

ANNEXURE - E

ANNEXURE TO BID AGAINST TENDER No:_____

(KINDLY FILL THIS SHEET AND SUBMIT IN -COMMERCIAL/TECHNICAL BID)

Name of Bidder:		
Sr. No.	Commercial Clauses	Bidder Confirmation (Please put √ in front of your confirmation)
1	Whether bidder (a proprietary concern, Partnership Firm, Company) is currently on holiday list/black list/de-listed or has been put on holiday/blacklisted/de-listed at any PSU/govt. Organization. If so, give details.	□ Yes, We are on holiday List/Black List/De-List □ No
2 i	Whether the party is registered under Micro/Small/Medium Enterprises act 2006 (Please furnish the proof)	□ Micro □ Medium □ Small □ No
ii	Status of MSE Bidder	□ Manufacturer □ Services □ Not Applicable
iii	Whether MSE bidder is offering product manufactured by him/her	□ Yes □ No
3 i	All MSE bidders shall register / declare their UAM Number on CPP Portal and copy of this registration / declaration shall be attached with the offer; failing which such bidders will not be able to enjoy benefits as per PP Policy for MSME order, 2012. SSI/MSME/NSIC/UAM /DIC registration certificate	□ Mention UAM Number _____ □ Not Applicable
ii	Submitted valid document against clause no 3 (i)	□ Submitted □ Not Applicable
4 i	Whether the proprietor of "MSME" enterprise is from SC/ST category (Please attach caste certificate issued by competent authority)	□ Yes □ No
ii	Whether the proprietor of "MSME" enterprise is woman (i.e. Woman proprietorship, or holding minimum 51% shares in case of Partnership/Private Limited Companies)	□ Yes □ No
iii	Submitted certificate against clause no 4 (ii)	□ Submitted □ Not Applicable
5	AGREED TO ALL TERMS AND CONDITIONS OF ENQUIRY: It is hereby stated that the quotation/offer submitted is in full compliance with the documents issued against the enquiry and also further confirmed that there is no deviation from all the terms and conditions as per the enquiry. Non-acceptance or deviation to HOCL's standard terms and conditions mentioned in enquiry documents may lead to rejection of offer, no correspondence shall be done for clarifications	□ Agreed □ Not Agreed
DATE:		SIGN AND STAMP OF BIDDER

ANNEXURE (F)

(For Purchase Order/ Work Order with estimated value more than FIVE Lakhs)

ANNEXURE TO BE SUBMITTED ALONG WITH THE BID AGAINST TENDER NO_____

(KINDLY FILL AND SUBMIT ALONG WITH COMMERCIAL/TECHNICAL BID)

Name of the Bidder:		
Sr No.	Commercial Clauses	Bidder Confirmation(Please put √ **)**
1	Please mention whether you are a Class-I/Class II Local supplier.(Please see the definition given below)	Class I ☐ Class II ☐
2	Specify the percentage (%) of local content.	---------- %
3	Details of location at which the local value addition is made	
4	Mention whether the product offered is manufactured in India under a license from a foreign who hold intellectual property rights and there is a technology collaboration agreement / Transfer of technology agreement.	Yes / No

SELF DECLARATION OF LOCAL CONTENT

We hereby declare that the percentage (%) of local content specified against mentioned against Sr.No.2 is_____%.

We also understand that submitting False self-declarations and auditors will be in breach of Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a Bidder or its successors can be debarred for up to Two Years as per the Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under Law.

DATE: SGNATURE AND STAMP

Definitions

Local Content: - The amount of value added in India(Total value of item procured minus the value of imported content in the item(including all customs duties) as a proportion of total value, in percentage.

Class I Local Supplier: - Supplier or service provider whose goods AND services or works offered for procurement has local content equal to or more than 50%.

Class II Local Supplier: - Supplier or service provider whose goods AND services or works offered for procurement has local content more than 20% but less than 50 %.

Purchase Preference: -Will be as per the applicable Government order.

DATE: SIGNATURE AND STAMP

ANNEXURE – H

BID SECURITY DECLARATION

ANNEXURE TO BE SUBMITTED ALONG WITH THE BID AGAINST TENDER No._____

I/We.....hereby declare that:

1. I will not revoke the tender within the stipulated period/ validity period OR increase the quoted rates.

2. I will commence the work on intimating to start the work/ on receipt of Letter of Indent.

3. I will not withdraw or amend the tender or impair or derogate from the tender in any respect within the period of validity of the tender.

4. I will furnish the required performance security within the specified period.

NAME AND ADDRESS OF THE BIDDER

PLACE:
DATE:

SIGNATURE AND STAMP OF THE BIDDER

Annexure - R

Declaration of Compliance of Order (Public Procurement No.1, 2 & 3) dtd 23 Jul 2020 & 24 Jul 2020 on

Restrictions under Rule 144 (xi) of the General Financial Rules (GFRs), 2017

This declaration must form part of all tenders & it contains general information and serves as a declaration form for all bidders. (Before completing this declaration, bidders must study the General Conditions, Definitions, Govt Directives applicable in respect of Public Procurement No.1, 2 & 3) dtd 23 Jul 2020 & 24 Jul 2020 on Restrictions under Rule 144 (xi) of the General Financial Rules (GFRs), 2017& prescribed tender conditions).

DECLARATION BY AUTHORISED SIGNATORY OF THE FIRM

I, the undersigned,…… (full names), do hereby declare, in my capacity as …… of M/s .....(name of bidder entity), that:

1. The facts contained herein are within my own personal knowledge.
2. I have read the Order (Public Procurement No.1, 2 & 3) dtd 23 Jul 2020 & 24 Jul 2020 on the subject of Restrictions under Rule 144 (xi) of the General Financial Rules (GFRs), 2017 regarding restrictions on procurement from a bidder of a country which shares a land border with India and comply to all the provisions of the Order.
3. I certify that M/s .....(name of bidder entity) is not from such a country or, is from such a country (strike out whichever is not applicable), has been registered with the Competent Authority. I further certify that M/S.....(name of the sub-contractor if any) is not from such a country or, is from such a country (strike out whichever is not applicable), has been registered with the Competent Authority. I hereby certify that this SUPPLIER fulfills all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority is attached].
4. I understand that the submission of incorrect data and / or if certificate / declaration given by M/s .....(name of bidder entity) is found to be false, this would be a ground for immediate termination and further legal action in accordance with law as per Clause 12 of the Public Order on Restrictions under Rule 144 (xi) of the General Financial Rules (GFRs), 2017.

AUTHORISED SIGNATURE:

DATE: _____

Seal / Stamp of Bidder

ANNEXURE -S

INSTRUCTIONS TO THE CONTRACTORS FOR USE OF VEHICLES

INSTRUCTIONS TO THE CONTRACTORS FOR USE OF VEHICLES, LIFTING MACHINES, LIFTING TOOLS & TACKLES, EARTH MOVING EQUIPMENT AND ENGINE OPERATED EQUIPMENT

1. **Lifting machines, chains ropes and lifting tackles**

   Contractor shall possess valid certificates, for lifting machines, chains blocks, ropes, slings, D-shackles, belts and other lifting tools & tackles used for working inside HOCL, Ambalamugal.

2. **Insurance for special type vehicles**

   Contractor shall possess valid certificates, for vehicles which are used for working inside HOCL, Ambalamugal.

3. **Driving License**

   The Driver/Operator shall possess relevant valid certificates, for vehicles which are used for working inside HOCL, Ambalamugal.

4. **Certificate of Fitness**

   Contractor shall possess valid certificates, for transport vehicles which are used for working inside HOCL, Ambalamugal.

5. **Vehicle Entry Permit**

   Vehicle entry permit shall be taken for use of Mobile equipment inside plant area.

6. **Spark Arrestor**

   Spark arrestor shall be provided for all vehicles / engine operated equipment which are used for working inside plant area.

NOTE:

1. **The vehicle / mobile equipment brought inside HOCL premises shall be maximum 10 years from the date of registration.**
2. **Spark ignited equipment (including petrol driven engines) are not permitted inside PESO Licensed area.**

Please note that Mobile Lifting Machines like Mobile cranes, Fork lift, Manlift, Dozers and Excavator shall be allowed to work inside the Factory Premises only after verifying the following:

I. For Mobile Cranes

Shall ensure regular controls are in place for the following by doing regular checks/inspections but not limited to the following:

a. RTO license for operating crane available
b. Record of eye examination/re-examination carried out as per Kerala factories Rules 1957
c. Availability of load chart inside operator cabin in such a way that operator can read and understand load chart.
d. Condition of hook and latch.
e. Condition of wire ropes/slings.
f. Condition of over hoist limit switch (Anti two blocks) and overload alarm.
g. SWL marked on all hooks.
h. Tyre condition.
i. Third party inspection certificate of crane and lifting tools and equipment.
j. Condition of Horn & Reverse horn.
k. Condition in hydraulic cylinders and outriggers.
l. Guards in moving and rotating parts.
m. Availability of Safe Load indicator (SLI) in operator cabin.

II. For Fork Lift

Shall ensure regular controls are in place for the following by doing regular checks/inspections but not limited to the following:

a. RTO License for operating Excavator.
b. Condition of Fork.
c. Condition in hydraulic cylinders for any leakage.
d. Tyre condition.
e. Condition of Horn & Reverse horn.
f. Condition of overhead guard.

III. For Man Lift

Shall ensure regular controls are in place for the following by doing regular checks/inspections but not limited to the following:

a. RTO license for operating crane available
b. Record of eye examination/re-examination carried out as per Kerala factories Rules 1957
c. Condition of Platform and guard rails.
d. Condition of main boom and tip boom.
e. Tyre condition.
f. Third party inspection certificate of crane and lifting tools and equipment
g. Condition of Horn & Reverse horn.
n. Condition in hydraulic cylinders and outriggers.

IV. For Excavator/Dozer

Shall ensure regular controls are in place for the following by doing regular checks/inspections but not limited to the following:

a. RTO License for operating Excavator.
b. Condition of Loader bucket.
c. Condition of Boom.
d. Hydraulic oil level.
e. Condition in hydraulic cylinders for any leakage.
f. Tyre condition.
g. Condition of Horn & Reverse horn.
h. Condition of backhoe pins and bushings.
i. Condition of swing tower.

HINDUSTAN ORGANIC CHEMICALS LIMITED

MS 001
MANUAL FOR SCAFFOLDING
SEPTEMBER 2023

ANNEXURE - AC

SCAFFOLDING

Scope, application and definitions

(a) Scope and application. This applies to all scaffolds used in workplaces. It does not apply to crane or derrick suspended personnel platforms.

(b) Definitions.

Adjustable suspension scaffold means a suspension scaffold equipped with a hoist(s) that can be operated by an employee(s) on the scaffold.

Bearer (putlog) means a horizontal trans- verse scaffold member (which may be supported by ledgers or runners) upon which the scaffold platform rests and which joins scaffold uprights, posts, poles, and similar members.

Boatswains' chair means a single-point adjustable suspension scaffold consisting of a seat or sling designed to support one employee in a sitting position.

Body belt (safety belt) means a strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration device.

Body harness means a design of straps which may be secured about the employee in a manner to distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders, with means for attaching it to other components of a personal fall arrest system.

Brace means a rigid connection that holds one scaffold member in a fixed position with respect to another member, or to a building or structure.

Bricklayers' square scaffold means a supported scaffold composed of framed squares which support a platform.

Carpenters' bracket scaffold means a supported scaffold consisting of a platform supported by brackets attached to building or structural walls.

Catenary scaffold means a suspension scaffold consisting of a platform supported by two essentially horizontal and parallel ropes attached to structural members of a building or other structure. Additional sup-port may be provided by vertical pickups.

Chimney hoist means a multi-point adjust-able suspension scaffold used to provide access to work inside chimneys. (See "Multi-point adjustable suspension scaffold".) **Cleat** means a structural block used at the end of a platform to prevent the platform from slipping off its supports. Cleats are also used to provide footing on sloped surfaces such as crawling boards.

Competent person means one who is capable of identifying existing and predict-able hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Continuous run scaffold (Run scaffold) means a two- point or multi-point adjustable suspension scaffold constructed using a series of interconnected braced scaffold members or supporting structures erected to form a continuous scaffold.

Coupler means a device for locking together the tubes of a tube and coupler scaffold.

Crawling board (chicken ladder) means a supported scaffold consisting of a steel plates/grating with cleats spaced and secured to provide footing, for use on sloped surfaces such as roofs.

Deceleration device means any mechanism, such as a rope grab, rip-stitch lanyard, Specially woven lanyard, tearing or deforming lanyard, or automatic self-retracting lifeline lanyard, which dissipates a substantial amount of energy during a fall arrest or limits the Energy imposed on an employee during fall arrest.

Double pole (independent pole) scaffold means a supported scaffold consisting of a platform(s) resting on cross beams (bearers) supported by ledgers and a double row of uprights independent of support (except ties, guys, braces) from any structure.

Equivalent means alternative designs, materials or methods to protect against a hazard which the employer can demonstrate will provide an equal or greater degree of safety for employees than the methods, materials or designs specified in the standard.

Exposed power lines means electrical power lines which are accessible to employees and which are not shielded from contact. Such lines do not include extension cords or power tool cords.

Eye or Eye splice means a loop with or without a thimble at the end of a wire rope.

Fabricated decking and steel plates/gratings means manufactured platforms made of metal. **Fabricated frame scaffold (tubular welded frame scaffold)** means a scaffold consisting of a platform(s) supported on fabricated end frames with integral posts, horizontal bearers, and intermediate mem- bers.

Failure means load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.

Float (ship) scaffold means a suspension scaffold consisting of a braced platform resting on two parallel bearers and hung from overhead supports by ropes of fixed length.

Form scaffold means a supported scaffold consisting of a platform supported by brackets attached to formwork.

Guardrail system means a vertical barrier, consisting of, but not limited to, toprails, midrails, and posts, erected to prevent employees from falling off a scaffold platform or walkway to lower levels.

Hoist means a manual orpower-operated mechanical device to raise or lower a suspended scaffold.

Horse scaffold means a supported scaffold consisting of a platform supported by construction horses (saw horses). Horse scaffolds constructed of metal are sometimes known as trestle scaffolds.

Independent pole scaffold (see "Double pole scaffold").

Interior hung scaffold means a suspension scaffold consisting of a platform suspended from the ceiling or roof structure by fixed length supports.

Ladder jack scaffold means a supported scaffold consisting of a platform resting on brackets attached to ladders.

Ladder stand means a mobile, fixed-size, self-supporting ladder consisting of a wide flat tread ladder in the form of stairs.

Landing means a platform at the end of a flight of stairs.

Large area scaffold means a pole scaffold,

tube and coupler scaffold, systems scaffold, or fabricated frame scaffold erected over substantially the entire work area. For example: a scaffold erected over the entire floor area of a room.

Lean-to scaffold means a supported scaffold which is kept erect by tilting it toward and resting it against a building or structure.

Lifeline means a component consisting of a flexible line that connects to an anchorage at one end to hang vertically (vertical lifeline), or that connects to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

Lower levels means areas below the level where the employee is located and to which an employee can fall. Such areas include, but are not limited to, ground levels, floors, roofs, ramps, runways, excavations, pits, tanks, materials, water, and equipment.

Masons' adjustable supported scaffold (see "Self-contained adjustable scaffold"). Masons' multi-point adjustable suspension scaffold means a continuous run suspension scaffold designed and used for masonry operations.

Maximum intended load means the total load of all persons, equipment, tools, materials, transmitted loads, and other loads reasonably anticipated to be applied to a scaffold or scaffold component at any one time.

Mobile scaffold means a powered or unpowered, portable, caster or wheel-mounted supported scaffold.

Multi-level suspended scaffold means a two-point or multi-point adjustable suspension scaffold with a series of platforms at various levels resting on common stirrups.

Multi-point adjustable suspension scaffold means a suspension scaffold consisting of a platform(s) which is suspended by more than two ropes from overhead supports and equipped with means to raise and lower the platform to desired work levels. Such scaffolds include chimney hoists.

Needle beam scaffold means a platform suspended from needle beams.

Open sides and ends means the edges of a platform that are more than 14 inches (36 cm) away horizontally from a sturdy, continuous, vertical surface (such as a building wall) or a sturdy, continuous horizontal surface (such as a floor), or a point of ac- cess. Exception: For plastering and lathing operations the horizontal threshold distance is 18 inches (46 cm).

Outrigger means the structural member of a supported scaffold used to increase the base width of a scaffold in order to provide support for and increased stability of the scaffold.

Outrigger beam (Thrustout) means the structural member of a suspension scaffold or outrigger scaffold which provides support for the scaffold by extending the scaffold point of attachment to a point out and away from the structure or building.

Outrigger scaffold means a supported scaffold consisting of a platform resting on outrigger beams (thrustouts) projecting beyond the wall or face of the building or structure, the inboard ends of which are secured inside the building or structure.

Overhand bricklaying means the process of laying bricks and masonry units such that the surface of the wall to be jointed is on the opposite side of the wall from the mason, requiring the mason to lean over the wall to complete the work. It includes mason tending and electrical installation incorporated into the brick wall during the overhand bricklaying process.

Personal fall arrest system means a system used to arrest an employee's fall. It consists of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline, or combinations of these.

Platform means a work surface elevated above lower levels. Platforms can be constructed using individual steel plates/gratings,

fabricated steel plates/gratings, fabricated decks, and fabricated platforms.

Pole scaffold (see definitions for "Single-pole scaffold" and "Double (independent) pole scaffold").

Power operated hoist means a hoist which is powered by other than human energy.

Pump jack scaffold means a supported scaffold consisting of a platform supported by vertical poles and movable support brackets.

Qualified means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.

Rated load means the manufacturer's specified maximum load to be lifted by a hoist or to be applied to a scaffold or scaffold component.

Repair bracket scaffold means a supported scaffold consisting of a platform supported by brackets which are secured in place around the circumference or perimeter of a chimney, stack, tank or other supporting structure by one or more wire ropes placed around the supporting structure.

Roof bracket scaffold means a rooftop supported scaffold consisting of a platform resting on angular-shaped supports.

Runner (ledger or ribbon) means the lengthwise horizontal spacing or bracing member which may support the bearers.

Scaffold means any temporary elevated platform (supported or suspended) and its supporting structure (including points of anchorage), used for supporting employees or materials orboth.

Self-contained adjustable scaffold means a combination supported and suspension scaffold consisting of an adjustable platform(s) mounted on an independent supporting frame(s) not a part of the object being worked on, and which is equipped with a means to permit the raising and lowering of the platform(s). Such systems include rolling roof rigs, rolling outrigger systems, and some masons' adjustable supported scaffolds.

Shore scaffold means a supported scaffold which is placed against a building or structure and held in place with props.

Single-point adjustable suspension scaffold means a suspension scaffold consisting of a platform suspended by one rope from an overhead support and equipped with means to permit the movement of the platform to desired work levels. **Single-pole scaffold** means a supported scaffold consisting of a platform(s) resting on bearers, the outside ends of which are supported on runners secured to a single row of posts or uprights, and the inner ends of which are supported on or in a structure or building wall.

Stair tower (Scaffold stairway/tower) means a tower comprised of scaffold components and which contains internal stairway units and rest platforms. These towers are used to provide access to scaffold platforms and other elevated points such as floors and roofs.

Stall load means the load at which the prime-mover of a power-operated hoist stalls or the power to the prime-mover is automatically disconnected.

Step, platform, and trestle ladder scaffold means a platform resting directly on the rungs of step ladders or trestle ladders.

Stilts means a pair of poles or similar supports with raised footrests, used to permit walking above the ground or working surface.

Stonesetters' multi-point adjustable suspension scaffold means a continuous run suspension scaffold designed and used for stonesetters' operations.

Supported scaffold means one or more platforms supported by outrigger beams, brackets, poles, legs, uprights, posts, frames, or similar rigid support.

Suspension scaffold means one or more

platforms suspended by ropes or other non-rigid means from an overhead structure(s).

System scaffold means a scaffold consisting of posts with fixed connection points that accept runners, bearers, and diagonals that can be interconnected at predetermined levels.

Tank builders' scaffold means a supported scaffold consisting of a platform resting on brackets that are either directly attached to a cylindrical tank or attached to devices that are attached to such a tank.

Top plate bracket scaffold means a scaffold supported by brackets that hook over or are attached to the top of a wall. This type of scaffold is similar to carpenters' bracket scaffolds and form scaffolds and is used in residential construction for setting trusses.

Tube and coupler scaffold means a supported or suspended scaffold consisting of a platform(s) supported by tubing, erected with coupling devices connecting uprights, braces, bearers, and runners.

Tubular welded frame scaffold (see "Fabricated frame scaffold").

Two-point suspension scaffold (swing stage) means a suspension scaffold consisting of a platform supported by hangers (stirrups) suspended by two ropes from overhead supports and equipped with means to permit the raising and lowering of the platform to desired work levels.

Unstable objects means items whose strength, configuration, or lack of stability may allow them to become dislocated and shift and therefore may not properly support the loads imposed on them. Unstable objects do not constitute a safe base support for scaffolds, platforms, or employees. Examples include, but are not limited to, barrels, boxes, loose brick, and concrete blocks.

Vertical pickup means a rope used to support the horizontal rope in catenary scaffolds.

Walkway means a portion of a scaffold platform used only for access and not as a work level.

Window jack scaffold means a platform resting on a bracket or jack which projects through a window opening.

General requirements.

This section does not apply to aerial lifts

(a) Capacity

(1) Each scaffold and scaffold component shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it.

(2) Direct connections to roofs and floors, and counterweights used to balance adjustable suspension scaffolds, shall be capable of resisting at least 4 times the tipping moment imposed by the scaffold operating at the rated load of the hoist, or 1.5 (minimum) times the tipping moment imposed by the scaffold operating at the stall load of the hoist, whichever is greater.

(3) Each suspension rope, including connecting hardware, used on non-adjustable suspension scaffolds shall be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope.

(4) Each suspension rope, including connecting hardware, used on adjustable suspension scaffolds shall be capable of supporting, without failure, at least 6 times the maximum intended load applied or transmitted to that rope with the scaffold operating at either the rated load of the hoist, or 2 (minimum) times the stall load of the hoist, whichever is greater.

(5) The stall load of any scaffold hoist shall not exceed 3 times its rated load.

(6) Scaffolds shall be designed by a qualified person and shall be constructed and

loaded in accordance with that design. Non-mandatory Appendix A to this subpart contains examples of criteria that will enable an employer to comply with paragraph (a) of this section.

(b) Scaffold platform construction.

(1) Each platform on all working levels of scaffolds shall be fully steel plates/gratings or decked between the front uprights and the guardrail supports as follows:
(i) Each platform unit (e.g., scaffold steel plates/gratings, fabricated steel plates/gratings, fabricated deck, or fabricated platform) shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 1 inch (2.5 cm) wide, except where the employer can demonstrate that a wider space is necessary (for example, to fit around uprights when side brackets are used to extend the width of the platform).
(ii) Where the employer makes the demonstration provided for in paragraph (b)(1)(i) of this section, the platform shall be steel plates/gratings or decked as fully as possible and the remaining open space between the platform and the uprights shall not exceed 9 1/2 inches (24.1 cm).
Exception to paragraph (b)(1): The requirement in paragraph (b)(1) to provide full steel plates/gratings or decking does not apply to plat- forms used solely as walkways or solely by employees performing scaffold erection or dismantling. In these situations, only the steel plates/gratings that the employer establishes is necessary to provide safe working conditions is required.
(2) Except as provided in paragraphs (b)(2)(i) and (b)(2)(ii) of this section, each scaffold platform and walkway shall be at least 18 inches (46 cm) wide.
(i) Each ladder jack scaffold, top plate bracket scaffold, roof bracket scaffold, and pump jack scaffold shall be at least 12 inches (30 cm) wide. There is no minimum width requirement for boatswains' chairs.
(ii) Where scaffolds must be used in areas that the employer can demonstrate are so narrow that platforms and walkways cannot be at least 18 inches (46 cm) wide, such platforms and walkways shall be as wide as feasible, and employees on those platforms and walkways shall be protected from fall haz ards by the use of guardrails and/or personal fall arrest systems.
(3) Except as provided in paragraphs (b)(3) (i) and (ii) of this section, the front edge of all platforms shall not be more than 14 inches (36 cm) from the face of the work, unless guardrail systems are erected along the front edge and/or personal fall arrest systems are used in accordance with paragraph (g) of this section to protect employees from fall- ing.
(i) The maximum distance from the face for outrigger scaffolds shall be 3 inches (8 cm);
(ii) The maximum distance from the face for plastering and lathing operations shall be 18 inches (46 cm).
(4) Each end of a platform, unless cleated or otherwise restrained by hooks or equivalent means, shall extend over the centerline of its support at least 6 inches (15 cm).
(5)(i) Each end of a platform 10 feet or less in length shall not extend over its support more than 12 inches (30 cm) unless the
platform is designed and installed so that the cantilevered portion of the platform is able to support employees and/or materials without tipping, or has guardrails which block employee access to the cantilevered end.
(ii) Each platform greater than 10 feet in length shall not extend over its support more than 18 inches (46 cm), unless it is designed and installed so that the cantilevered portion of the platform is able to support employees without tipping, or has guardrails which block employee access to the cantilevered end.
(6) On scaffolds where scaffold steel plates/gratings are abutted to create a long platform, each

abutted end shall rest on a separate support surface. This provision does not preclude the use of common support members, such as "T" sections, to support abutting steel plates/gratings, or hook on platforms designed to rest on common supports.

(7) On scaffolds where platforms are overlapped to create a long platform, the overlap shall occur only over supports, and shall not be less than 12 inches (30 cm) unless the platforms are nailed together or otherwise restrained to prevent movement.

(8) At all points of a scaffold where the platform changes direction, such as turning a corner, any platform that rests on a bearer at an angle other than a right angle shall be laid first, and platforms which rest at right angles over the same bearer shall be laid second, on top of the first platform.

(9) Platforms may be coated periodically with fire-retardant finishes and slip-resistant finishes.

(10) Scaffold components manufactured by different manufacturers shall not be intermixed unless the components fit together without force and the scaffold's structural integrity is maintained by the user. Scaffold components manufactured by different manufacturers shall not be modified in order to intermix them unless a competent person determines the resulting scaffold is structurally sound.

(11) Scaffold components made of dis similar metals shall not be used together unless a competent person has determined that galvanic action will not reduce the strength of any component to a level below that required by paragraph (a)(1) of this section.

(c) Criteria for supported scaffolds.

(1) Supported scaffolds with a height to base width (including outrigger supports, if used) ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means, as follows:

(i) Guys, ties, and braces shall be installed at locations where horizontal members support both inner and outer legs.

(ii) Guys, ties, and braces shall be installed according to the scaffold manufacturer's recommendations or at the closest horizontal member to the 4:1 height and be repeated vertically at locations of horizontal members every 20 feet (6.1 m) or less thereafter for scaffolds 3 feet (0.91 m) wide or less, and every 26 feet (7.9 m) or less thereafter for scaffolds greater than 3 feet (0.91 m) wide. The top guy, tie or brace of completed scaffolds shall be placed no further than the 4:1 height from the top. Such guys, ties and braces shall be installed at each end of the scaffold and at horizontal intervals not to exceed 30 feet (9.1 m) (measured from one end [not both] towards the other).

(iii) Ties, guys, braces, or outriggers shall be used to prevent the tipping of supported scaffolds in all circumstances where an eccentric load, such as a cantilevered work platform, is applied or is transmitted to the scaffold.

(2) Supported scaffold poles, legs, posts, frames, and uprights shall bear on base plates and mud sills or other adequate firm foundation.

(i) Footings shall be level, sound, rigid, and capable of supporting the loaded scaffold without settling or displacement.

(ii) Unstable objects shall not be used to support scaffolds or platform units.

(iii) Unstable objects shall not be used as working platforms.

(iv) Front-end loaders and similar pieces of equipment shall not be used to support scaffold platforms unless they have been specifically designed by the manufacturer for such use.

(v) Fork-lifts shall not be used to support scaffold platforms unless the entire platform is attached to the fork and the fork-lift is not moved horizontally while the platform is occupied.

(3) Supported scaffold poles, legs, posts, frames, and uprights shall be plumb and braced to prevent swaying and displacement.

(d) Criteria for suspension scaffolds.

(1) All suspension scaffold support devices, such as outrigger beams, cornice hooks, parapet clamps, and similar devices, shall rest on surfaces capable of supporting at least 4 times the load imposed on them by the scaffold operating at the rated load of the hoist (or at least 1.5 times the load imposed on them by the scaffold at the stall capacity of the hoist, whichever is greater).

(2) Suspension scaffold outrigger beams, when used, shall be made of structural metal or equivalent strength material, and shall be restrained to prevent movement.

(3) The inboard ends of suspension scaffold outrigger beams shall be stabilized by bolts or other direct connections to the floor or roof deck, or they shall have their inboard ends stabilized by counterweights, except masons' multi-point adjustable suspension scaffold outrigger beams shall not be stabilized by counterweights.

(i) Before the scaffold is used, direct connections shall be evaluated by a competent person who shall confirm, based on the evaluation, that the supporting surfaces are capable of supporting the loads to be imposed. In addition, masons' multi-point adjustable suspension scaffold connections shall be designed by an engineer experienced in such scaffold design.

(ii) Counterweights shall be made of non-flowable material. Sand, gravel and similar materials that can be easily dislocated shall not be used as counterweights.

(iii) Only those items specifically designed as counterweights shall be used to counterweight scaffold systems. Construction materials such as, but not limited to, masonry units and rolls of roofing felt, shall not be used as counterweights.

(iv) Counterweights shall be secured by mechanical means to the outrigger beams to prevent accidental displacement.

(v) Counterweights shall not be removed from an outrigger beam until the scaffold is disassembled.

(vi) Outrigger beams which are not stabilized by bolts or other direct connections to the floor or roof deck shall be secured by tiebacks.

(vii) Tiebacks shall be equivalent in strength to the suspension ropes.

(viii) Outrigger beams shall be placed perpendicular to its bearing support (usually the face of the building or structure). However, where the employer can demonstrate that it is not possible to place an outrigger beam perpendicular to the face of the building or structure because of obstructions that cannot be moved, the outrigger beam may be placed at some other angle, provided oppos- ing angle tiebacks are used.

(ix) Tiebacks shall be secured to a structurally sound anchorage on the building or structure. Sound anchorages include structural members, but do not include standpipes, vents, other piping systems, or electrical conduit.

(x) Tiebacks shall be installed perpendicular to the face of the building or structure, or opposing angle tiebacks shall be installed. Single tiebacks installed at an angle are prohibited.

(4) Suspension scaffold outrigger beams shall be:

(i) Provided with stop bolts or shackles at both ends;

(ii) Securely fastened together with the flanges turned out when channel iron beams are used in place of I-beams;

(iii) Installed with all bearing supports perpendicular to the beam center line;

(iv) Set and maintained with the web in a vertical position; and
(v) When an outrigger beam is used, the shackle or clevis with which the rope is attached to the outrigger beam shall be placed directly over the center line of the stirrup.
(5) Suspension scaffold support devices such as cornice hooks, roof hooks, roof irons, parapet clamps, or similar devices shall be:
(i) Made of steel, wrought iron, or materials of equivalent strength;
(ii) Supported by bearing blocks; and
(iii) Secured against movement by tiebacks installed at right angles to the face of the building or structure, or opposing angle tiebacks shall be installed and secured to a structurally sound point of anchorage on the building or structure. Sound points of anchorage include structural members, but do not include standpipes, vents, other piping systems, or electrical conduit.
(iv) Tiebacks shall be equivalent in strength to the hoisting rope.
(6) When winding drum hoists are used on a suspension scaffold, they shall contain not less than four wraps of the suspension rope at the lowest point of scaffold travel. When other types of hoists are used, the suspension ropes shall be long enough to allow the scaffold to be lowered to the level below without the rope end passing through the hoist, or the rope end shall be configured or provided with means to prevent the end from passing through the hoist.
(7) The use of repaired wire rope as suspension rope is prohibited.
(8) Wire suspension ropes shall not be joined together except through the use of eye splice thimbles connected with shackles or coverplates and bolts.
(9) The load end of wire suspension ropes shall be equipped with proper size thimbles and secured by eyesplicing or equivalent means.
(10) Ropes shall be inspected for defects by a competent person prior to each work shift and after every occurrence which could affect a rope's integrity. Ropes shall be replaced if any of the following conditions exist:
(i) Any physical damage which impairs the function and strength of the rope.
(ii) Kinks that might impair the tracking or wrapping of rope around the drum(s) or sheave(s).
(iii) Six randomly distributed broken wires in one rope lay or three broken wires in one strand in one rope lay.
(iv) Abrasion, corrosion, scrubbing, flattening or peening causing loss of more than one-third of the original diameter of the outside wires.
(v) Heat damage caused by a torch or any damage caused by contact with electrical wires.
(vi) Evidence that the secondary brake has been activated during an overspeed condition and has engaged the suspension rope.
(11) Swaged attachments or spliced eyes on wire suspension ropes shall not be used unless they are made by the wire rope manufacturer or a qualified person.
(12) When wire rope clips are used on suspension scaffolds:
(i) There shall be a minimum of 3 wire rope clips installed, with the clips a minimum of 6 rope diameters apart;
(ii) Clips shall be installed according to the manufacturer's recommendations;
(iii) Clips shall be retightened to the manufacturer's recommendations after the initial loading;
(iv) Clips shall be inspected and retightened to the manufacturer's recommendations at the start of each workshift thereafter;
(v) U-bolt clips shall not be used at the point of suspension for any scaffold hoist;
(vi) When U-bolt clips are used, the U-bolt shall be placed over the dead end of the rope, and the saddle shall be placed over the live end of the rope.
(13) Suspension scaffold power-operated

hoists and manual hoists shall be tested by a qualified testing laboratory.
(14) Gasoline-powered equipment and hoists shall not be used on suspension scaffolds.
(15) Gears and brakes of power-operated hoists used on suspension scaffolds shall be enclosed.
(16) In addition to the normal operating brake, suspension scaffold power-operated hoists and manually operated hoists shall have a braking device or locking pawl which engages automatically when a hoist makes either of the following uncontrolled movements: an instantaneous change in momentum or an accelerated overspeed.
(17) Manually operated hoists shall require a positive crank force to descend.
(18) Two-point and multi-point suspension scaffolds shall be tied or otherwise secured to prevent them from swaying, as determined to be necessary based on an evaluation by a competent person. Window cleaners' anchors shall not be used for this purpose.
(19) Devices whose sole function is to provide emergency escape and rescue shall not be used as working platforms. This provision does not preclude the use of systems which are designed to function both as suspension scaffolds and emergency systems.

(e) Access.

This paragraph applies to scaffold access for all employees. Access requirements for employees erecting or dismantling supported scaffolds are specifically addressed in paragraph (e)(9) of this section.
(1) When scaffold platforms are more than 2 feet (0.6 m) above or below a point of access, portable ladders, hook-on ladders, attachable ladders, stair towers (scaffold stairways/towers), stairway-type ladders (such as ladder stands), ramps, walkways, integral prefabricated scaffold access, or direct access from another scaffold, structure, personnel hoist, or similar surface shall be used. Crossbraces shall not be used as a means of access.
(2) Portable, hook-on, and attachable ladders (Additional requirements for the proper construction and use of portable ladders are contained in subpart X of this part—Stairways and Ladders):
(i) Portable, hook-on, and attachable ladders shall be positioned so as not to tip the scaffold;
(ii) Hook-on and attachable ladders shall be positioned so that their bottom rung is not more than 24 inches (61 cm) above the scaffold supporting level;
(iii) When hook-on and attachable ladders are used on a supported scaffold more than 35 feet (10.7 m) high, they shall have rest platforms at 35-foot (10.7 m) maximum vertical intervals.
(iv) Hook-on and attachable ladders shall be specifically designed for use with the type of scaffold used;
(v) Hook-on and attachable ladders shall have a minimum rung length of 11 1/2 inches (29 cm); and
(vi) Hook-on and attachable ladders shall have uniformly spaced rungs with a maximum spacing between rungs of 16 3/4 inches.
(3) Stairway-type ladders shall:
(i) Be positioned such that their bottom step is not more than 24 inches (61 cm) above the scaffold supporting level;
(ii) Be provided with rest platforms at 12 foot (3.7 m) maximum vertical intervals;
(iii) Have a minimum step width of 16 inches (41 cm), except that mobile scaffold stairway-type ladders shall have a minimum step width of 11 1/2 inches (30 cm); and
(iv) Have slip-resistant treads on all steps and landings.
(4) Stairtowers (scaffold stairway/ towers) shall be positioned such that their bottom step is not more than 24 inches (61 cm.) above the scaffold supporting level.

(i) A stairrail consisting of a toprail and a midrail shall be provided on each side of each scaffold stairway.
(ii) The toprail of each stairrail system shall also be capable of serving as a handrail, unless a separate handrail is provided.
(iii) Handrails, and toprails that serve as handrails, shall provide an adequate handhold for employees grasping them to avoid falling.
(iv) Stairrail systems and handrails shall be surfaced to prevent injury to employees from punctures or lacerations, and to prevent snagging of clothing.
(v) The ends of stairrail systems and handrails shall be constructed so that they do not constitute a projection hazard.
(vi) Handrails, and toprails that are used as handrails, shall be at least 3 inches (7.6 cm) from other objects.
(vii) Stairrails shall be not less than 28 inches (71 cm) nor more than 37 inches (94 cm) from the upper surface of the stairrail to the surface of the tread, in line with the face of the riser at the forward edge of the tread.
(viii) A landing platform at least 18 inches (45.7 cm) wide by at least 18 inches (45.7 cm) long shall be provided at each level.
(ix) Each scaffold stairway shall be at least 18 inches (45.7 cm) wide between stairrails.
(x) Treads and landings shall have slip-resistant surfaces.
(xi) Stairways shall be installed between 40 degrees and 60 degrees from the horizontal.
(xii) Guardrails meeting the requirements of paragraph (g)(4) of this section shall be provided on the open sides and ends of each landing.
(xiii) Riser height shall be uniform, within 1/4 inch, (0.6 cm) for each flight of stairs. Greater variations in riser height are allowed for the top and bottom steps of the entire system, not for each flight of stairs.
(xiv) Tread depth shall be uniform, within 1/4 inch, for each flight of stairs.
(5) Ramps and walkways.
(i) Ramps and walkways 6 feet (1.8 m) or more above lower levels shall have guardrail systems which comply with subpart M of this part—Fall Protection;
(ii) No ramp or walkway shall be inclined more than a slope of one (1) vertical to three (3) horizontal (20 degrees above the horizontal).
(iii) If the slope of a ramp or a walkway is steeper than one (1) vertical in eight (8) horizontal, the ramp or walkway shall have cleats not more than fourteen (14) inches (35 cm) apart which are securely fastened to the steel plates/gratings to provide footing.
(6) Integral prefabricated scaffold access frames shall:
(i) Be specifically designed and constructed for use as ladder rungs;
(ii) Have a rung length of at least 8 inches (20 cm);
(iii) Not be used as work platforms when rungs are less than 11 1/2 inches in length, unless each affected employee uses fall protection, or a positioning device
(iv) Be uniformly spaced within each frame section;
(v) Be provided with rest platforms at 35-foot (10.7 m) maximum vertical intervals on all supported scaffolds more than 35 feet (10.7 m) high; and
(vi) Have a maximum spacing between rungs of 16 3/4 inches (43 cm). Non-uniform rung spacing caused by joining end frames together is allowed, provided the resulting spacing does not exceed 16 3/4 inches (43 cm).
(7) Steps and rungs of ladder and stairway type access shall line up vertically with each other between rest platforms.
(8) Direct access to or from another surface shall be used only when the scaffold is not more than 14 inches (36 cm) horizontally and not more than 24 inches (61 cm) vertically from the other surface.
(9) Effective September 2, 1997, access for employees erecting or dismantling supported scaffolds shall be in accordance with the following:

(i) The employer shall provide safe means of

access for each employee erecting or dismantling a scaffold where the provision of safe access is feasible and does not create a greater hazard. The employer shall have a competent person determine whether it is feasible or would pose a greater hazard to provide, and have employees use a safe means of access. This determination shall be based on site conditions and the type of scaffold being erected or dismantled.

(ii) Hook-on or attachable ladders shall be installed as soon as scaffold erection has progressed to a point that permits safe installation and use.

(iii) When erecting or dismantling tubular welded frame scaffolds, (end) frames, with horizontal members that are parallel, level and are not more than 22 inches apart vertically may be used as climbing devices for access, provided they are erected in a manner that creates a usable ladder and provides good hand hold and foot space.

(iv) Cross braces on tubular welded frame scaffolds shall not be used as a means of access or egress.

(f) Use

(1) Scaffolds and scaffold components shall not be loaded in excess of their maximum intended loads or rated capacities, whichever is less.

(2) The use of shore or lean-to scaffolds is prohibited.

(3) Scaffolds and scaffold components shall be inspected for visible defects by a competent person before each work shift, and after any occurrence which could affect a scaffold's structural integrity.

(4) Any part of a scaffold damaged or weakened such that its strength is less than that required by paragraph (a) of this section shall be immediately repaired or replaced, braced to meet those provisions, or removed from service until repaired.

(5) Scaffolds shall not be moved horizontally while employees are on them.

(6) The clearance between scaffolds and power lines shall be as follows: Scaffolds shall not be erected, used, dismantled, altered, or moved such that they or any conductive material handled on them might come closer to exposed and energized power lines than as follows:

Insulated lines voltage	Minimum distance	Alternatives
Less than 300 volts ..... 300 volts to 50 kv..... More than 50 kv	3 feet (0.9 M). 10 feet (3.1 m) 10 feet (3.1 M) plus .4 inches (1.0 cm) for each 1 kv over 50 kv.	2 times the length of the line insulator, but never less than 10 feet (3.1 m).
Uninsulated lines voltage	**Minimum distance**	**Alternatives**
Less than 50 kv ..... More than 50 kv	10 feet (3.1 M). 10 feet (3.1 M) plus .4 inches (1.0 cm) for each 1 kv over 50 kv.	2 times the length of the line insulator, but never less than 10 feet (3.1 m).

Exception to paragraph (f)(6): Scaffolds and materials may be closer to power lines than specified above where such clearance is necessary for performance of work, and only after the utility company, or electrical system operator, has been notified of the need to work closer and the utility company, or electrical system operator, has deenergized the lines, relocated the lines, or installed protective coverings to prevent accidental contact with the lines.

(7) Scaffolds shall be erected, moved, dismantled, or altered only under the supervision and direction of a competent person qualified in scaffold erection, moving, dismantling or alteration. Such activities shall be performed only by experienced and trained employees selected for such work by the competent person.

(8) Employees shall be prohibited from working on scaffolds covered with snow, ice, or other slippery material except as necessary for removal of such materials.

(9) Where swinging loads are being hoisted onto or near scaffolds such that the loads might contact the scaffold, tag lines or equivalent measures to control the loads shall be used.

(10) Suspension ropes supporting adjustable suspension scaffolds shall be of a diameter large enough to provide sufficient surface area for the functioning of brake and hoist mechanisms.

(11) Suspension ropes shall be shielded from heat-producing processes. When acids or other corrosive substances are used on a scaffold, the ropes shall be shielded, treated to protect against the corrosive substances, or shall be of a material that will not be damaged by the substance being used.

(12) Work on or from scaffolds is prohibited during storms or high winds unless a competent person has determined that it is safe for employees to be on the scaffold and those employees are protected by a personal fall arrest system or wind screens. Wind screens shall not be used unless the scaffold is secured against the anticipated wind forces imposed.

(13) Debris shall not be allowed to accumulate on platforms.

(14) Makeshift devices, such as but not limited to boxes and barrels, shall not be used on top of scaffold platforms to increase the working level height of employees.

(15) Ladders shall not be used on scaffolds to increase the working level height of employees, except on large area scaffolds where employers have satisfied the following criteria:

(i) When the ladder is placed against a structure which is not a part of the scaffold, the scaffold shall be secured against the sideways thrust exerted by the ladder;

(ii) The platform units shall be secured to the scaffold to prevent their movement;

(iii) The ladder legs shall be on the same platform or other means shall be provided to stabilize the ladder against unequal platform deflection, and

(iv) The ladder legs shall be secured to prevent them from slipping or being pushed off the platform.

(16) Platforms shall not deflect more than 1/60 of the span when loaded.

(17) To reduce the possibility of welding current arcing through the suspension wire rope when performing welding from suspended scaffolds, the following precautions shall be taken, as applicable:

(i) An insulated thimble shall be used to attach each suspension wire rope to its hanging support (such as cornice hook or outrigger). Excess suspension wire rope and any additional independent lines from grounding shall be insulated;

(ii) The suspension wire rope shall be covered with insulating material extending at least 4 feet (1.2 m) above the hoist. If there is a tail line below the hoist, it shall be insulated to prevent contact with the platform. The portion of the tail line that hangs free below the scaffold shall be guided or retained, or both, so that it does not become

grounded;
(iii) Each hoist shall be covered with insulated protective covers;
(iv) In addition to a work lead attachment required by the welding process, a grounding conductor shall be connected from the scaffold to the structure. The size of this conductor shall be at least the size of the welding process work lead, and this conductor shall not be in series with the welding process or the work piece;
(v) If the scaffold grounding lead is disconnected at any time, the welding machine shall be shut off; and
(vi) An active welding rod or uninsulated welding lead shall not be allowed to contact the scaffold or its suspension system.

(g) Fall protection.

(1) Each employee on a scaffold more than 10 feet (3.1 m) above a lower level shall be protected from falling to that lower level. Paragraphs (g)(1) (i) through (vii) of this section establish the types of fall protection to be provided to the employees on each type of scaffold. Paragraph (g)(2) of this section addresses fall protection for scaffold erectors and dismantlers.
Note to paragraph (g)(1): The fall protection requirements for employees installing suspension scaffold support systems on floors, roofs, and other elevated surfaces are set forth in subpart M of this part.
(i) Each employee on a boatswains' chair, catenary scaffold, float scaffold, needle beam scaffold, or ladder jack scaffold shall be protected by a personal fall arrest system;
(ii) Each employee on a single-point or two-point adjustable suspension scaffold shall be protected by both a personal fall arrest system and guardrail system;
(iii) Each employee on a crawling board (chicken ladder) shall be protected by a personal fall arrest system, a guardrail system (with minimum 200 pound toprail capacity), or by a three-fourth inch (1.9 cm) diameter grabline or equivalent handhold securely fastened beside each crawling board;
(iv) Each employee on a self-contained adjustable scaffold shall be protected by a guardrail system (with minimum 200 pound toprail capacity) when the platform is supported by the frame structure, and by both a personal fall arrest system and a guardrail system (with minimum 200 pound toprail capacity) when the platform is supported by ropes;
(v) Each employee on a walkway located within a scaffold shall be protected by a guardrail system (with minimum 200 pound toprail capacity) installed within 9 1/2 inches (24.1 cm) of and along at least one side of the walkway.
(vi) Each employee performing overhand bricklaying operations from a supported scaffold shall be protected from falling from all open sides and ends of the scaffold (except at the side next to the wall being laid) by the use of a personal fall arrest system or guardrail system (with minimum 200 pound toprail capacity).
(vii) For all scaffolds not otherwise specified in paragraphs (g)(1)(i) through (g)(1)(vi) of this section, each employee shall be protected by the use of personal fall arrest systems or guardrail systems meeting the requirements of paragraph (g)(4) of this section.
(2) Effective September 2, 1997, the employer shall have a competent person determine the feasibility and safety of providing fall protection for employees erecting or dismantling supported scaffolds. Employers are required to provide fall protection for employees erecting or dismantling supported scaffolds where the installation and use of such protection is feasible and does not create a greater hazard.
(3) Personal fall arrest systems used on scaffolds shall be attached by

lanyard to a vertical lifeline, horizontal lifeline, or scaffold structural member. Vertical lifelines shall not be used when overhead components, such as overhead protection or additional platform levels, are part of a single-point or two-point adjustable suspension scaffold.

(i) When vertical lifelines are used, they shall be fastened to a fixed safe point of anchorage, shall be independent of the scaffold, and shall be protected from sharp edges and abrasion. Safe points of anchorage include structural members of buildings, but do not include standpipes, vents, other piping systems, electrical conduit, outrigger beams, or counterweights.

(ii) When horizontal lifelines are used, they shall be secured to two or more structural members of the scaffold, or they may be looped around both suspension and independent suspension lines (on scaffolds so equipped) above the hoist and brake attached to the end of the scaffold. Horizontal lifelines shall not be attached only to the suspension ropes.

(iii) When lanyards are connected to horizontal lifelines or structural members on a single-point or two-point adjustable suspension scaffold, the scaffold shall be equipped with additional independent support lines and automatic locking devices capable of stopping the fall of the scaffold in the event one or both of the suspension ropes fail. The independent support lines shall be equal in number and strength to the suspension ropes.

(iv) Vertical lifelines, independent support lines, and suspension ropes shall not be attached to each other, nor shall they be attached to or use the same point of anchorage, nor shall they be attached to the same point on the scaffold or personal fall arrest system.

(3) Guardrail systems installed to meet the requirements of this section shall comply with the following provisions (guardrail systems built in accordance with Appendix A to this subpart will be deemed to meet the requirements of paragraphs (g)(4) (vii), (viii), and (ix) of this section):

(i) Guardrail systems shall be installed along all open sides and ends of platforms. Guardrail systems shall be installed before the scaffold is released for use by employees other than erection/dismantling crews.

(ii) The top edge height of toprails or equivalent member on supported scaffolds manufactured or placed in service after January 1, 2000 shall be installed between 38 inches (0.97 m) and 45 inches (1.2 m) above the platform surface. The top edge height on supported scaffolds manufactured and placed in service before January 1, 2000, and on all suspended scaffolds where both a guardrail and a personal fall arrest system are required shall be between 36 inches (0.9 m) and 45 inches (1.2 m). When conditions warrant, the height of the top edge may exceed the 45-inch height, provided the guardrail system meets all other criteria of paragraph (g)(4).

(iii) When midrails, screens, mesh, intermediate vertical members, solid panels, or equivalent structural members are used, they shall be installed between the top edge of the guardrail system and the scaffold platform.

(iv) When midrails are used, they shall be installed at a height approximately midway between the top edge of the guardrail system and the platform surface.

(v) When screens and mesh are used, they shall extend from the top edge of the guardrail system to the scaffold platform, and along the entire opening between the supports.

(vi) When intermediate members (such as balusters or additional rails) are used, they shall not be more than 19 inches (48 cm) apart.

(vii) Each toprail or equivalent member of a guardrail system shall be capable of withstanding, without failure, a force applied in any downward or horizontal direction at any

point along its top edge of at least 100 pounds (445 n) for guardrail systems installed on single-point adjustable suspension scaffolds or two-point adjustable suspension scaffolds, and at least 200 pounds (890 n) for guardrail systems installed on all other scaffolds.

(viii) When the loads specified in paragraph (g)(4)(vii) of this section are applied in a downward direction, the top edge shall not drop below the height above the platform surface that is prescribed in paragraph (g)(4)(ii) of this section.

(ix) Midrails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members of a guardrail system shall be capable of withstanding, without failure, a force applied in any downward or horizontal direction at any point along the midrail or other member of at least 75 pounds (333 n) for guardrail systems with a minimum 100 pound toprail capacity, and at least 150 pounds (666 n) for guardrail systems with a minimum 200 pound toprail capacity.

(x) Suspension scaffold hoists and non-walk-through stirrups may be used as end guardrails, if the space between the hoist or stirrup and the side guardrail or structure does not allow passage of an employee to the end of the scaffold.

(xi) Guardrails shall be surfaced to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.

(xii) The ends of all rails shall not overhang the terminal posts except when such overhang does not constitute a projection hazard to employees.

(xiii) Steel or plastic banding shall notbe used as a toprail or midrail.

(xiv) Manila or plastic (or other synthetic) rope being used for toprails or midrails shall be inspected by a competent person as frequently as necessary to ensure that it continues to meet the strength requirements of paragraph (g) of this section.

(xv) Crossbracing is acceptable in place of a midrail when the crossing point of two braces is between 20 inches (0.5 m) and 30 inches (0.8 m) above the work platform or as a toprail when the crossing point of two braces is between 38 inches (0.97 m) and 48 inches (1.3 m) above the work platform. The end points at each upright shall be no more than 48 inches (1.3 m) apart.

(h) Falling object protection.

(1) In addition to wearing hardhats each employee on a scaffold shall be provided with additional protection from falling hand tools, debris, and other small objects through the installation of toeboards, screens, or guardrail systems, or through the erection of debris nets, catch platforms, or canopy structures that contain or deflect the falling objects. When the falling objects are too large, heavy or massive to be contained or deflected by any of the above-listed measures, the employer shall place such potential falling objects away from the edge of the surface from which they could fall and shall secure those materials as necessary to prevent their falling.

(2) Where there is a danger of tools, materials, or equipment falling from a scaffold and striking employees below, the following provisions apply:

(i) The area below the scaffold to which objects can fall shall be barricaded, and employees shall not be permitted to enter the hazard area;or

(ii) A toeboard shall be erected along the edge of platforms more than 10 feet (3.1 m) above lower levels for a distance sufficient to protect employees below.

(iii) Where tools, materials, or equipment are piled to a height higher than the top edge of the toeboard, paneling or screening extending from the toeboard or platform to the top of

the guardrail shall be erected for a distance sufficient to protect employees below; or

(iv) A guardrail system shall be installed with openings small enough to prevent passage of potential falling objects; or

(v) A canopy structure, debris net, or catch platform strong enough to withstand the impact forces of the potential falling objects shall be erected over the employees below.

(3) Canopies, when used for falling object protection, shall comply with the following criteria:

(i) Canopies shall be installed between the falling object hazard and the employees.

(ii) When canopies are used on suspension scaffolds for falling object protection, the scaffold shall be equipped with additional independent support lines equal in number to the number of points supported, and equivalent in strength to the strength of the suspension ropes.

(iii) Independent support lines and suspen- sion ropes shall not be attached to the same points of anchorage.

(4) Where used, toeboards shall be:

(i) Capable of withstanding, without failure, a force of at least 50 pounds (222 n) applied

in any downward or horizontal direction at any point along the toeboard (toeboards built in accordance with Appendix A to this subpart will be deemed to meet this require- ment); and

(ii) At least three and one-half inches (9 cm) high from the top edge of the toeboard to the level of the walking/ working surface. Toeboards shall be securely fastened in place at the outermost edge of the platform and have not more than 1/4 inch (0.7 cm) clearance above the walking/working sur- face. Toeboards shall be solid or with open- ings not over one inch (2.5 cm) in the great- est dimension.

Additional requirements applicable to specific types of scaffolds.

(a) Tube and coupler scaffolds.

(1) When platforms are being moved to the next level, the existing platform shall be left undisturbed until the new bearers have been set in place and braced prior to receiving the new platforms.

(2) Transverse bracing forming an "X" across the width of the scaffold shall be installed at the scaffold ends and at least at every third set of posts horizontally (measured from only one end) and every fourth runner vertically. Bracing shall extend diagonally from the inner or outer posts or runners upward to the next outer or inner posts or runners. Building ties shall be installed at the bearer levels between the transverse bracing

(3) On straight run scaffolds, longitudinal bracing across the inner and outer rows of posts shall be installed diagonally in both directions, and shall extend from the base of the end posts upward to the top of the scaf- fold at approximately a 45 degree angle. On scaffolds whose length is greater than their height, such bracing shall be repeated beginning at least at every fifth post. On scaffolds whose length is less than their height, such bracing shall be installed from the base of the end posts upward to the opposite end posts, and then in alternating directions until reaching the top of the scaf- fold. Bracing shall be installed as close as possible to the intersection of the bearer and post or runner and post.

(4) Where conditions preclude the attach- ment of bracing to posts, bracing shall be attached to the runners as close to the post as possible.

(5) Bearers shall be installed transversely between posts, and when coupled to the posts, shall have the inboard coupler bear directly on the runner coupler. When the bearers are coupled to the runners, the couplers shall be as close to the posts as possible.

(6) Bearers shall extend beyond the posts and runners, and shall provide full contact with the coupler.

(7) Runners shall be installed along the length of the scaffold, located on both the inside and outside posts at level heights (when tube and coupler guardrails and midrails are used on outside posts, they may be used in lieu of outside runners).

(8) Runners shall be interlocked on straight runs to form continuous lengths, and shall be coupled to each post. The bottom runners and bearers shall be located as close to the base as possible.

(9) Couplers shall be of a structural metal, such as drop-forged steel, malleable iron, or structural grade aluminum. The use of gray cast iron is prohibited.

(10) Tube and coupler scaffolds over 125 feet (38 m) in height shall be designed by a regis- tered professional engineer, and shall be constructed and loaded in accordance with such design. Non-mandatory Appendix A to this subpart contains examples of criteria that will enable an employer to comply with design and loading requirements for tube and coupler scaffolds under 125 feet (38 m) in height.

(b) Fabricated frame scaffolds (tubular welded frame scaffolds).

(1) When moving platforms to the next level, the existing platform shall be left undisturbed until the new end frames have been set in place and braced prior to receiving the new platforms.

(2) Frames and panels shall be braced by cross, horizontal, or diagonal braces, or combination thereof, which secure vertical members together laterally. The cross braces shall be of such length as will automatically square and align vertical members so that the erected scaffold is always plumb, level, and square. All brace connections shall be secured.

(3) Frames and panels shall be joined to- gether vertically by coupling or stacking pins or equivalent means.

(4) Where uplift can occur which would displace scaffold end frames or panels, the frames or panels shall be locked together vertically by pins or equivalent means.

(5) Brackets used to support cantilevered loads shall:

(i) Be seated with side-brackets parallel to the frames and end-brackets at 90 degrees to the frames;

(ii) Not be bent or twisted from these positions; and

(c) Be used only to support personnel, unless the scaffold has been designed for other loads by a qualified engineer and built to withstand the tipping forces caused by those other loads being placed on the bracket-supported section of the scaffold. **(6)** Scaffolds over 125 feet (38.0 m) in height above their base plates shall be designed by a registered professional engineer, and shall be constructed and loaded in accordance with such design.

Plasterers', decorators', and large area scaffolds. Scaffolds shall be constructed in accordance with paragraphs (a), (b), or (c) of this section, as appropriate.

(d) Bricklayers' square scaffolds (squares).

(1) Diagonal braces shall be installed on all sides of each square.

(2) Diagonal braces shall be installed be- tween squares on the rear and front sides of the scaffold, and shall extend from the bot- tom of each square to the top of the next square.

(3) Scaffolds shall not exceed three tiers in height, and shall be so constructed and arranged that one square rests directly above the other. The upper tiers shall stand on a continuous row of steel plates/gratings laid across the next lower tier, and shall be nailed down or otherwise secured to prevent displacement.

(e)Horse scaffolds.

(1) Scaffolds shall not be constructed or

arranged more than two tiers or 10 feet (3.0 m) in height, whichever is less.

(2) When horses are arranged in tiers, each horse shall be placed directly over the horse in the tier below.

(3) When horses are arranged in tiers, the legs of each horse shall be nailed down or otherwise secured to prevent displacement.

(4) When horses are arranged in tiers, each tier shall be cross braced.

(f) Form scaffolds and carpenters' bracket scaffolds.

(1) Each bracket shall be attached to the supporting formwork or structure by means of one or more of the following:

A metal stud attachment device; welding; hooking over a secured structural supporting member, with the form wales either bolted to the form or secured by snap ties or tie bolts extending through the form and securely anchored; or, for carpenters' bracket scaffolds only, by a bolt extending through to the opposite side of the structure's wall.

(2) Metal bracket-form scaffolds shall be an integral part of the form panel.

(3) Folding type metal brackets, when extended for use, shall be either bolted or secured with a locking-type pin.

(g) Roof bracket scaffolds.

(1) Scaffold brackets shall be constructed to fit the pitch of the roof and shall provide a level support for the platform.

(2) Brackets (including those provided with pointed metal projections) shall be anchored in place by nails unless it is impractical to use nails. When nails are not used, brackets shall be secured in place with first-grade manila rope of at least three-fourth inch (1.9 cm) diameter, or equivalent.

(i) Outrigger scaffolds.

(1) The inboard end of outrigger beams, measured from the fulcrum point to the extreme point of anchorage, shall be not less than one and one-half times the out- board end in length.

(2) Outrigger beams fabricated in the shape of an I-beam or channel shall be placed so that the web section is vertical.

(3) The fulcrum point of outrigger beams shall rest on secure bearings at least 6 inches (15.2 cm) in each horizontal dimension.

(4) Outrigger beams shall be secured in place against movement, and shall be securely braced at the fulcrum point against tipping.

(5) The inboard ends of outrigger beams. shall be securely anchored either by means of braced struts bearing against sills in contact with the overhead beams or ceiling, or by means of tension members secured to the floor joists underfoot, or by both.

(6) The entire supporting structure shall be securely braced to prevent any horizontal movement.

(7) To prevent their displacement, platform units shall be nailed, bolted, or otherwise secured to outriggers.

(8) Scaffolds and scaffold components shall be designed by a registered professional engineer and shall be constructed and loaded in accordance with such design.

(j) Pump jack scaffolds.

(1) Pump jack brackets, braces, and accessories shall be fabricated from metal plates and angles. Each pump jack bracket shall have two positive gripping mechanisms to prevent any failure or slippage.

(2) Poles shall be secured to the structure by rigid triangular bracing or equivalent at the bottom, top, and other points as necessary. When the pump jack has to pass bracing already installed, an additional brace shall be installed approximately 4 feet (1.2 m) above the brace to be passed, and shall be left in place until the pump jack has been moved and the original brace reinstalled.

(3) When guardrails are used for fall protection, a workbench may be used as the toprail only

(4) Work benches shall not be used as scaffold platforms.

(k) Ladder jack scaffolds.

(1) Platforms shall not exceed a height of 20 feet (6.1 m).
(2) All ladders used to support ladder jack scaffolds shall meet the requirements of subpart X of this part— Stairways and Ladders, except that job-made ladders shall not be used to support ladder jack scaffolds.
(3) The ladder jack shall be so designed and constructed that it will bear on the side rails and ladder rungs or on the ladder rungs alone. If bearing on rungs only, the bearing area shall include a length of at least 10 inches (25.4 cm) on each rung.
(4) Ladders used to support ladder jacks shall be placed, fastened, or equipped with devices to prevent slipping.
(5) Scaffold platforms shall not be bridged one to another.

(l) Window jack scaffolds.

(1) Scaffolds shall be securely attached to the window opening.
(2) Scaffolds shall be used only for the purpose of working at the window opening through which the jack is placed.
(3) Window jacks shall not be used to support steel plates/gratings placed between one window jack and another, or for other elements of scaffolding.

(m) Crawling boards (chicken ladders).

(1) Crawling boards shall extend from the roof peak to the eaves when used in connection with roof construction, repair, or maintenance.
(2) Crawling boards shall be secured to the roof by ridge hooks or by means that meet equivalent criteria (e.g., strength and durability).

(n) Step, platform, and trestle ladder scaffolds.

(1) Scaffold platforms shall not be placed any higher than the second highest rung or step of the ladder supporting the platform.
(2) All ladders used in conjunction with step, platform and trestle ladder scaffolds shall meet the pertinent requirements of subpart X of this part— Stairways and Ladders, except that job-made ladders shall not be used to support such scaffolds.
(3) Ladders used to support step, platform, and trestle ladder scaffolds shall be placed, fastened, or equipped with devices to prevent slipping.
(4) Scaffolds shall not be bridged one to another.

(o) Single-point adjustable suspension scaffolds.

(1) When two single-point adjustable suspension scaffolds are combined to form a two-point adjustable suspension scaffold, the resulting two-point scaffold shall comply with the requirements for two-point adjustable suspension scaffolds in paragraph (p) of this section.
(2) The supporting rope between the scaffold and the suspension device shall be kept vertical unless all of the following conditions are met:
(i) The rigging has been designed by a qualified person, and
(ii) The scaffold is accessible to rescuers, and
(iii) The supporting rope is protected to ensure that it will not chafe at any point where a change in direction occurs, and
(iv) The scaffold is positioned so that swinging cannot bring the scaffold into contact with another surface.
(3) Boatswains' chair tackle shall consist of correct size ball bearings or bushed blocks containing safety hooks and properly "eye-spliced" minimum five-eighth (5 ¤8) inch

(1.6 cm) diameter first-grade manila rope, or other rope which will satisfy the criteria (e.g., strength and durability) of manila rope.
(4) Boatswains' chair seat slings shall be reeved through four corner holes in the seat; shall cross each other on the underside of the seat; and shall be rigged so as to prevent slippage which could cause an out-of-level condition.
(5) Boatswains' chair seat slings shall be a minimum of five-eight (5/8) inch (1.6 cm) diameter fiber, synthetic, or other rope which will satisfy the criteria (e.g., strength, slip resistance, durability, etc.) of first grade manila rope.
(6) When a heat-producing process such as gas or arc welding is being conducted, boatswains' chair seat slings shall be a minimum of three-eight (3/8) inch (1.0 cm) wire rope.

(p) Two-point adjustable suspension scaffolds (swing stages).

The following requirements do not apply to two-point adjustable suspension scaffolds used as masons' or stonesetters' scaffolds. Such scaffolds are covered by paragraph (q) of this section.
(1) Platforms shall not be more than 36 inches (0.9 m) wide unless designed by a qualified person to prevent unstable conditions.
(2) The platform shall be securely fastened to hangers (stirrups) by U-bolts or by other means
(3) The blocks for fiber or synthetic ropes shall consist of at least one double and one single block. The sheaves of all blocks shall fit the size of the rope used.
(4) Platforms shall be of the ladder-type, steel plates/gratings-type, beam-type, or light-metal type.

Light metal-type platforms having a rated capacity of 750 pounds or less and platforms 40 feet (12.2 m) or less in length shall be tested and listed by a nationally recognized testing laboratory.
(5) Two-point scaffolds shall not be bridged or otherwise connected one to another during raising and lowering operations unless the bridge connections are articulated (attached), and the hoists properly sized.
(6) Passage may be made from one platform to another only when the platforms are at the same height, are abutting, and walk-through stirrups specifically designed for this purpose are used.

(q) Multi-point adjustable suspension scaffolds, stonesetters' multi-point adjustable suspension scaffolds, and masons' multi-point adjustable suspension scaffolds.

(1) When two or more scaffolds are used they shall not be bridged one to another unless they are designed to be bridged, the bridge connections are articulated, and the hoists are properly sized.
(2) If bridges are not used, passage may be made from one platform to another only when the platforms are at the same height and are abutting.
(3) Scaffolds shall be suspended from metal outriggers, brackets, wire rope slings, hooks, or means that meet equivalent criteria (e.g., strength, durability).

(r) Catenary scaffolds.

(1) No more than one platform shall be placed between consecutive vertical pick-ups, and no more than two platforms shall be used on a catenary scaffold.
(2) Platforms supported by wire ropes shall have hook-shaped stops on each end of the platforms to prevent them from slipping off the wire ropes. These hooks shall be so

placed that they will prevent the platform from falling if one of the horizontal wire ropes breaks.
(3) Wire ropes shall not be tightened to the extent that the application of a scaffold load will overstress them.
(4) Wire ropes shall be continuous and without splices between anchors.

(s) Float (ship) scaffolds.

(1) The platform shall be supported by a minimum of two bearers, each of which shall project a minimum of 6 inches (15.2 cm) beyond the platform on both sides. Each bearer shall be securely fastened to the platform.
(2) Rope connections shall be such that the platform cannot shift or slip.
(3) When only two ropes are used with each float:
(i) They shall be arranged so as to provide four ends which are securely fastened to overhead supports.
(ii) Each supporting rope shall be hitched around one end of the bearer and pass under the platform to the other end of the bearer where it is hitched again, leaving sufficient rope at each end for the supporting ties.

(t) Interior hung scaffolds.

(1) Scaffolds shall be suspended only from the roof structure or other structural member such as ceiling beams.
(2) Overhead supporting members (roof structure, ceiling beams, or other structural members) shall be inspected and checked for strength before the scaffold is erected. **(3)** Suspension ropes and cables shall be connected to the overhead supporting members by shackles, clips, thimbles, or other means that meet equivalent criteria (e.g., strength, durability).
(u) Needle beam scaffolds.
(1) Scaffold support beams shall be installed on edge.
(2) Ropes or hangers shall be used for supports, except that one end of a needle beam scaffold may be supported by a permanent structural member.
(3) The ropes shall be securely attached to the needle beams.
(4) The support connection shall be arranged so as to prevent the needle beam from rolling or becoming displaced.
(5) Platform units shall be securely attached to the needle beams by bolts or equivalent means. Cleats and overhang are not considered to be adequate means of attachment.

(v) Multi-level suspended scaffolds.

(1) Scaffolds shall be equipped with additional independent support lines, equal in number to the number of points supported, and of equivalent strength to the suspension ropes, and rigged to support the scaffold in the event the suspension rope(s) fail.
(2) Independent support lines and suspension ropes shall not be attached to the same points of anchorage.
(3) Supports for platforms shall be attached directly to the support stirrup and not to any other platform.

(w) Mobile scaffolds.

(1) Scaffolds shall be braced by cross, horizontal, or diagonal braces, or combination thereof, to prevent racking or collapse of the scaffold and to secure vertical members together laterally so as to automatically square and align the vertical members. Scaffolds shall be plumb, level, and squared. All brace connections shall be secured.
(i) Scaffolds constructed of tube and coupler components shall also comply with the requirements of paragraph (b) of this section;
(ii) Scaffolds constructed of fabricated frame components shall also comply with the

requirements of paragraph (c) of this section.
(2) Scaffold casters and wheels shall be locked with positive wheel and/or wheel and swivel locks, or equivalent means, to prevent movement of the scaffold while the scaffold is used in a stationary manner.
(3) Manual force used to move the scaffold shall be applied as close to the base as practicable, but not more than 5 feet (1.5 m) above the supporting surface.
(4) Power systems used to propel mobile scaffolds shall be designed for such use. Forklifts, trucks, similar motor vehicles or add-on motors shall not be used to propel scaffolds unless the scaffold is designed for such propulsion systems.
(5) Scaffolds shall be stabilized to prevent tipping during movement.
(6) Employees shall not be allowed to ride on scaffolds unless the following conditions exist:
(i) The surface on which the scaffold is being moved is within 3 degrees of level, and free of pits, holes, and obstructions;
(ii) The height to base width ratio of the scaffold during movement is two to one or less.
(iii) Outrigger frames, when used, are installed on both sides of the scaffold;
(iv) When power systems are used, the propelling force is applied directly to the wheels, and does not produce a speed in excess of 1 foot per second (0.3 m/s); and **(v)** No employee is on any part of the scaffold which extends outward beyond the wheels, casters, or other supports.
(7) Platforms shall not extend outward beyond the base supports of the scaffold unless outrigger frames or equivalent devices are used to ensure stability.
(8) Where leveling of the scaffold is necessary, screw jacks or equivalent means shall be used.
(9) Caster stems and wheel stems shall be pinned or otherwise secured in scaffold legs or adjustment screws.
(10) Before a scaffold is moved, each employee on the scaffold shall be made aware of the move.

(x) Repair bracket scaffolds.

(1) Brackets shall be secured in place by at least one wire rope at least 1/2 inch (1.27 cm) in diameter.
(2) Each bracket shall be attached to the securing wire rope (or ropes) by a positive locking device capable of preventing the unintentional detachment of the bracket from the rope, or by equivalent means.
(3) Each bracket, at the contact point between the supporting structure and the bottom of the bracket, shall be provided with a shoe (heel block or foot) capable of preventing the lateral movement of the bracket.
(4) Platforms shall be secured to the brackets in a manner that will prevent the separation of the platforms from the brackets and the movement of the platforms or the brackets on a completed scaffold.
(5) When a wire rope is placed around the structure in order to provide a safe anchorage for personal fall arrest systems used by employees erecting or dismantling scaffolds, the wire rope shall meet the requirements of subpart M of this part, but shall be at least 5 /16 inch (0.8 cm) in diameter.
(6) Each wire rope used for securing brackets in place or as an anchorage for personal fall arrest systems shall be protected from damage due to contact with edges, corners, protrusions, or other discontinuities of the supporting structure or scaffold components.
(7) Tensioning of each wire rope used for securing brackets in place or as an anchorage for personal fall arrest systems shall be by means of a turnbuckle at least 1 inch

(2.54 cm) in diameter, or by equivalent means.

(8) Each turnbuckle shall be connected to the other end of its rope by use of an eyesplice thimble of a size appropriate to the turnbuckle to which it is attached.

(9) U-bolt wire rope clips shall not be used on any wire rope used to secure brackets or to serve as an anchor for personal fall arrest systems.

(10) The employer shall ensure that materials shall not be dropped to the outside of the supporting structure.

(11) Scaffold erection shall progress in only one direction around any structure.

(y) Stilts. Stilts, when used, shall be used in accordance with the following requirements:

(1) An employee may wear stilts on a scaffold only if it is a large area scaffold.

(2) When an employee is using stilts on a large area scaffold where a guardrail system is used to provide fall protection, the guard-rail system shall be increased in height by an amount equal to the height of the stilts being used by the employee.

(3) Surfaces on which stilts are used shall be flat and free of pits, holes and obstructions, such as debris, as well as other trip- ping and falling hazards.

(4) Stilts shall be properly maintained. Any alteration of the original equipment shall be approved by the manufacturer.

1. General Guidelines and Tables

Maximum intended nominal load (Kg/m^2)	Maximum permissible span
122.....	10
244.....	8
366.....	6

(a) Fabricated steel platforms may be used in lieu of steel plates/gratings. Maximum spans for such units shall be as recommended by the manufacturer based on the maximum intended load being calculated as follows

Rated load capacity	Intended load
Light-duty	• 122 Kg/m^2 applied uniformly over the entire span area
Medium-duty	• 244 Kg/m^2 applied uniformly over the entire span area.
Heavy-duty	• 366 Kg/m^2 applied uniformly over the entire span area.
One-person	• 113.4 Kg placed at the center of the span (total 113.4 Kg).
Two-person	• 113.4 Kg placed 18 inches (0.46 m) to the left and right of the center of the span (total 226.8 Kg).
Three-person	• 113.4 Kg placed at the center of the span and 113.4 Kg placed 18 inches (0.46 m) to the left and right of the center of the span (total 340.2 Kg).

Note: Platform units used to make scaffold platforms intended for light-duty use shall be capable of supporting at least 122 Kg/m^2 applied uniformly over the entire unit-span area, or a 113.4 Kg point load placed on the unit at the center of the span, whichever load produces the greater shear force.

(b) Guardrails shall be as follows:

(i) Top rails shall be equivalent in strength to

1 1/4 inch × 1/8 inch structural angle iron; or
1 inch × .070 inch wall steel tubing; or
1.990 inch × .058 inch wall aluminum tubing.

(ii) Midrails shall be equivalent in strength to 1 1/4 inch × 1 1/4 inch × 1/8 inch structural angle iron; or
1 inch × .070 inch wall steel tubing; or
1.990 inch ×.058 inch wall aluminum tubing.
(iii) Toeboards shall be equivalent in strength to 1 1/4 inch × 1 1/4 inch structural angle iron; or
1 inch × .070 inch wall steel tubing; or 1.990 inch × .058 inch wall aluminum tubing.
(iv) Posts shall be equivalent in strength to 1 1/4 inch × 1 1/4 inch × 1/8 structural angle iron; or
1 inch × .070 inch wall steel tubing; or
1.990 inch × .058 inch wall aluminum tubing.
(v) Distance between posts shall not exceed 8 feet (2.44 m).
(c) Overhead protection shall consist of 2-inch nominal steel plates
(d) Screens installed between toeboards and midrails or toprails shall consist of No. 18 gauge wire one inch mesh.

Tube and coupler scaffolds.

MINIMUM SIZE OF MEMBERS			
	Light duty	Medium duty	Heavy duty
Maximum intended load	122 Kg/m²	244 Kg/m²	366 Kg/m² .
Posts, runners and braces	Nominal 2 in. (1.90 inches) OD. steel tube or pipe.	Nominal 2 in. (1.90 inches) OD steel tube or pipe.	Nominal 2 in. (1.90 inches) OD steel tube or pipe.
Bearers	Nominal 2 in. (1.90 inches) OD steel tube or pipe and a maximum post spacing of 4 ft. × 10 ft.	Nominal 2 in. (1.90 inches) OD steel tube or pipe and a maximum post spacing of 4 ft. × 7 ft. Nominal 2 1/2 in. (2.375 in.). OD steel tube or pipe and a maximum post spacing of 6 ft. × 8 ft.*.	Nominal 2 1/2 in. (2.375 in.). OD steel tube or pipe and a maximum post spacing of 6 ft. × 6 ft.
Maximum runner spacing vertically	6 ft. 6 in	6 ft. 6 in	6 ft. 6 in.

* Bearers shall be installed in the direction of the shorter dimension.

Note: Longitudinal diagonal bracing shall be installed at an angle of 45° (±5°).

MAXIMUM NUMBER OF PLATFORM LEVELS				
	Maximum number of additional platform levels			Maximum height of scaffold (in m)
	Light duty	Medium duty	Heavy duty	
Number of Working Levels:				
1	16	11	6	38.1
2	11	1	0	38.1
3	6	0	0	38.1
4	1	0	0	38.1

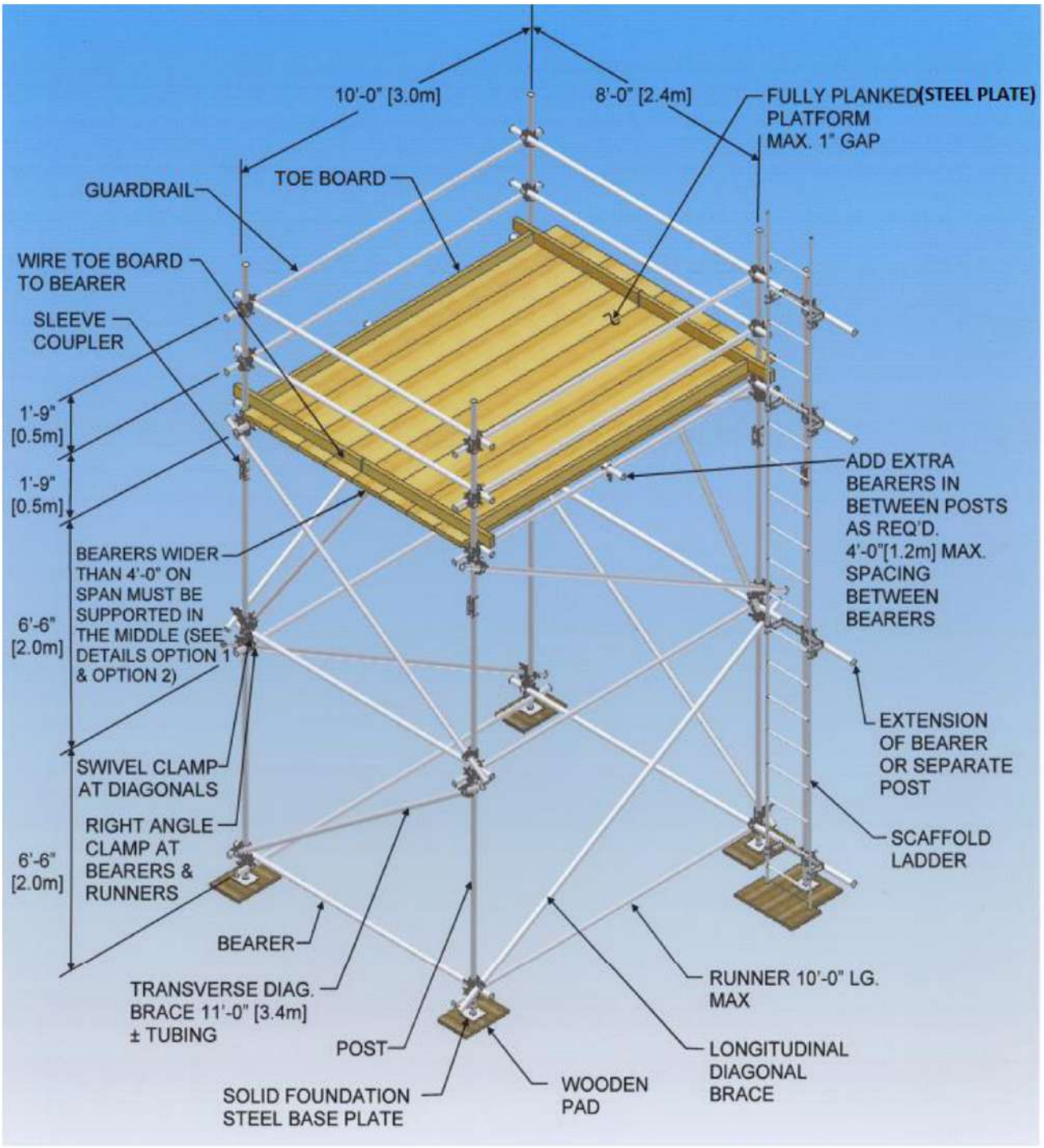
HINDUSTAN ORGANIC CHEMICALS LIMITED

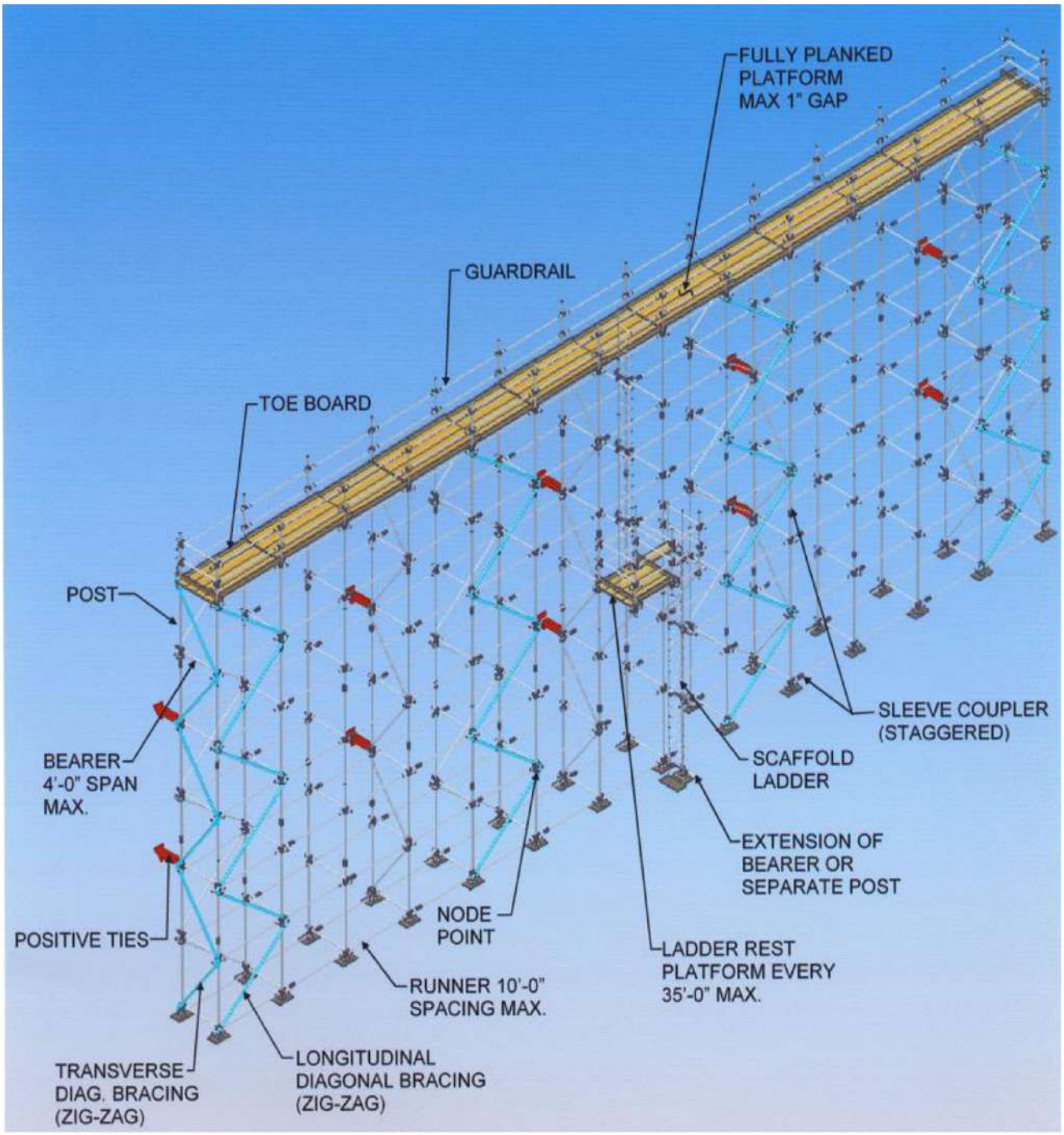
PR 001

SCAFFOLDING PARTS AND ERECTION PROCEDURE

(TUBE & CLAMP)

SEPTEMBER 2023


10'-0" [3.0m]
8'-0" [2.4m]
FULLY PLANKED(STEEL PLATE) PLATFORM MAX. 1" GAP
GUARDRAIL
TOE BOARD
WIRE TOE BOARD TO BEARER
SLEEVE COUPLER
1'-9" [0.5m]
1'-9" [0.5m]
ADD EXTRA BEARERS IN BETWEEN POSTS AS REQ'D. 4'-0"[1.2m] MAX. SPACING BETWEEN BEARERS
BEARERS WIDER THAN 4'-0" ON SPAN MUST BE SUPPORTED IN THE MIDDLE (SEE DETAILS OPTION 1 & OPTION 2)
6'-6" [2.0m]
EXTENSION OF BEARER OR SEPARATE POST
SWIVEL CLAMP AT DIAGONALS
RIGHT ANGLE CLAMP AT BEARERS & RUNNERS
SCAFFOLD LADDER
6'-6" [2.0m]
BEARER
TRANSVERSE DIAG. BRACE 11'-0" [3.4m] ± TUBING
RUNNER 10'-0" LG. MAX
POST
LONGITUDINAL DIAGONAL BRACE
SOLID FOUNDATION STEEL BASE PLATE
WOODEN PAD


FULLY PLANKED
PLATFORM
MAX 1" GAP
GUARDRAIL
TOE BOARD
POST
BEARER
4'-0" SPAN
MAX.
POSITIVE TIES
TRANSVERSE
DIAG. BRACING
(ZIG-ZAG)
LONGITUDINAL
DIAGONAL BRACING
(ZIG-ZAG)
RUNNER 10'-0"
SPACING MAX.
NODE
POINT
LADDER REST
PLATFORM EVERY
35'-0" MAX.
EXTENSION OF
BEARER OR
SEPARATE POST
SCAFFOLD
LADDER
SLEEVE COUPLER
(STAGGERED)

Lay out the mudsills at approximate centers and place base plates on them. The bearer is the name for the tube goes across the scaffold that the boards rest on. The runner goes down the length of the scaffold. Lay these out and stand up the first post. Clamp the runner to the post close to the base. Clamp the bearer on at 90 degrees on top of the runner.

After the first post is upright and runner and bearer attached, the scaffold will be self supporting. Next, attach the other posts at predetermined centers. The bearer always goes on top of the runner for a safety clamp backup effect.

After all four posts are attached, measure the scaffold from inside to inside to insure the corner angles are at 90 degrees (square).

It is a good idea to attach a horizontal diagonal at this time to ensure that the scaffold remains square. Make sure the legs are level and plumb as you go.

After ensuring the first level is properly spaced, square, plumb, and level, you may begin the second level. It is best to have the clamp spacing preset on the horizontal tubes by measuring the spacing with a tape measure. Do not exceed 6'6" to this second level.

Attach the second level bearers and runners. Next, attach the diagonals. Swivel clamps are used to attach these at an approximate 45 degree angle from level to level. All four sides should have diagonal bracing attached.

Put the steel plates/gratings for the second level on the bearers. Once the erector climbs to the second level, he will be exposed to a fall hazard and precautions to be taken

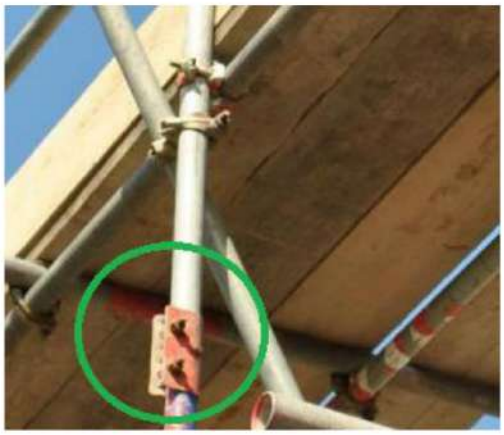
Attach a ladder for access to the second level. Install the guardrails, midrails, and toeboards. Secure the steel plates/gratings to the bearer.

The completed scaffold should be square, rigid, properly diagonally braced, ladders should extend at least to top of handrails, work platforms fully covered with steel plates/gratings, toeboards installed, screening attached where required, guardrails & midrails installed, and all other safety measures met.

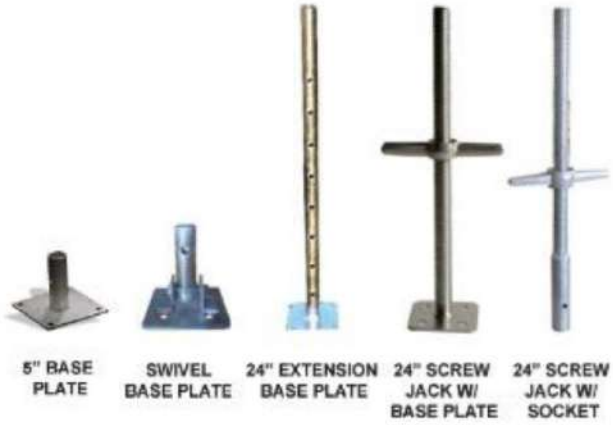
PARTS

The right angle clamp attaches tubes at 90 degrees.

The swivel clamp attaches tubes at various angles. It is used for diagonal braces.



Sleeve Coupler



Outrigger

HINDUSTAN ORGANIC CHEMICALS LIMITED

SCAFFOLD CHECKLIST

Location (Plant):	**Purpose of Scaffold:**	**Erected by (Dept./Contractor):**	
PARTS	**POINTS TO BE CHECKED**	**✓**	**REMARKS**
Sill plate	Provided on lose ground		
Base plate	5" base plate/24" extension base plate/24" screw jack		
	Caster wheels with brake for mobile scaffold		
	Swivel base plate for uneven or angled surface		
Tubes	Uniform/Proper size		
	Straight		
Standard (Post)	Staggered joints (adjacent standards are not joined within the same lift level to prevent tipping)		
	Sleeve couplers (to join two standards (tube type) end to end)		
	Vertical		
Ledger (Runner)	Staggered joints		
	Level		
	Not damaged		
	Bearer placed on top of Ledger		
Bracing	Longitudinal diagonal bracing		
	Transverse diagonal bracing		
	Bracing repeated at every 5th post		
Ladders	Proper angle (75^{o}) or 1:4 base to height ratio		
	Right length		
	Properly secured/Ladder clamp		
	Separate landing		
	Right extension		
Fittings	Right fittings		
	Not damaged		
	Right angle clamps for Bearer and Ledger (tube type)		
Fall protection	Top rail		
	Mid rail		
	Toe guard (Falling object protection)		
Boards (Steel plates/gratings)	Not damaged		
	Not loose		
	Right support		
Any Other Observation			

Verified By

Name: **Designation:** **Signature**