Standard Bidding Document

4841-82708-Design, Supply, Installation, Testing, Commissioning and Operation & Maintenance of 990KWp On-grid Solar PV System at CUI Lahore campus
(Works)

National

Single Stage-Two Envelope

CORRIGENDUM # 1	CORR-P132631-001
Initiation Date	November 13, 2026

November 14, 2026

Comsats University, Islamabad (Lahore Campus) (Comsats University, Islamabad),Additional Registrar Comsats University Islamabad, Defence Road, Lahore., Lahore City, Lahore (District), Lahore Division (Division), Punjab (Province).
Phone: +92-321-432-3437, Email: miqureshi@cuilahore.edu.pk

Table of Contents

REQUEST FOR BIDS 1

Instructions to Bidders 3

Bid Data Sheet 31

Bids Data Sheet (BDS) 32

Eligibility Criteria 37

Evaluation Criteria 38

Jobs/Lots 40

Related Services : 41

Work Specifications and Market Rates 42

Scope of Work 54

Price Schedule 55

General Conditions of Contract 57

Special Conditions of Contract 67

Bid Securing Declaration 72

Contract Form 74

Integrity Pact 77

Performance Guarantee Form 79

Annexure 82

1. DESIGN (ELECTRICAL, irradiance, layout, lightening arresters etc) 83

2. DESIGN (Parking Shed) 83

3. DESIGN (Rooftop structure) 83

4. Specifications and system data checklist 83

5. Engineer Estimate for Solarization of CUI Lahore 83

6. Eligibility & evaluation criteria 1

7. EPADS generated prebid_minutes 84

8. Financial Submission 84

9. Payment schedule 84

Procurement Forms 85

Past Construction Experiences 1

Contractor's Key Personnel Representative and Their Schedules 1

Financial Resources 1

Past Experience and Completed Contracts 1

Historical Contract Non-Performance, and Pending Litigation and Litigation History 1

Current Contracts and Their Progress 1

Financial Capacity and Net Worth Evaluation Form 1

Average Annual Turnover 1

Additional Forms and Documents 89

REQUEST FOR BIDS

PROCUREMENT OF CIVIL WORKS

1. The **Comsats University, Islamabad (Lahore Campus) (Comsats University, Islamabad)** has reserved Funds for the procurement planned for FY **2026-27**. The **Comsats University, Islamabad (Lahore Campus) (Comsats University, Islamabad)** intends to apply part of the proceeds of this Fund to cover eligible payments under the contract for the "**4841-82708-Design, Supply, Installation, Testing, Commissioning and Operation & Maintenance of 990KWp On-grid Solar PV System at CUI Lahore campus**" with the reference of "**P132631**".

2. The **Comsats University, Islamabad (Lahore Campus) (Comsats University, Islamabad)** invites sealed Bids from eligible Bidders for procurement of Works **(4841-82708-Design, Supply, Installation, Testing, Commissioning and Operation & Maintenance of 990KWp On-grid Solar PV System at CUI Lahore campus)** described in the bidding documents on **EPADS v2.0**.

3. **Single Stage-Two Envelope** will be used by adopting **Least Cost Based Selection (LCBS)** Technique for the subject procurement, in line with the Public Procurement Rules, 2026 and any Regulations, Regulatory Guides, Procurement Guidelines or Instructions issued by the Authority from time to time.

4. All Bids must be accompanied by a Bid Security amount described in Bid Security Section in Bidding Document in the form of **Pay Order, Banker's Cheque, Call at Deposit, Bank Guarantee, Demand Draft**. Or all bids must be accompanied by bid securing declaration in the format specified in the Bidding documents

5. E-Bidding documents, containing detailed terms & conditions, specifications and requirements etc. are available on **e-Pak Acquisition and Disposal System (EPADS)** at **https://epads.gov.pk/opportunities/federal/procurements/132631** for all the interested bidders registered on **EPADS v2.0**. Bidders are required to

get themselves registered on **EPADS v2.0** to participate in Bidding process.

6. The e-bids, prepared in accordance with the instructions in the e-Bidding documents, must be submitted through **EPADS v2.0** on or before **Friday, November 20, 2026 02:00 PM**. E-bids will be opened by using **EPADS v2.0** on the same day at **Friday, November 20, 2026 02:30 PM**. Manual submission of Bids shall not be entertained. Those vendor who have not yet registered on the new version of **EPADS v2.0**, may register themselves on **https://vendors.epads.gov.pk/**. A tutorial to explain the registeration process is available at **https://www.youtube.com/watch?v=MNW6T38v7tc.**

In terms of Rules 65 of Public Procurement Rules, 2026 Grievance Redressal Committee (GRC) is notified for the subject procurement and notification copy is available on the procuring agency's website and on Authority's website at (**www.ppra.org.pk**).

Comsats University, Islamabad (Lahore Campus) (Comsats University, Islamabad), Additional Registrar
Comsats University Islamabad, Defence Road, Lahore., Lahore City, Lahore (District), Lahore Division (Division), Punjab (Province).
+92-321-432-3437
miqureshi@cuilahore.edu.pk

Instructions to Bidders

A. INTRODUCTION

1. **Scope of Bid**

1.1. The Procuring agency/Employer (PA), as indicated in the Bid Data Sheet (BDS) invites Bids for the execution of Works as specified in the BDS and Section VI- Works Requirements. The name, identification, and number of lots (contracts) of this National/ International Competitive Bidding process are specified in the BDS.

2. **Source of Funds**

2.1. Source of funds as referred in Clause 2 of Bid Data Sheet.

3. **Eligible Bidders**

3.1. A bidder may be natural person, company or firm or public or semi-public agency of Pakistan or any foreign country, or any combination of them with a formal existing agreement (on Judicial Papers) in the form of a joint venture or consortium. In the case of a joint venture or consortium, all members shall be jointly and severally liable for the execution of the Contract in accordance with the terms and conditions of the Contract. The joint venture or consortium shall nominate a Lead Member as nominated in the BDS, who shall have the authority to conduct all business for and on behalf of any and all the members of the joint venture or consortium during the Bidding process, and in case of award of contract, during the execution of contract. Verifiable copy of the agreement that forms a joint venture, consortium or association shall be required to be submitted as part of the Bid.

Any bid submitted by the joint venture, shall indicate the part of proposed contract to be performed by each party and each party shall be evaluated (or post qualified if required) with respect to its contribution only, and the responsibilities of each party shall not be substantially altered without prior written approval of the Procuring Agency and in line with any instructions issued by the Authority.

(The limit on the number of members of JV or Consortium may be prescribed

in BDS, in accordance with the guidelines issued by the PPRA).

3.2. The invitation for bids is open to all prospective bidders subject to any provisions of incorporation or licensing by the respective national/ international incorporating agency or statutory body established for that particular trade or business. Procuring agencies shall specify the registration/licensing requirements for the foreign bidder keeping in view the requirement of that business.

3.3. A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidders may be considered to have a conflict of interest with one or more parties in this Bidding process, if they:

3.3.1. are associated or have been associated in the past, directly or indirectly with a firm or any of its affiliates which have been engaged by the Procuring agency/Employer to provide consulting services for the preparation of design or technical specifications of the works that are the subject of the bid; or

3.3.2. have controlling shareholders in common; or

3.3.3. receive or have received any direct or indirect subsidy from any of them; or

3.3.4. have the same legal representative for purposes of this Bid; or

3.3.5. have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another bidder, or influence the decisions of the Procuring agency/Employer regarding this Bidding process; or

3.3.6. Submit more than one bid in this bidding process.

3.4. A Bidder may be ineligible if –

3.4.1. he is declared bankrupt or, in the case of company or firm, insolvent;

3.4.2. payments in favor of the bidder is suspended in accordance with the judgment of a court of law other than a judgment declaring bankruptcy and resulting (in accordance with the national laws) in the total or partial loss of the right to administer and dispose of its property;

3.4.3. the bidder is convicted, by a final judgment of a Court of Law or relevant Professional Statuary Body, of any offence involving professional conduct;

3.4.4. The bidder is debarred/ blacklisted by a national level Procuring agency/Employer and hence debarred due to involvement in corrupt and fraudulent practices, or performance failure or due to breach of bid securing declaration.

3.5. As and when required, bidders shall provide to the Procuring agency/Employer evidence of their eligibility, proof of compliance with the necessary legal requirements to carry out the contract effectively.

3.6. Bidders shall submit proposal relating to the nature, conditions and modalities of sub-contracting wherever the sub-contracting of any elements of the contract is envisaged.

4. **Eligible Material and Equipment**

4.1. All the material and equipment to be mobilized under the contract shall have their origin in eligible source countries, and all expenditures made under the contract will be limited to such materials and equipment. For this purpose, ineligible countries are stated in the section-IV titled as “Eligible Countries”.

B. BIDDING DOCUMENTS

5. **Contents of Bidding Documents**

5.1. The scope of Works, bidding procedures, and terms and conditions of the contract are prescribed in the bidding documents. In addition to the Invitation for Bids, the bidding documents which should be read in

conjunction with any addenda issued in accordance with ITB 7.1 include:

Section I Instructions to Bidders (ITBs)

Section II Bid Data Sheet (BDS)

Section III Eligible Countries

Section VI Evaluation and Qualification Criteria

Section V Works Requirements Technical Specifications & Schedule of Requirements

Section VI Standard Bidding Forms

Section VII General Conditions of Contract (GCC)

Section VIII Particular Conditions of Contract (PCC)

Section IX Contract Forms

5.2. The bidder is expected to examine all instructions, forms, specifications, terms and conditions prescribed in the bidding documents. Failure to furnish all the information required in the bidding documents will be at the bidder's risk and may result in the rejection of his bid.

6. **Clarification of Bidding Document, Pre-bid Meeting**

6.1. A prospective bidder requiring any clarification of the bidding document may notify the Procuring agency/Employer through EPADS.

6.2. The Procuring agency/Employer shall respond to the request for clarification in accordance with Rule 31 of the Public Procurement Rules 2004.

6.3. Should the Procuring Agency deem it necessary to amend the BIDDING document as a result of a clarification, it shall do so following the procedure under ITB 7.

6.4. If indicated in the BDS, the bidder's designated representative is invited at the bidder's cost to attend a pre-bid meeting at the place, date and time mentioned in the BDS. During this pre-bid meeting, prospective bidders may request clarification of the schedule of requirement, the evaluation criteria or any other aspects of the bidding documents.

6.5. Minutes of the pre-bid meeting, if applicable, including the text of the questions asked by bidders, including those during the meeting (without

identifying the source) and the responses given, together with any responses prepared after the meeting will be uploaded on EPADS. Any modification to the bidding documents that may become necessary as a result of the pre-bid meeting shall be made by the Procuring agency/Employer exclusively through the use of an Addendum pursuant to ITB 7. Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder.

6.6. The bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the bidder's own expense.

6.7. The bidder and any of its authorized personnel will be granted permission by the Procuring agency/Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the bidder and its personnel will release and indemnify the Procuring agency/Employer from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.

7. **Amendment of Bidding Documents**

7.1. The procuring agency may issue notification of any change, addition, modification or deletion in accordance with Rule 23 of the Public Procurement Rules 2004 i.e. Bidding Documents.

7.2. To give prospective bidders reasonable time in which to take an addendum/corrigendum into account in preparing their bids, the Procuring agency/Employer may, at its discretion, extend the deadline for the submission of bids:
Provided that the Procuring agency/Employer shall extend the deadline for submission of bid in pursuance of Rule 27 of the Public Procurement Rules 2004, i.e. Extension of time for submission of bids, if such an addendum is issued within last three (03) days of the bid submission deadline.

C. PREPARATION OF BIDS

8. **Language of Bid**

8.1. The bid prepared by the bidder, as well as all correspondence and documents relating to the bid exchanged by the bidder and the Procuring agency/Employer shall be written in the English language unless specified in the BDS. Supporting documents and printed literature furnished by the bidder may be in another language provided they are accompanied by an accurate translation of the relevant pages in the English language unless specified in the BDS, in which case, for purposes of interpretation of the bidder, the translation shall govern.

9. **Documents Constituting the Bids**

9.1. The Bids prepared by the Bidder shall constitute of all the documents required in the BDS.

10. **Documents Establishing Eligibility of Material, Equipment and Works, their Conformity to Bidding Documents**

10.1. The bid prepared by the bidder shall constitute the following components: -

10.1.1. Documentary evidence established in accordance with ITB 10 that the material and equipment to be utilized by the Bidder for the executions of works are eligible material and equipment and conform to the Bidding Documents;

10.1.2. Documentary evidence established in accordance with ITB 11 that the bidder has been authorized to carry out the Construction works;

10.1.3. Documentary evidence established in accordance with ITB 11 that the bidder is eligible and/or qualified for the subject bidding process;

10.1.4. Form of Bid and Bid Prices completed in accordance with ITB 12 and 13;

10.1.5. Completed schedules as required, including priced Bill of Quantities in accordance with ITB 13.

10.1.6. Technical Proposal completed in all aspects in accordance with ITB-15.

10.1.7. Bid security or Bid Securing Declaration furnished in accordance with ITB 17;

10.1.8. Any other document required in the BDS.

10.2. In addition to the requirements, bids submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful bid shall be signed by all members and submitted with the bid, together with a copy of the proposed Agreement.

10.3. The bidder shall furnish, as part of its bid, all those documents establishing the eligibility in conformity to the terms and conditions specified in the bidding documents for all material, equipment and works which the bidder proposes to execute.

10.4. The documentary evidence of conformity of the material, equipment and works to the Bidding Documents may be in the form of literature, drawings, and data, and shall consist of:

10.4.1. a detailed description of the work methodology, approach, schedule and resources to be mobilized at site;

10.4.2. an item-by-item commentary on the Procuring agency/Employer’s Technical Specifications demonstrating substantial responsiveness of the material, equipment and works to those specifications, or a statement of deviations and exceptions to the provisions of the Technical Specifications;

10.4.3. any other procurement specific documentation requirement as stated in the BDS.

10.5. The required documents and other accompanying documents must be in English. In case any other language than English is used the pertinent

translation into English shall be attached to the original version.

11. **Documents Establishing Eligibility and Qualification of the Bidder**

11.1. The bidder shall furnish, as part of its bid, all those documents establishing the bidder's eligibility to participate in the bidding process and/or its qualification to perform the contract if its bid is accepted.

11.2. The documentary evidence of the bidder's eligibility to bid shall establish to the satisfaction of the Procuring agency/Employer that the bidder, at the time of submission of its bid, is from an eligible country as defined in Section-IV titled as "Eligible Countries".

11.3. The documentary evidence of the bidder's qualification to perform the contract if its bid is accepted shall establish to the satisfaction of Procuring agency/Employer that:

11.3.1. The bidder has the financial and technical capability necessary to perform the Contract, meets the qualification criteria specified in Section-V, Evaluation and Qualification Criteria and BDS.

11.3.2. In the case of a bidder not doing business within Pakistan, the bidder is or will be (if awarded the contract) represented by a local bidder (Joint Venture) in accordance with the PEC works bylaws, and in case of award of works such foreign firm is required to participate in the execution of works to carry out its obligations as prescribed in the Conditions of Contract and /or Technical Specifications.

11.3.3. That the bidder meets the qualification criteria listed in Section-V, Evaluation and Qualification Criteria and BDS.

12. **Forms of Bid**

12.1. The Bidder shall fill the Form of Bids furnished in the bidding documents. The Bids Form must be completed without any alterations to its format and no substitute shall be accepted.

13. **Bid Prices**

13.1. The bid prices quoted by the bidder in the Standard bid Forms, Bill of Quantities and in the Price Schedules shall conform to the requirements specified below or exclusively mentioned hereafter in the bidding documents.

13.2. The bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. If a Price Schedule shows items listed but not priced, their prices shall be construed to be included in the prices of other items in the Bill of Quantities and will not be paid for separately by the Procuring agency/Employer.

13.3. Items not listed in the Price Schedule shall be assumed not to be included in the bid, and provided that the bid is still substantially responsive in their absence or due to their nominal nature, the corresponding average price of the respective item(s) of the remaining substantially responsive bidder(s) shall be construed to be the price of those missing item(s):
Provided that:

13.3.1. where there is only one (substantially) responsive bidder, or

13.3.2. where there is provision for alternate proposals and the respective items are not listed in the other bids,

The Procuring agency/Employer may fix the price of missing items in accordance with market survey, and the same shall be considered as final price.

13.4. The Bid price to be quoted in the Form of Bid in accordance with ITB 12 shall be the total price of the bid.

13.5. Unless otherwise specified in the BDS and the Contract, the rates and prices quoted by the bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract.

13.6. If so specified in ITB 1.1, bids may be invited for individual lots (contracts) or for any combination of lots (packages).

13.7. Prices quoted by the Bidder shall be fixed during the bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable price will be treated as non-responsive and shall be rejected, pursuant to ITB 27, unless otherwise price adjustment is permissible under Conditions of the Contract.

13.8. All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date twenty-eight (28) days prior to the deadline for submission of bids, shall be included in the rates and prices and the total bid price submitted by the bidder.

14. **Currencies of Bid and Payment**

14.1. Prices shall be quoted in Pakistani Rupees unless otherwise specified in the BDS. Comparison of bids and tie of bid shall be treated in accordance with the Rule 30(2) of Public Procurement Rules, 2004.

15. **Documents Comprising the Technical Proposal**

15.1. The bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section VII – Standard Bid Forms, in sufficient detail to demonstrate the adequacy of the bidder's proposal to meet the work requirements and the completion time.

16. **Bid Validity Period**

16.1. Bids shall remain valid for the period specified in the BDS after the bid submission deadline prescribed by the Procuring agency/Employer. A bid valid for a shorter period shall be rejected by the Procuring agency/Employer as non-responsive. The period of bid validity will be determined from the complementary bid securing instrument i.e. the expiry period of bid security or bid securing declaration as the case may be.

16.2. Under exceptional circumstances, prior to the expiration of the initial Bids/Bid validity period, the Procuring Agency may request the Bidders' consent to an extension of the period of validity of their Bids/Bid. Such request for extension of the period of bid validity shall be carried out in

accordance with Rule 26 of the Public Procurement Rules, 2004.

17. **Bid Security or Bid Securing Declaration**

17.1. Pursuant to ITB 11.1 unless otherwise specified in the BDS, the bidder shall furnish as part of its bid, a Bid Security in accordance with Rule 25 of the Public Procurement Rules, 2004 in the amount and currency specified in the BDS or Bid Securing Declaration as specified in the BDS in the format provided in Section VII (Standard Bidding Forms).

In case Procuring agency/Employer is inviting bids in lots / packages, the bidder shall be required to submit his bid security against the respective lot/ package for which he is submitting his bid.

Until the development of functionality of auto verification of financial instrument in EPADS, the scanned copy of bid security or bid securing declaration, as the case may be, shall be uploaded on E-PADS whereas the original instrument to be submitted to the procuring agency before closing of bid submission deadline,

17.2. The Bid Security shall be denominated in the local currency or in another freely convertible currency, and it shall be in the form specified in the **BDS** which shall be in any of the following:

17.2.1. A bank guarantee, an irrevocable letter of credit issued by a Scheduled bank in the form provided in the Bidding Documents or another form acceptable to the Procuring agency/Employer and valid for twenty-eight (28) days beyond the end of the validity of the Bid. This shall also apply if the period for Bid Validity is extended. In either case, the form must include the complete name of the bidder;

17.2.2. A cashier’s or certified cheque; or

17.2.3. Another security as indicated in the **BDS**.

17.3. The Bid Security or Bid Securing Declaration shall be in accordance with the Form of the Bid Security or Bid Securing Declaration included in Section VII (Standard Bidding Forms) or another form approved by the Procuring agency/Employer prior to the bid submission.

17.4. The Bid Security shall be payable promptly upon written demand by the Procuring agency/Employer in case any of the conditions listed in ITB 17.9 are invoked.

17.5. Any bid not accompanied by a Bid Security or Bid Securing Declaration in accordance with ITB 17.1 or 17.3 shall be rejected by the Procuring agency/Employer and shall be declared as non-responsive bid, pursuant to ITB 27.

17.6. Unsuccessful bidders' Bid Security will be discharged or returned as promptly as possible, however in no case later than thirty (30) days after the expiration of the period of Bid Validity prescribed by the Procuring agency/Employer pursuant to ITB 16. The Procuring agency/Employer shall make no claim to the amount of the Bid Security, and shall promptly return the Bid Security document, after whichever of the following that occurs earliest:

17.6.1. The expiry of the Bid Security;

17.6.2. The entry into force of a procurement contract and the provision of a performance security (or guarantee), for the performance of the contract if such a security (or guarantee), is required by the Biding documents;

17.6.3. The rejection by the Procuring agency/Employer of all Bids;

17.6.4. The withdrawal of the bid prior to the deadline for the submission of bids, unless the biding documents stipulate that no such withdrawal is permitted.

17.7. The successful bidder's Bid Security will be discharged upon the bidder signing the contract pursuant to ITB 40, or furnishing the performance security (or guarantee), pursuant to ITB 41.

17.8. The Bid Security may be forfeited or the Bid Securing Declaration executed:

17.8.1. if a Bidder:

17.8.1.1. Withdraws its Bid during the period of Bid Validity as specified by the Procuring agency/Employer, and referred by the bidder on the Form of Bid except as provided for in ITB 16.2; or

17.8.2. In the case of a successful bidder, if the bidder fails:

17.8.2.1. to sign the contract in accordance with ITB 40; or

17.8.2.2. to furnish performance security (or guarantee) in accordance with ITB 41.

17.9. In case of Bid Security issued by the foreign bank is allowed by the Procuring agency/Employer, the same should be counter guaranteed by a corresponding bank in Pakistan. Furthermore, in case of joint venture, it should be in the name of Joint venture to ensure joint responsibility. In case the JV is not legally constituted at the time of bid submission, the bid security or bid securing declaration shall be in the names of all future members as named in the letter of bid.

18. **Withdrawal of Bids**

18.1. Before bid submission deadline, any bidder may withdraw, substitute, or modify its bid after it has been submitted by sending a written notice, duly signed by an authorized representative, and the corresponding must accompany the respective written notice.

19. **Format and Signing of Bid**

19.1. The Bidder shall prepare and submit Bids through EPADS with due diligence after carefully reading all the terms and condition before bid submission deadline.

D. SUBMISSION OF BIDS

20. **Submission of Bids through EPADS v2.0**

20.1. All bids shall be submitted through EPADS v2.0.

21. **Deadline for Submission of Bids**

21.1. All bids shall be received through **EPADS v2.0** not later than bid submission deadline as specified in the **BDS**.

21.2. The Procuring agency/Employer may, under exceptional circumstances and at its discretion, extend the deadline for the submission of bids, pursuant to Rule 27 of the Public Procurement Rules, 2004. Extension of Time for submission of bid, by amending the Bidding Documents in accordance with ITB 7, in which case all rights and obligations of the Procuring agency/Employer and bidders previously subject to the deadline will thereafter be subject to the new deadline.

22. **Substitution and Modification of bids**

22.1. A bidder may substitute or modify his bid after it has been submitted, provided that written notice of the substitution or modification of the bid, is received by the Procuring agency/Employer prior to the deadline for submission of bids.

22.2. Revised bid may be submitted after the substitution or modification made in the original bid in accordance with the provisions referred in **ITB 18** .

E. OPENING AND EVALUATION OF BIDS

23. **Opening of Bids**

23.1. The Procuring Agency will open bids in accordance with Rule 28 of the Public Procurement Rules, 2004 and as specified in the BDS.

24. **Confidentiality**

24.1. Information relating to the examination, clarification, evaluation and comparison of bids and recommendation of contract award shall not be disclosed to bidders or any other persons not officially concerned with such

process until the time of the announcement of the respective evaluation report.

25. **Clarification of Bids**

25.1. Clarification of Bidding Documents shall be carried out in accordance with Rule 31 of the Public Procurement Rules, 2004.

25.2. The alteration or modification in the bid which in any case affect the following parameters will be considered as a change in the substance of a bid:

25.2.1. evaluation & qualification criteria;

25.2.2. required scope of work;

25.2.3. contract price;

25.2.4. all securities requirements;

25.2.5. tax requirements;

25.2.6. terms and conditions of bidding documents.

25.2.7. change in the ranking of the bidder

26. **Preliminary Examination of Bids**

26.1. Prior to the detailed evaluation of bids, the Procuring agency/Employer will determine whether each bid:

26.1.1. meets the eligibility criteria defined in **ITB 3** and **ITB 4**;

26.1.2. has been prepared as per the format and contents defined by the Procuring agency/Employer in the bidding documents;

26.1.3. has been properly signed;

26.1.4. is accompanied by the required securities; and

26.1.5. is substantially responsive to the requirements of the bidding documents.

The Procuring agency/Employer's determination of a bid's substantial responsiveness will be based on the contents of the bid itself.

26.2. A substantially responsive Bid is one which conforms to all the terms, conditions, and specifications of the Bidding Documents, without material deviation or reservation. A material deviation or reservation is one that: -

26.2.1. affects in any substantial way the scope, quality, or performance of the Works;

26.2.2. limits in any substantial way, inconsistent with the bidding documents, the Procuring agency/Employer's rights or the bidders' obligations under the Contract; or

26.2.3. if rectified, would affect unfairly the competitive position of other bidders presenting substantially responsive bids.

26.3. The Procuring agency/Employer will confirm that the documents and information specified under ITB 9, 10 and 11 have been provided in the bid. If any of these documents or information is missing, or is not provided in accordance with the Instructions to Bidders, the bid shall be rejected.

26.4. The Procuring agency/Employer may waive-off any minor informality, nonconformity, or irregularity in a bid which does not constitute a material deviation, provided such waiver does not prejudice or affect the relative ranking of any Bidder.

Explanation: A minor informality, non-conformity or irregularity is one that is merely a matter of form and not of substance. It also pertains to some immaterial defect in a Bid or variation of a bid from the exact requirements of the invitation that can be corrected or waived without being prejudicial to other bidders. The defect or variation is immaterial when the effect on quantity, quality, or delivery is negligible when contrasted with the total cost or scope of the works. The Procuring agency/Employer either shall give the bidder an opportunity to cure any deficiency resulting from a minor informality or irregularity in a bid or waive the deficiency, whichever is advantageous to the Procuring agency/Employer. Examples of minor informalities or irregularities include failure of a bidder to –

26.4.1. *Submit the number of copies of signed bids required by the invitation;*

26.4.2. *Furnish required information concerning the number of its employees;*

26.4.3. *the firm submitting a bid has formally adopted or authorized, before the date set for opening of bids, the execution of documents by typewritten, printed, or stamped signature and submits evidence of such authorization and the bid carries such a signature.*

26.5. Provided that a Technical Bid is substantially responsive, the Procuring agency/Employer may request the bidder to submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities or omissions in the Technical Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any such aspect of the technical Proposal linked with the ranking of the bidders. Failure of the bidder to comply with the request may result in the rejection of its bid.

26.6. Provided that a Technical Bid is substantially responsive, the Procuring agency/Employer shall rectify quantifiable nonmaterial nonconformities or omissions related to the Financial Proposal. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of the missing or nonconforming item or component.

26.7. If a bid is not substantially responsive, it will be rejected by the Procuring agency/Employer and may not subsequently be evaluated for complete technical responsiveness.

27. **Examination of Terms and Conditions; Technical Evaluation**

27.1. The Procuring agency/Employer shall examine the bid to confirm that all terms and conditions specified in the **GCC** and the **PCC** have been accepted by the bidder without any material deviation or reservation.
For this purpose:
“Deviation” means departure from the requirements specified in the Bidding

Document.

"Reservation" means setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document.

27.2. The Procuring agency/Employer shall evaluate the technical aspects of the bid submitted in accordance with ITB 30, to confirm that all requirements specified in Section VI – Works Requirement, Technical Specifications of the Bidding Documents have been met without material deviation or reservation.

27.3. If after the examination of the terms and conditions and the technical evaluation, the Procuring agency/Employer determines that the bid is not substantially responsive in accordance with ITB 27, it shall reject the bid.

28. **Correction of Arithmetic Errors**

28.1. Bids determined to be substantially responsive will be checked for any arithmetic errors. Errors will be corrected as follows: -

28.1.1. if there is a discrepancy between unit prices and the sub-total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail, and the sub-total price shall be corrected, unless in the opinion of the Procuring agency/Employer there is an obvious misplacement of the decimal point in the unit price, in which the total price as quoted shall govern and the unit price shall be corrected;

28.1.2. if there is an error in a total corresponding to the addition or subtraction of sub-totals, the sub-totals shall prevail, and the total shall be corrected; and

28.1.3. where there is a discrepancy between the amounts in figures and in words, the amount in words will govern.

28.1.4. Where there is discrepancy between grand total of price schedule and amount mentioned on the Form of Bid, the amount referred in Price Schedule shall be treated as correct subject to elimination of other errors.

28.2. The amount stated in the Bid will, be rectified by the Procuring agency/Employer in accordance with the above procedure for the correction of errors and, with, the concurrence of the bidder, shall be considered as binding upon the bidder. If the bidder does not accept the corrected amount, its bid shall be rejected after forfeiture of Bid Security or execution of the Bid Securing Declaration, as the case may be, in accordance with **ITB 41.3**.

29. **Conversion to Single Currency**

29.1. The unit rates and the prices shall be quoted by the bidder entirely in Pak rupees. A bidder expecting to incur expenditures in other currencies for inputs to the Works from outside the Procuring agency/Employer's country (referred to as the "Foreign Currency Requirements") shall indicate the same in the letter of bid-financial proposal. The proportion of the Bid Price (excluding Provisional Sums) needed by him for the payment of such Foreign Currency Requirements either (i) entirely in the currency of the Bidder's home country or, (ii) at the bidder's option, entirely in Pak rupees provided always that a bidder expecting to incur expenditures in a currency or currencies other than those stated in (i) and (ii) above for a portion of the foreign currency requirements, and wishing to be paid accordingly, shall indicate the respective portions in his bid. Comparison of bids quoted in different currencies and conversion of bids into a single currency shall be carried out in accordance with Rule 30(2) of the Public Procurement Rules, 2004**.**

30. **Evaluation of Bids**

30.1. The Procuring agency/Employer shall evaluate and compare only the bids determined to be substantially responsive, pursuant to **ITB 27**.

30.2. In evaluating the Technical Proposal of each Bid, the Procuring agency/Employer shall use the criteria and methodologies listed in the BDS and in terms of works requirement. No other evaluation criteria or methodologies shall be permitted.

30.3. The Procuring agency/Employer's evaluation of a bid will take into account:

30.3.1. the bid price, excluding provisional sums and the provision, if any, for contingencies in the summary bill of quantities, but including day work items, where priced competitively;

30.3.2. converting the amount resulting from applying above, if relevant, to a single currency in accordance with ITB 29;

30.4. The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.

30.5. If these bidding documents allow bidders to quote separate prices for different lots, and the award to a single bidder of multiple lots, the methodology of evaluation to determine the lowest evaluated lot combinations in the Form of Bid, is specified in the **BDS**.

30.6. If the bid, which results in the Evaluated Bid Price (Successful Bid), is seriously unbalanced or front loaded in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, taking into consideration the schedule of estimated Contract payments, the Employer may require that the amount of the performance security be increased at the expense of the Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.

Explanation:

"Unbalanced" or "front-loaded" bids consist of deliberately submitting bids with artificially high prices or unit rates for the early stages of a construction project, offset by artificially low prices or unit rates for the later stages of the project, to improve the contractor's cash flow.

31. **Domestic Preference**

31.1. If the **BDS** so specifies, the Procuring agency/Employer will grant a margin of preference to the domestic contractor in line with the rules, regulations, regulatory guides or instructions issued by the Authority from time to time.

32. **Determination of Successful Bid**

32.1. The Procuring agency/Employer shall compare the evaluated bids in accordance with the predefined bidding procedure, of all substantially responsive bids to determine the Successful bidder.

33. **Qualification of Bidder**

33.1. The Procuring agency/Employer shall determine to its satisfaction whether the bidder is substantially responsive and whose bid is declared as Successful bid either continues to meet (if prequalification applies) or meets (if post-qualification applies) the qualifying criteria specified in Evaluation and Qualification Criteria.
Note: In case of international bidding, the parameters for incorporation or licensing within Pakistan may be fulfilled as part of post qualification.

33.2. The determination shall be based upon an examination of the documentary evidence of the bidder’s qualifications submitted by the bidder, pursuant to **ITB 11**.

33.3. Prior to contract award, the Procuring agency/Employer will verify that the successful bidder (including each member of a JV) is not blacklisted/debarred. The Procuring agency/Employer will conduct the same verification for each sub-contractor proposed by the successful bidder.

34. **Sub-Contractors**

34.1. The bidder shall provide details regarding any specialized sub-contractor to the Procuring agency/Employer. In case change of sub-contractors, the bidder shall promptly notify the Procuring agency/Employer and obtain approval for replacement of sub-contractors.

34.2. Bidders may propose sub-contracting up to the percentage of total value of contracts or the volume of works as specified in the **BDS**.

35. **Abnormally Low Financial Bid**

35.1. A procuring Agency may reject abnormally low bids. The decision of the Procuring agency/Employer to reject a bid and reasons for the decision shall be recorded in the procurement proceedings and promptly communicated to the bidder concerned. Moreover, the Procuring agency/Employer shall not incur any liability solely by rejecting abnormally bid

Guidance for Procuring agency/Employer:

An abnormally low bid means, in the light of the Procuring agency/Employer's estimate and of all the bids submitted, the bid appears to be abnormally low by not providing a margin for normal levels of profit. In order to identify the Abnormally Low Bid (ALB) following approaches can be considered to minimize the scope of subjectivity:

35.1.1. Comparing the bid price with the cost estimate;

35.1.2. Comparing the bid price with the bids offered by other bidders submitting substantially responsive bids; and

35.1.3. Comparing the bid price with prices paid in similar contracts in the recent past either government- or development partner-funded.

35.2. The Procuring agency/Employer will determine to its satisfaction whether the bidder that is selected as having submitted the successful bid is qualified to perform the contract satisfactorily, in accordance with the criteria listed in **ITB 11**

35.3. The determination will take into account the bidder's financial and technical capabilities. It will be based upon an examination of the documentary evidence of the bidder's qualifications submitted by the bidder, pursuant to **ITB 11**, as well as such other information as the Procuring agency/Employer deems necessary and appropriate. Factors not included in these bidding documents shall not be used in the evaluation of the bidders' qualifications.

35.4. Procuring agency/Employer may seek “Certificate for Independent Price Determination” from the bidder and the results of reference checks may be used in determining award of contract.

Explanation: The Certificate shall be furnished by the bidder. The bidder shall certify that the price is determined keeping in view of all the essential aspects such as raw material, its processing, value addition, optimization of resources due to economy of scale, transportation, insurance and margin of profit etc.

35.5. An affirmative determination will be a prerequisite for award of the contract to the bidder. A negative determination will result in rejection of the bidder’s bid, in which event the Procuring agency/Employer will proceed to the next ranked bidder to make a similar determination of that bidder’s capabilities to perform satisfactorily.

F. AWARD OF CONTRACT

36. **Criteria of Award**

36.1. Subject to **ITB 36 and 37**, the Procuring agency/Employer will award the Contract to the bidder whose bid has been determined to be substantially responsive to the bidding documents and who has been declared as Successful Bidder, provided that such bidder has been determined to be:

36.1.1. eligible in accordance with the provisions of **ITB 3**;

36.1.2. is determined to be qualified to perform the Contract satisfactorily; and

36.1.3. Successful negotiations have been concluded, if any.

37. **Negotiations**

37.1. The Committee of the Procuring agency/Employer may negotiate with the Most Advantageous Bidder relating to the following areas:

37.1.1. a minor alteration to the technical (drawings, design technical specifications) details of the statement of works;

37.1.2. Methodology, work plan, staffing in view to streamline the work;

37.1.3. a minor amendment to the Particular conditions of Contract;

37.1.4. finalizing payment arrangements;

37.1.5. clarifying details that were not apparent or could not be finalized at the time of Bidding;

37.2. Where negotiation fails to result into an agreement, the Procuring agency/Employer may invite the next ranked bidder for negotiations. Where negotiations are commenced with the next ranked bidder, the Procuring agency/Employer shall not reopen earlier negotiations.

38. **Procuring agency's Right to reject All Bids**

38.1. The procuring agency has the right to reject all bids in accordance with Rule 33 of the Public Procurement Rules, 2004. However, the Authority (i.e. **PPRA**) may call from the Procuring agency/Employer the justification of those grounds.

39. **Notification of Award**

39.1. The procuring agency shall announce and publish the evaluation result in accordance with Rule 35 of the Public Procurement Rules, 2004.

39.2. Where no complaints have been lodged, the bidder whose bid has been accepted will be notified of the award by the Procuring agency/Employer prior to expiration of the bid validity period through EPADS. However, the Procuring agency/Employer shall not award any procurement contract at least for five (05) days after the announcement of final evaluation report. The notification letter (herein after and in the condition of the contract and contract form called “Letter of Acceptance” will specify the sum that the Procuring agency/Employer will pay the successful bidder in consideration for the execution and completion of the

works as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price).

39.3. The notification of award will constitute the formation of the Contract, subject to the bidder furnishing the Performance Security (or guarantee) in accordance with **ITB 41** and signing of the contract in accordance with **ITB 40**.

39.4. Upon the successful bidder's furnishing of the performance security (or guarantee) pursuant to **ITB 41**, the Procuring agency/Employer will promptly notify each unsuccessful bidder, the name of the successful bidder and the Contract amount and will discharge the Bid Security or Bid Securing Declaration of the bidder(s) pursuant to **ITB 17**.

40. **Signing of Contract**

40.1. Promptly after notification of award, Procuring agency/Employer shall send the successful bidder the draft agreement, incorporating all terms and conditions as agreed by the parties to the contract.

40.2. Immediately after the Redressal of grievance by the **GRC**, and after fulfillment of all conditions precedent of the Contract Form, the successful bidder and the Procuring agency/Employer shall sign the contract.

40.3. Where no formal signing of a contract is required, work order issued to the bidder shall be construed to be the contract.

41. **Performance Security (or Guarantee)**

41.1. After the receipt of the Letter of Acceptance, the successful bidder, within the specified time, shall deliver to the Procuring agency/Employer a Performance Guarantee in the amount and in the form stipulated in the BDS and PCC, denominated in the type and proportions of currencies in the Letter of Acceptance and in accordance with the Conditions of Contract.

41.2. If the Performance Guarantee is provided by the successful bidder and it shall be in the form specified in the BDS which shall be in any of the following:

41.2.1. certified cheque, cashier's or manager's cheque, or bank draft;

41.2.2. irrevocable letter of credit issued by a scheduled bank of Pakistan or in the case of an irrevocable letter of credit issued by a foreign bank, the letter shall be confirmed or authenticated by a scheduled bank of Pakistan;

41.2.3. bank guarantee confirmed by a reputable local bank or, in the case of a successful foreign bidder, bonded by a foreign bank; or

41.2.4. surety bond callable upon demand issued by any reputable surety or insurance company.
Any Performance Guarantee submitted shall be enforceable in Pakistan.

41.3. Failure of the Most Advantageous Bidder to comply with the requirement of **ITB 40** shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security or declare blacklisted (in case bid securing declaration is submitted) in which event the Procuring agency/Employer may make the award to the next most advantageous bidder or reinitiate the procurement process afresh (as a case may be).

42. **Advance Payment**

42.1. Advance payment will be provided to the bidder in percentage and in the manner as agreed by the both parties in terms of Conditions of the Contract.

42.2. The Procuring agency/Employer will provide an advance payment as stipulated in the Conditions of Contract, subject to a maximum amount, as stated and/or Conditions of the Contract. The advance payment request shall be accompanied by an advance payment security (guarantee) in the form provided in Section X. For the purpose of receiving the advance payment, the bidder shall make and estimate of, and include in its bid, the expenses that will relate to the purchase of equipment, machinery, materials, and on the engagement of labor during the first month beginning with the date of the Procuring agency/Employer's "**Notice to Commence**" as specified in the **PCC**.

43. **General Performance of the Bidders**

43.1. The Procuring agency/Employer reserves the right to obtain information regarding performance of the bidders on their previously awarded contracts / works. The Procuring agency/Employer may seek information / report from the previous employer for consideration. However, the Procuring agency/Employer shall incorporate such parameters in the evaluation criteria and accordingly decide the fate of the bid submitted.

44. **Corrupt & Fraudulent Practices**

44.1. Procuring agencies (including beneficiaries of Government funded projects and procurement) as well as Bidders/Suppliers/Contractors under Government financed contracts, observe the highest standard of ethics during the procurement and execution of such contracts, and will avoid to engage in any corrupt and fraudulent practices.

G. GRIEVANCE REDRESSAL & COMPLAINT REVIEW MECHANISM

45. **Grievance Redressal**

45.1. Grievance Redressal shall be carried out in accordance with Rule 48 of the Public Procurement Rules, 2004 i.e. Redressal of grievances by the procuring agency and “Redressal of Grievances Regulations 2021”.

H. MECHANISM OF BLACKLISTING

46. **Mechanism of Blacklisting**

46.1. The Procuring agency/Employer shall proceed Blacklisting of Bidders/Contractors in accordance with Rule 19 of the Public Procurement Rules, 2004 i.e. Blacklisting and “Blacklisting and Debarment of Bidders or Contractors Regulations 2024.

Bid Data Sheet

Bids Data Sheet (BDS)

The following specific data for the procurement of Goods to be procured shall complement, supplement, or amend the provisions in the Instructions to Bidders (ITB). Whenever there is a conflict, the provisions herein shall prevail over those in ITB.

BDS Clause Number	ITB Number	Amendments of, and Supplements to, Clauses in the Instruction to Bidders
A. Introduction		
1	1.1	Name of Procuring Agency:**Comsats University, Islamabad (Lahore Campus) (Comsats University, Islamabad)** The subject of procurement is:**4841-82708-Design, Supply, Installation, Testing, Commissioning and Operation & Maintenance of 990KWp On-grid Solar PV System at CUI Lahore campus** Expected commencement date: **Wednesday, December 2, 2026**
2.	2.1	Financial year for the operations of the Procuring Agency:**2026-27** Name and identification number of the Contract: **P132631**
3.	3.1	JV/Consortium or AssociationAllowed: **No** Number of JV/Consortium Members: **Nil**
B. Bidding Documents		

4.	**6.2 & 6.4**	The Bidders may seek clarifications through **EPADS v2.0**: Clarification Date: Tuesday, November 17, 2026 Pre-Bid Meeting: Friday, November 6, 2026 11:00 AM Venue: Comsats University Islamabad, Defence Road, Lahore.
5.	**7.2**	Any addendum, in case issued, shall be published on **Comsats University, Islamabad (Lahore Campus) (Comsats University, Islamabad)** website and on **EPADS v2.0**.
C. Preparation of Bids		
6.	**8.1**	List of documents required along with the bid: 1. All the documentary evidences for each of the parameter / requirement mentioned in SBD. Literature / product data sheet of all quoted items mentioning brand, model, specifications and other relevant details.
7.	**9.1**	The qualification criteria to establish the supply / production capability of the bidder. *see Eligibility Criteria*
8.	**11.2**	**Works and Their relateddocuments:** *See section Required Scope of Work*
9.	**11.1**	Price schedule will be provided according to the format defined and acquired. *see section price schedule.*

10.	**11.4**	**Specifications:** *see section of specifications.*
11.	**11.5 & 13.5**	The price shall be **Fixed**. The bid price shall be adjusted in accordance with Appendix provided – Formula for Price Adjustment.
12.	**14.1**	Currency of the Bids shall be : **PKR**
13.	**16.1**	The Bids/Bid Validity period shall be: **120 Days**
14.	**17.1**	The amount of Bid Security shall be as defined in Bid Security Section for items and lots given in **BDS 6**
15.	**17.2**	The Bid Security shall be in the form of: **Pay Order, Banker's Cheque, Call at Deposit, Bank Guarantee, Demand Draft**
16.	**15.1**	Alternative Bids to the requirements of the bidding documents willnot be permitted.

D. Submission of Bids

17.	**18.1 & 21.1**	Bid shall be submitted online on EPADS v2.0 whereas hard copy of the bid security should be submitted to the following; **Comsats University Islamabad, Defence Road, Lahore., Lahore City, Lahore (District), Lahore Division (Division), Punjab (Province).** Bids that are not submitted on EPADS v2.0 shall be disqualified. The deadline for Bids submission is: **Friday, November 20, 2026 02:00 PM**
E. Opening and Evaluation of Bids		
18.	**24.1**	The Bids opening shall take place on **EPADS v2.0**. Day *: **Friday*** Date:***November 20, 2026*** Time *: **02:30 PM***
19.	**30.2**	Selection technique adopted will be: **Least Cost Based Selection (LCBS)** *see Evaluation Criteria*
F. Award of Contract		
20.	**41.1 & 41.2**	The Performance guarantee shall: **10.00%**. The Performance Guarantee shall be acceptable in the form of:**Pay Order, Banker's Cheque, Call at Deposit, Bank Guarantee, Demand Draft**

21.	**45.1**	Arbitrator shall be appointed by mutual consent of the both parties.
G. Review of Procurement Decisions		
22.	**37**	Grievance against this procurement shall be submitted online on EPADS v2.0.

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Eligibility Criteria

All Active Taxpayers shall be eligible to participate in the procurement process, unless expressly excluded or otherwise restricted under the Eligibility Criteria specified by the Procuring Agency.

Required Registration
FBR (NTN) FBR (GSTN) Punjab (PRA) SECP PEC

Eligibility Criteria	Document
Registration with Pakistan Engineering Council (PEC) in C3 or above Category with relevant codes e.g. EE03, EE09, EE11, CE10 (attach valid certificate)	Yes
For remaining eligibility conditions, please review SBD. The bidder shall attach an undertaking here on official company letterhead, duly signed by the authorized representative, confirming that the firm/company has carefully reviewed the bidding documents and undertakes to comply with all eligibility requirements, technical evaluation criteria and technical specifications prescribed by the Procuring Agency.	Yes

Evaluation Criteria

Least Cost Based Selection (LCBS)

Weightage

Technical Evaluation %
100

Technical Marks	100
Passing Marks	**70**
Technical Evaluation Criteria	
List of permanent staff (Attach list of staff, CVs and other relevant proof showing employment status with the firm) (Quantitative)(Doc Required) For more than 15 Employee **(5)** For employees > 10 to 15 **(4)** For employees minimum 05 to 10 **(3)**	5
Establishment of Firm (Age of firm shall be determined from the date of incorporation/ registration with SECP, Registrar of Firms, or equivalent registering authority) (Quantitative)(Doc Required) > 7 years **(5)** > 5 – 7 years **(3)** Min 3-5 years **(2)**	5
General Experience	

5 marks for each completed project of general nature, minimum 150 million worth Documentary Evidence: Work orders, Contract agreement, and completion certificate must be attached; otherwise, no marks shall be awarded (Government Departments only). (Qualitative)(Doc Required)	10
Similar Experience (Solar)	
10 marks against each completed project of a minimum 100 M PKR each or 800 kw each Documentary Evidence: Purchase orders/supply orders/completion certificates must be attached; otherwise, no marks shall be awarded. (Experience of projects executed for registered corporate entities in the private sector shall also be accepted) (Qualitative)(Doc Required)	40
FINANCIAL CAPABILITIES	
Average Annual Turnover (last 03 years) Documentary Evidence: Audit statement and FBR returns must be attached, otherwise, no marks shall be awarded (Construction work/receipt only) (Quantitative)(Doc Required) > PKR 300 million **(10)** min 200 million to PKR 300 million **(5)**	10
Available Cash and Credit Limit (Liquidity) Verifiable Banking documents issued by any schedule bank of Pakistan (The document shall issue date prior to the bid submission not old more than 10 days (Quantitative)(Doc Required) equal to or more than 150 % value of the estimated cost of the tender as mentioned in the bidding documents **(15)** equal to or more than 100 % value of the estimated cost of the tender as mentioned in the bidding documents **(10)** minimum 75 % value of the estimated cost of the tender as mentioned in the bidding documents **(5)**	15
EQUIPMENT CAPABILITIES (attach relevant proof)	
Surveying Equipment (Total Station) (01 Set) (Quantitative)(Doc Required)	1
Megger / Earth Resistance Tester (Quantitative)(Doc Required)	1
AC/DC Clamp Meter (Quantitative)(Doc Required)	1
Generator (50/100 KVA, 01 No) (Quantitative)(Doc Required)	1

Reciprocating saw / Jig saw, Right angle drill, Conduit bender, Large crimpers (Quantitative)(Doc Required)	1
PERSONNEL CAPABILITIES (attach relevant proof showing employment status with the firm)	
Number of Electrical Engineers (Min 1 -attach relevant proof) (Quantitative)(Doc Required)	6
Experience of Electrical Engineer (Minimum 05 years-attach relevant proof) (Quantitative)(Doc Required)	2
Number of Sub Engineers having Diploma in Associate Engineering (Min 1-No Electrical) attach relevant proof) (Quantitative)(Doc Required)	1
Experience of Sub-Engineers in number of Years (Minimum 05 - years) attach relevant proof) (Quantitative)(Doc Required)	1

Jobs/Lots

Jobs Without Lots :

Job	Delivery Schedule	Quantity	Bid Security
Design, Supply, Installation, Testing, Commissioning and Operation & Maintenance of 990KWp On-grid Solar PV System	Address: Comsats University Islamabad, Defence Road, Lahore., Lahore City, Lahore (District), Lahore Division (Division), Punjab (Province). Schedule: 90 Days Quantity: 1/job	1/job	3000000 PKR

Related Services :

Yes

Job	Related Services
Design, Supply, Installation, Testing, Commissioning and Operation & Maintenance of 990KWp On-grid Solar PV System	Installation, Testing, Commissioning and operationalization, training and as further required in SBD

Work Specifications and Market Rates

Jobs Without Lots :

Job: Design, Supply, Installation, Testing, Commissioning and Operation & Maintenance of 990KWp On-grid Solar PV System

Specifications / Requirements:

Sr. No	Sr. #	Description	Unit	Qty	Rate	Amount
1	1	PV moduleN Type and Half Cut PV modules minimum 700 W per panel or better	Watt	990000	54	53460000
2	2	Inverter (Number and capacities will be proposed by the bidder making a total of 990KWp for the campus)3 phase On grid Inverters with Remote Monitoring	Watt	990000	15	14850000

Sr. No	Sr. #	Description	Unit	Qty	Rate	Amount
3	3	PFI PanelsTo cover 990 KW power produced by PV solar plant for the offered load, assuming 0.8 present power factor, which needs to be improved to 0.95	Nos.	10	245400	2454000
4	4	Inverter RoomInverter room for Parking lot raised structure	Sq ft	120	7157	858840
5	5	Communication SystemOnline System for Data Logger, monitoring, control complete in all respect as per international standard or NPERA/LESCO. Including LED display units 50” each (2 Nos.) and Computers (2 Nos)	Nos.	1	2454000	2454000

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr. No	Sr. #	Description	Unit	Qty	Rate	Amount
6	6	Genset Synchronization ModuleGenset Auto Synchronization Hybrid Genet Controller/Solar-Diesel Integration Controller compatible with Inverter and Generator, factory fabricated as approved by the Engineer	Nos.	4	981600	3926400

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr. No	Sr. #	Description	Unit	Qty	Rate	Amount
7	7	PV Mount Structure for rooftops of A, B, C, D and Architecture Block and Raised structure for Parking behind H-BlockSite preparation works including clearance and dismantling of wall/shed/holes. Wind speed = 150km/h, azimuth as per site. (UV resistant, 120 micron of zinc coating), 12 SWG complete in all respects or as per drawing given in Employer’s Design	Watt	990000	25	24750000

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr. No	Sr. #	Description	Unit	Qty	Rate	Amount
8	8	Lightning ArresterCopper rod height 2 m to be fixed on these six Sites on required height with poles complete in all respect. Design of Lightening arresters for parking lot is given in the design. Rooftop PV installations will be done as per international standard safety or NPERA/LESCO. Pits for earthing are inclusive	Nos.	14	65000	910000
9	9	0.4kV LV Panel (One each for every inverter)Details of breakers and SPD to be in housed in cabinet: for AC and DC System. As given in AC & DC BoQ and drawings attached	Nos.	10	159510	1595100

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr. No	Sr. #	Description	Unit	Qty	Rate	Amount
10	10	DC Distribution BoxIP65 GI DB for each inverter for placing DC strings Expected size but not limited to W*H*D = 3*1*0.75(16SWG) wall mount, single door with lock and with complete fitting scheme/ railing for DC breakers	Nos.	10	36810	368100
11	11	DC Breakers and SPD for DC DBAs per string configuration and PV Module fuse ratings, as per NEPRA and International Standard or complete in all respect.	Sets	10	368100	3681000
12	12	DC wire for PV6 mm Sq. DC flexible wire 1500V DC Copper conductor, Cu XLPO for array to DB(Double Insulated)	Meter	18000	461	8298000

Sr. No	Sr. #	Description	Unit	Qty	Rate	Amount
13	13	DC wire for PV25 mm Sq. DC flexible wire 1500V DC Copper conductor, Cu XLPO from array DB to Main DB(Double Insulated)	Meter	620	1472	912640
14	14	DC wire for PV16 mm Sq. DC flexible wire 1500V DC Copper conductor, Cu XLPO from array DB to Main DB(Double Insulated)	Meter	620	1166	722920
15	15	AC wire from LV panel to inverterCu, XLPE/PVC 0.6/1 kV, 4*120 mm Sq. AC stranded(Double Insulated)	Meter	500	8589	4294500
16	16	AC wire for inverter groundingCu, PVC 0.6/1 kV, 1*70 mm Sq. AC flexible wire stranded	Meter	550	1227	674850

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr. No	Sr. #	Description	Unit	Qty	Rate	Amount
17	17	DC wire for PV panel and PV frames to grounding pointPVC 1*16 mm Sq. AC standard wire	Meter	1500	1166	1749000
18	18	Copper Bare Conductor25 mm sq	Meter	250	614	153500
19	19	Cable Tray16 SWG Galvanized iron with flat cover, perforated downside, complete fitting accessories i.e nut bolts, supporting angle iron etc, size (W*D) inch 8*4 for laying string wires or as per International Standard or complete in all respect.	Meter	250	2086	521500

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr. No	Sr. #	Description	Unit	Qty	Rate	Amount
20	20	UPVC pipe50mm dia pipe for laying string wires PV area to inverters including sockets	Meter	600	368	220800
21	21	UPVC pipe25mm including bends and sockets	Meter	1000	245	245000
22	22	MC4 connectorsIP67/IP68 for PV Stringing as per International Standard complete in all respect.	Nos.	500	429	214500
23	23	Bi-directional Meter for Net MeteringDelivery of Bi-directional Meter in line with NEPRA/ LESCO requirements	Nos.	1	2900000	2900000

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr. No	Sr. #	Description	Unit	Qty	Rate	Amount
24	24	DC EarthingBore Type Earthing for DC Components as Per NEPRA or international Standard of safety (Maximum 5 ohm earth resistance)	Nos.	12	122543	1470516
25	25	AC EarthingBore Type Earthing for AC Components as Per NEPRA Standard or international Standard of safety (Maximum 5 ohm earth resistance)	Nos.	6	130000	780000
26	26	Washing System for Panels (High Efficiency Nozzle and Pressure Pumps)	Nos.	6	1595100	9570600

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr. No	Sr. #	Description	Unit	Qty	Rate	Amount
27	27	MISC ITEMSCable ties, rawal bolts, pvc tapes, steel and PVC clamps, pvc pipes, glands different sizes, thimbles, connectors, warning labels etc. 2 x insulated glove pairs, shoe pairs, hats for site inspection and maintenance activities. PV module O&M Toolkit. 1 x 55 inch 4K TV Screen for monitoring of generation data from all inverters complete in all respect	Nos.	1	1227000	1227000
28	28	Installation, Testing and CommissioningComplete project installation and commissioning till handover of the project to Employer	Job	1	2454000	2454000

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr. No	Sr. #	Description	Unit	Qty	Rate	Amount
29	29	Net metering servicesNet metering services complete in all aspects including NEPRA license and load flow studies required by the distribution company	Job	1	1226996	1226996
30	30	Operation and Maintenance Services· Cleaning of all PV Modules on each Saturday / Sunday for 06 months. Monitoring of system performance and submission of monthly electricity generation reports	(Complete plant) job	6	460000	2760000
31	31	O&M Training1 week O & M training of 5 personnel of the Employer	persons	5	59000	296238
					GRAND TOTAL:	Rs150,000,000.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Scope of Work

The scope of work includes, but is not limited to, the following:

The selected firm shall execute the complete turnkey Design, Engineering, Supply, Installation, Testing, and Commissioning of a 990 kWp On-Grid Solar PV System at COMSATS University Islamabad, Lahore Campus, strictly in accordance with the technical specifications, safety standards, and statutory regulations outlined in the Standard Bidding Document (SBD). The scope encompasses end-to-end project execution—including site survey, structural and electrical works, grid synchronization, and regulatory approvals metering/net-billing—followed by comprehensive Operation & Maintenance (O&M), warranty support, and hands-on technical training for university staff during the stipulated post-commissioning period to ensure guaranteed system performance, availability, and smooth operational handover.

In the event of any discrepancy, conflict, or omission between this summary Scope of Work and any part of the SBD, the Contractor shall comply with the requirement specified anywhere in the SBD, without any additional cost to the Procuring Agency.

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Price Schedule

For Individual Jobs

#	Job Title	Quantity	Unit Price (PKR)	Total Price (PKR)	Delivery Location	Delivery Period / Year	Country of Origin
1							
2							

For Lots

#	Lot Title	Total Lot Price (PKR)	Country of Origin
1	[Lot 1 Title]		

PUBLIC PROCUREMENT REGULATORY AUTHORITY
(PPRA)
EPADS

General Conditions of Contract

A. General

1. **Definitions**

1.1. Unless the context otherwise requires, the following terms whenever used in this Contract shall have the same meaning and shall be interpreted as indicated

1.1.1. “Applicable Law” means the laws and any other instruments having the force of law in the Government’s Country, or in such other country as may be specified in the Special Conditions of the Contract (SC), as they may be issued and in force from time to time;

1.1.2. “The Contract” means an agreement enforceable by law;

1.1.3. “The Contract Price” means the price payable to the Contractor under the Contract for the full and proper performance of its contractual obligations;

1.1.4. “The Services” means the work to be performed by the Contractor pursuant to this Contract and as prescribed in the Specifications and Schedule of Activities included in the Contractor’s Bid;

1.1.5. “Ancillary Services” means those services ancillary to the provision of Services, such as transportation and insurance, and any other incidental services, such as installation, commissioning, provision of technical assistance, training, and other such obligations of the Contractor covered under the Contract;

1.1.6. “GCC” means the General Conditions of Contract contained in this section;

1.1.7. “SCC” means the Special Conditions of Contract by which the GCC may be amended or supplemented;

1.1.8. **“**Day” means calendar day unless indicated otherwise;

1.1.9. “Effective Date” means the date on which this Contract comes into force and effect;

1.1.10. “The Contractor” means the individual or corporate body whose Bids to provide the Services has been accepted by the Procuring Agency;

1.1.11. “The Project Site,” where applicable, means the place or places named in Bid Data Sheet and technical Specifications;

1.1.12. “Government” means the Government of Pakistan;

1.1.13. “Local Currency” means the currency of Pakistan;

1.1.14. “In Writing” means communicated in written form with proof of receipt;

1.1.15. “Completion Date” means the date of completion of the Services by the Contractor as certified by the Procuring Agency;

1.1.16. “Foreign Currency” means any currency other than the currency of the country of the Procuring Agency;

1.1.17. “Party” means the Procuring Agency or the Contractor, as the case may be, and “Parties” means both of them;

1.1.18. "Service" means any object of procurement other than goods or works;

1.1.19. “Subcontractor” means any entity to which the Bidder subcontracts any part of the Services.

2. **Applicable Law**

2.1. The contract shall be governed and interpreted in accordance with the laws of Pakistan, unless otherwise specified in SCC.

3. **Language**

3.1. The Contract as well as all correspondence and documents relating to the Contract exchanged between the Contractorand the Procuring Agency, shall be written in the **English language** unless otherwise stated in the **SCC** . Supporting documents and printed literature that are part of the Contract may be in another language provided these are accompanied by an accurate translation of the relevant passages in English, in which case, for purposes of interpretation of the Contract, this translation shall govern.

4. **Notices**

4.1. Any notice, request, or consent made pursuant to this Contract shall be in writing and shall be deemed to have been made when delivered in person to an authorized representative of the Party to whom the communication is addressed, or when sent by registered mail, telex, telegram, or facsimile to such Party at the address specified in the **SCC**.

5. **Location**

5.1. The Services shall be performed at such locations as the Procuring Agency may approve and as specified in **SCC.**

5.2. A {DOCUMENTS}

6. **Authorized Representatives / Authority of Member in charge**

6.1. Any action required or permitted to be taken, and any document required or permitted to be executed, under this Contract by the Procuring Agency or the Contractor may be taken or executed by the officials specified in the **SCC**.

B. Commencement, Completion, Modification, and Termination of Contract

7. **Effectiveness of Contract**

7.1. This Contract shall come into effect on the date the Contract is signed by both parties and such other later date as may be stated in the **SCC.**

8. **Commencement of Services**

8.1. The Contractor shall confirm availability of Key Experts and begin carrying out the Services not later than the number of days after the Effective Date specified in the **SCC.**

9. **Program schedule**

9.1. Before commencement of the Services, the Contractor shall submit to the Procuring Agency for approval a Program showing the general methods, arrangements, order and timing for all activities. The Services shall be carried out in accordance with the approved Program as updated.

10. **Starting Date/Expiration Date**

10.1. The Contractor shall start carrying out the Services Five (05) days after the date the Contract becomes effective, or at such other date as may be specified in the **SCC.**

10.2. Unless terminated earlier pursuant to Clause **GCC 14** hereof, this Contract shall expire at the end of such time period after the Effective Date as specified in the **SCC.**

11. **Entire Agreement**

11.1. This Contract contains all covenants, stipulations and provisions agreed by the Parties. No agent or representative of either Party has authority to make, and the Parties shall not be bound by or be liable for, any statement, representation, promise or agreement not set forth herein.

12. **Modification**

12.1. Any modification or variation of the terms and conditions of this Contract, including any modification or variation of the scope of the Services, may only be made by written agreement between the Parties. However, each Party shall give due consideration to any modification(s) or variation(s) made by the other Party.

12.2. In cases of any modification(s) or variation(s), the prior written consent of the Procuring Agency is required.

13. **Force Majeure**

13.1. **Definition**

For the purposes of this Contract, “Force Majeure” means an event which is beyond the reasonable control of a Contractor and which makes a Contractor’s performance of its obligations under the Contract impossible or so impractical as to be considered impossible under the circumstances.

13.2. **No Breach of Contract**

The failure of a Party to fulfill any of its obligations under the contract shall not be considered to be a breach of, or default under, this Contract in so far as such inability arises from an event of Force Majeure, provided that the Party affected by such an event (a) has taken all reasonable precautions, due care and reasonable alternative

measures in order to carry out the terms and conditions of this Contract, and (b) has informed the other Party as soon as possible about the occurrence of such an event.

13.3. **Extension of Time**
Any period within which a Contractor shall, pursuant to this Contract, complete any action or task, shall be extended for a period equal to the time during which such Party was unable to perform such action as a result of Force Majeure.

13.4. **Payments**
During the period of their inability to perform the Services as a result of an event of Force Majeure, the Contractor shall be entitled to continue to be paid under the terms of this Contract, as well as to be reimbursed for additional costs reasonably and necessarily incurred by them during such period for the purposes of the Services and in reactivating the Service after the end of such period.

14. **Termination**

14.1. **By the Procuring Agency**
The Procuring Agency may terminate this Contract in case of the occurrence of any of the events specified in paragraphs (a) through (e) of this Clause. In such an occurrence the Procuring Agency shall give at least thirty (30) calendar days' written notice of termination to the Contractor in case of the events referred to in (a) through (d); at least sixty (60) calendar days' written notice in case of the event referred to in (e);

14.1.1. If the Contractor fails to remedy a failure in the performance of its obligations hereunder, as specified in a notice of suspension;

14.1.2. If the Contractor becomes (or, if the Contractor consists of more than one entity, if any of its members becomes) insolvent or bankrupt or enter into any agreements with their creditors for relief of debt or take advantage of any law for the benefit of debtors or go into liquidation or receivership whether compulsory or voluntary;

14.1.3. If the Contractor fails to comply with any final decision reached as a result of arbitration proceedings;

14.1.4. If, as the result of Force Majeure, the Contractor is unable to perform a material portion of the Services for a period of not less than sixty (60) calendar days;

14.1.5. If the Procuring Agency, in its sole discretion and for any reason whatsoever, decides to terminate this Contract;

14.2. **By the Contractor**
The Contractor may terminate this Contract, by not less than thirty (30) calendar days' written notice to the Procuring Agency, in case of the occurrence of any of the events specified in paragraphs (a) through (d) of this Clause.

14.2.1. If the Procuring Agency fails to pay any money due to the Contractor pursuant to this Contract and not subject to dispute within forty-five (45) calendar days after receiving written notice from the Contractor that such payment is overdue;

14.2.2. If, as the result of Force Majeure, the Contractor is unable to perform a material portion of the Services for a period of not less than sixty (60) calendar days;

14.2.3. If the Procuring Agency fails to comply with any final decision reached as a result of arbitration;

14.2.4. If the Procuring Agency is in material breach of its obligations pursuant to this Contract and has not remedied the same within forty-five (45) days (or such longer period as the Bidder may have subsequently approved in writing) following the receipt by the Procuring Agency of the Contractor's notice specifying such breach.

C. Obligations of the Contractor

15. **General**

15.1. **Standard of Performance**

15.1.1. The Contractor shall perform the Services and carry out the Services with all due diligence, efficiency and economy, in accordance with generally accepted professional standards and practices, and shall observe sound management practices, and employ appropriate technology and safe and effective equipment, machinery, materials and methods. The Contractor shall always act, in respect of any matter relating to this Contract or to the Services, as a faithful adviser to the Procuring Agency, and shall at all times support and safeguard the Procuring Agency's legitimate interests in any dealings with the third parties;

15.1.2. The Contractor shall employ and provide such qualified and experienced Experts and Sub-Contractors as are required to carry out the Services.

15.2. **Law Applicable to Services**

The Contractor shall perform the Services in accordance with the Contract and in accordance with the Law of Pakistan and shall take all practicable steps to ensure that any of its Experts and Sub-Bidders, comply with the Applicable Law.

16. **Conflict of Interests**

16.1. **Contractor Not to Benefit from Commissions and Discounts**

The remuneration of the Contractor shall constitute the Contractor's sole remuneration in connection with this Contract or the Services, and the Contractor shall not accept for their own benefit any trade commission, discount, or similar payment in connection with activities pursuant to this Contract or to the Services or in the discharge of their obligations under the Contract, and the Contractor shall use their best efforts to ensure that the Personnel, any Subcontractors, and agents of either of them similarly shall not receive any such additional remuneration.

16.2. **Contractor and Affiliates Not to be Otherwise Interested in Project**

The Contractor agree that, during the term of this Contract and after its termination, the Contractor and its affiliates, as well as any Subcontractor and any of its affiliates, shall be disqualified from providing Services (other than the Services and any continuation thereof) for any project resulting from or closely related to the Services.

16.3. **Prohibition of Conflicting Activities**

Neither the Bidder nor its Subcontractors nor the Personnel shall engage, either directly or indirectly, in any of the following activities:

16.3.1. during the term of this Contract, any business or professional activities in the Government's country which would conflict with the activities assigned to them under this Contract;

16.3.2. during the term of this Contract, neither the Contractor nor their Subcontractors shall hire public employees in active duty or on any type of leave, to perform any activity under this Contract;

16.3.3. after the termination of this Contract, such other activities as may be specified in the **SCC.**

17. **Insurance to be Taken Out by the Contractor**

17.1. The Contractor(a) shall take out and maintain, and shall cause any Subcontractors to take out and maintain, at its (or the Sub-contractors', as the case may be) own cost but on terms and conditions approved by the Procuring Agency, insurance against the risks, and for the coverage, as shall be specified in the **SCC**; and (b) at the Procuring Agency's request, shall provide evidence to the Procuring Agency showing that such insurance has been taken out and maintained and that the current premiums have been paid.

18. **Contractor's Actions Requiring Procuring Agency's Prior Approval**

18.1. The Contractor shall obtain the Procuring Agency's prior approval in writing before taking any of the following actions:

18.1.1. appointing such members of the Personnel not provided by the Contractor;

18.1.2. changing the Program of activities; and

18.1.3. any other action that may be specified in the **SCC.**

19. **Reporting Obligations**

19.1. The Contractor shall submit to the Procuring Agency the reports and documents in the numbers, and within the periods as prescribed by the Procuring Agency.

20. **Liquidated Damages**

20.1. **Payments of Liquidated Damages**

The Contractor shall pay liquidated damages to the Procuring Agency at the rate per day stated in the **SCC** for each day that the Completion Date is later than the Intended Completion Date. The total amount of liquidated damages shall not exceed the amount defined in the **SCC**. The Procuring Agency may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's liabilities.

20.2. **Correction for Over-payment**

If the Intended Completion Date is extended after liquidated damages have been paid, the Procuring Agency shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The

Contractor shall be paid interest on the overpayment, calculated from the date of payment to the date of repayment, at the rates specified in **SCC.**

20.3. **Lack of performance penalty**
If the Contractor has not corrected a Defect within the time specified in the Procuring Agency's notice, a penalty for Lack of performance will be paid by the Contractor. The amount to be paid will be calculated as a percentage of the cost of having the Defect corrected, assessed as specified in the Contractor

21. **Performance Guarantee**

21.1. Within the time stipulated in the acceptance letter from the Procuring Agency, the successful Bidder shall furnish the Performance Guarantee in shape and amount **specified in SCC.**

21.2. The proceeds of the Performance Guarantee shall be payable to the Procuring agency as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.

21.3. The Performance Guarantee shall be denominated in the currency of the Contract, or in a freely convertible currency acceptable to the Procuring agency and shall be in the acceptable form as specified in **SCC**.

21.4. The Performance Guarantee will be discharged by the Procuring agency and returned to the Supplier not later than thirty (30) days following the date of completion of the Supplier's performance obligations under the Contract, including any warranty obligations, unless otherwise **specified in SCC.**

22. **Sustainable Procurement**

22.1. The Contractor shall conform to the sustainable procurement contractual provisions, if and as specified in the **SCC.**

D. Contractor's Personnel

23. **Description of Personnel**

23.1. The titles, agreed job descriptions, minimum qualifications, and estimated periods of engagement in the carrying out of the Services of the Contractor's Key Personnel. The Key Personnel listed by title as well as by name are hereby approved by the Procuring Agency.

24. **Removal and / or Replacement of Personnel**

24.1. Except as the Procuring Agency may otherwise agree, no changes shall be made in the Key Personnel. If, for any reason beyond the reasonable control of the Contractor, it becomes necessary to replace any of the Key Personnel, the Contractor shall provide as a replacement a person of equivalent or better qualifications.

24.2. If the Procuring Agency finds that any of the Personnel have (i) committed serious misconduct or have been charged with having committed a criminal action, or (ii) have reasonable cause to be dissatisfied with the performance of any of the Personnel, then the Contractor shall, at the Procuring Agency's written request specifying the grounds thereof, provide as a replacement a person with qualifications and experience acceptable to the Procuring Agency.

24.3. The Contractor shall have no claim for additional costs arising out of or incidental to any removal and/or replacement of Personnel.

E. Obligations of the Procuring Agency

25. **Change in the Applicable Law**

25.1. If, after the date of this Contract, there is any change in the Applicable Law with respect to taxes and duties which increases or decreases the cost of the Services rendered by the Contractor, then the remuneration and reimbursable expenses otherwise payable to the Contractor under this Contract shall be increased or decreased accordingly by agreement between the Parties, and corresponding adjustments shall be made to the amounts referred in the **SCC.**

26. **Services and Facilities**

26.1. The Procuring Agency shall make available to the Contractor and the Experts, for the purposes of the Services and free of any charge, the services, facilities and property described in the Terms of Reference, at the times and in the manner specified in the Terms of Reference.

26.2. In case that such services, facilities and property shall not be made available to the Contractor, the Parties shall agree on (i) any time extension that it may be appropriate to grant to the Contractor for the performance of the Services, (ii) the manner in which the Contractor shall procure any such services, facilities and property from other sources, and (iii) the additional payments, if any, to be made to the Contractor as a result thereof.

F. Payments to the Contractor

27. **Contract Price**

27.1. The price payable shall be in Pakistani Rupees unless otherwise specified in the **SCC**.

28. **Terms and Conditions of Payment**

28.1. Payments will be made to the Contractor according to the payment schedule stated in the **SCC** and as per actual invoice submitted by the Contractor.

28.2. Unless otherwise stated in the **SCC**, the advance payment shall be made against the provision by the Contractor of a bank guarantee for the same amount, and shall be valid for the period stated in the **SCC.** Any other payment shall be made after the conditions listed in the **SCC** for such payment have been met, and the Contractor have submitted an invoice to the Procuring Agency specifying the amount due.

29. **Quality Control Identifying Defects**

29.1. The principle and modalities of Inspection of the Services by the Procuring Agency shall be as indicated in the **SCC.** The Procuring Agency shall check the Contractor’s performance and notify him of any Defects that are

found. Such checking shall not affect the Contractor's responsibilities. The Procuring Agency may instruct the Contractor to search for a Defect and to uncover and test any service that the Procuring Agency considers may have a Defect. Defect Liability Period is as defined in the **SCC**.

29.2. A {INSPECTION}

30. **Correction of Defects, and Lack of Performance Penalty**

30.1. The Procuring Agency shall give notice to the contractor of any Defects before the end of the Contract. The Defects liability period shall be extended for as long as Defects remain to be corrected.

30.2. Every time notice a Defect is given; the contractor shall correct the notified Defect within the length of time specified by the Procuring Agency's notice.

30.3. If the contractor has not corrected a Defect within the time specified in the Procuring Agency's notice, the Procuring Agency will assess the cost of having the Defect corrected, the contractor will pay this amount, and a Penalty for Lack of Performance.

31. **Settlement of Disputes Amicable Settlement**

31.1. The Parties shall use their best efforts to settle amicably all disputes arising out of or in connection with this Contract or its interpretation.

32. **Dispute Settlement**

32.1. **Arbitration**

If any dispute of any kind whatsoever shall arise between the procuring agency and the contractor in connection with or arising out of the Contract, including without prejudice to the generality of the foregoing, any question regarding its existence, validity or termination, or the execution of the contract, the parties shall seek to resolve any such dispute or difference by mutual consultation. If the parties fail to resolve such a dispute or difference even after negotiations or mediation, then the dispute shall be referred within fourteen (14) days in writing by either party to the Arbitrator, with a copy to the other party.

Any dispute in respect of which a notice of intention to commence arbitration has been given, in accordance with **GCC sub-clause 32.1**, shall be finally settled by arbitration. Arbitration may be commenced prior to or after completion of the Contract. Arbitration proceedings shall be conducted in accordance with Arbitration Act 1940. Notwithstanding any reference to arbitration herein, the parties shall continue to perform their respective obligations under the Contract unless otherwise agreed. The Procuring Agency shall continue to pay the Contractor any undisputed amounts due under the Contract during the resolution of any dispute.

Special Conditions of Contract

SECTION VIII. SPECIAL CONDITIONS OF CONTRACT

The following Special Conditions of Contract shall supplement the General Conditions of Contract. Whenever there is a conflict, the provisions herein shall prevail over those in the Conditions of Contract. The corresponding clause number of the GCC is indicated in parentheses.

Number of GC Clause

Amendments of, and Supplements to, Clauses in the General Conditions of Contract

Number of GC Clause 1

Definitions

The Procuring Agency is: Comsats University, Islamabad (Lahore Campus) (Comsats University, Islamabad), Additional Registrar Comsats University Islamabad, Defence Road, Lahore., Lahore City, Lahore (District), Lahore Division (Division), Punjab (Province).

The Supplier is:

The title of the subject procurement is: 4841-82708-Design, Supply, Installation, Testing, Commissioning and Operation & Maintenance of 990KWp On-grid Solar PV System at CUI Lahore campus

Number of GC Clause 2

Applicable/Governing Law:

The Contract shall be interpreted in accordance with the laws of Islamic Republic of Pakistan

Number of GC Clause 3

Language:

The language of the Contract, all correspondence and communications to be given, and all other documentation to be prepared and supplied under the Contract shall be in **English.**

Number of GC Clause 4

Notices:

The addresses for the notices are:

Procuring Agency:

Comsats University, Islamabad (Lahore Campus) (Comsats University, Islamabad), Additional Registrar Comsats University Islamabad, Defence Road, Lahore., Lahore City, Lahore (District), Lahore Division (Division), Punjab (Province).
+92-321-432-3437
miqureshi@cuilahore.edu.pk

Contractor/ Bidder:

[Name, address and telephone number]

The Contractor/ Bidder's Representative(s)

[Name, address, telephone number and e-mail address]

Number of GC Clause 6.1

The Authorized Representatives are:

For the Procuring Agency:

Comsats University, Islamabad (Lahore Campus) (Comsats University, Islamabad), Additional Registrar Comsats University Islamabad, Defence Road, Lahore., Lahore City, Lahore (District), Lahore Division (Division), Punjab (Province).
+92-321-432-3437
miqureshi@cuilahore.edu.pk

For the Bidder:

Name: ……

Designation: ……..

Address: ……..

Number of GC Clause 7

Effectiveness of the contract

The Contractor/Bidder shall be effective within ….. days from the date of signature of the Contract by both parties

Number of GC Clause 8

Commencement of Contract:

The Contractor/Bidder shall provide Non-Consultancy Services from the effective date of contract.

Number of GC Clause 10.2

Expiration of Contract:

The time period shall be ……

Number of GC Clause 14

Termination

In the event of termination of the contract due to any reason as already defined in the General Conditions of Contract, the Bidder shall be responsible for providing to the Authority the Goods till the time of alternate arrangements.

Number of GC Clause 16

Conflict of Interest:

The Procuring Agency reserves the right to determine on a case-by-case basis whether the Bidder should be disqualified from providing goods or services due to a conflict of a nature described in Clause GCC 17.

Number of GC Clause 20

Liquidated Damages

If the Bidder fails to provide services as required under the contract or in case of any data loss/data breach or any incident compromising the data security or other such failures related to any services, the Bidder shall pay to the Procuring Agency as Liquidated Damages at a rate of **0.20%** to **10.00%** of the Contract value, in accordance with the extent of performance failure & the cost of investigating such incidents as judged by the Authority.

Number of GC Clause 21

Performance Guarantee:

The amount of performance guarantee shall be **10.00%** of the contract price in acceptable form of **Pay Order, Banker's Cheque, Call at Deposit, Bank Guarantee, Demand Draft**

Number of GC Clause 27

Currency of Payment:

All the payment to be released to the contractor/Bidder shall be in Pakistani Rupees.

Number of GC Clause 28

Payment terms:

Payment will be made to the Bidder against the procured Goods and services according to the actual invoice or running bills submitted by the Bidder against the services provided within the time given in the conditions of the contract.

Number of GC Clause 29

Identifying Defects:

The Authority reserves the right at any time to inspect the premises of the provider to inspect the goods and monitor the goods being provided.

Inspections & Tests Requirements

For being Brand New, bearing relevant reference numbers of the equipment (Certificate from supplier)

For Physical Fitness having No Damages (Certificate from supplier)

For the Country of Origin as quoted by the Supplier (Certificate from manufacturer)

For conformance to specifications and performance parameters, through Prior to delivery inspection (Inspection Report by Procurement Committee / Inspection Team)

For successful operation at site after complete installation, testing and commissioning of the equipment (Installation, Testing and Commissioning Report by Procurement Committee / Inspection Team)

Delivery & Documents

Copies of the Supplier’s invoice showing Goods’ description, quantity, unit price, and total amount;

Original and two copies of the usual transport document (for example, a negotiable bill of lading, a non-negotiable sea waybill, an inland waterway document, an air waybill, a railway consignment note, a road consignment note, or a multimodal transport document) which the buyer may require to take the goods;

Copies of the packing list identifying contents of each package;

Insurance Certificate;

Manufacturer’s or Supplier’s Valid Warranty Certificate;

Inspection Certificate issued by the Nominated Inspection Agency (if any), and the Supplier’s Factory Inspection Report;

Certificate of Origin.

The above documents would be required even if the equipment has already been imported and is available with the supplier ex-stock

Number of GC Clause 31

Following is the guidance for Dispute Resolution

i. If any dispute of any kind whatsoever shall arise between the Authority and the Bidder in connection with or arising out of the Contract... (full clause unchanged)

ii. At future of negotiation the dispute shall be resolved through mediation...

iii. At failure of mediation, arbitration under Arbitration Act 1940...

iv. Cost sharing equally...

v. Proceedings may commence before/after completion...

Notwithstanding any reference to the arbitration herein, the parties shall continue to perform their respective obligations under the Contract.

Rules of procedure for arbitration proceedings:

Any dispute between the Authority and a Bidder shall be referred to arbitration under the laws of Pakistan including Arbitration Act 1940.

Place of Arbitration and Award:

The arbitration shall be conducted in English language and place shall be Islamabad. The award shall be final and binding.

Bid Securing Declaration

Form 9: Bid Securing Declaration

Date: *[insert date (as day, month and year)]*

Bid No.:***P132631***

To: **Comsats University, Islamabad (Lahore Campus) (Comsats University, Islamabad), Additional Registrar Comsats University Islamabad, Defence Road, Lahore., Lahore City, Lahore (District), Lahore Division (Division), Punjab (Province).**

We, the undersigned, declare that:

We understand that, according to your conditions, Bids must be supported by a Bid Securing Declaration.

We accept that we will be blacklisted and henceforth cross debarred for participating in respective category of public procurement proceedings for a period of (not more than) six months, if fail to abide with a bid securing declaration, however without indulging in corrupt and fraudulent practices, if we are in breach of our obligation(s) under the Bid conditions, because we:

1. have withdrawn or modified our Bid during the period of Bid Validity specified in the Form of Bid;

2. Disagreement to arithmetical correction made to the Bid price; or

3. having been notified of the acceptance of our Bid by the Procuring Agency during the period of Bid Validity, (i) failure to sign the contract if required by Procuring Agency to do so or (ii) fail or refuse to furnish the Performance Security or to comply with any other condition precedent to signing the contract specified in the Bidding Documents.

We understand this Bid Securing Declaration shall expire if we are not the successful

Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) twenty-eight (28) days after the expiration of our Bid.

Contract Form

SECTION IX: CONTRACT FORMS

THIS AGREEMENT made the _____ day of _____ 20_____ between **Comsats University, Islamabad (Lahore Campus) (Comsats University, Islamabad), Additional Registrar Comsats University Islamabad, Defence Road, Lahore., Lahore City, Lahore (District), Lahore Division (Division), Punjab (Province).**

(hereinafter called "the Procuring Agency") of the one part and *[name of Bidder]* of *[city and country of Bidder]* (hereinafter called "the Bidder") of the other part:

WHEREAS the Procuring Agency invited Bids for provision of goods, viz., **4841-82708-Design, Supply, Installation, Testing, Commissioning and Operation & Maintenance of 990KWp On-grid Solar PV System at CUI Lahore campus (*P132631*)** and has accepted a Bids by the Bidder for the provision of Goods in the sum of *[contract price in words and figures]* (hereinafter called "the Contract Price").

NOW THIS CONTRACT WITNESSETH AS FOLLOWS:

1. In this Contract words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Contract, In the event of any ambiguity or conflict between the Contract Documents listed below, the order of precedence shall be the order in which the Contract Documents are listed below:-

1. This form of Contract;
2. the Form of Bids and the Price Schedule submitted by the Bidder;
3. the Schedule of Requirements;
4. the Technical Specifications;
5. the Special Conditions of Contract;
6. the General Conditions of the Contract;
7. the Procuring Agency's Letter of Acceptance; and
8. [*add here: any other documents*]

3. In consideration of the payments to be made by the Procuring Agency to the Bidder as hereinafter mentioned, the Bidder hereby covenants with the Procuring Agency to provide the Goods related services and to remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The Procuring Agency hereby covenants to pay the Bidder in consideration of the provision of Goods and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the contract at the times and in the manner prescribed by the contract.

IN WITNESS whereof the parties hereto have caused this Contract to be executed in accordance with their respective laws the day and year first above written.

Signed, sealed, delivered by _____the _____ (for the Procuring Agency)

Witness to the signatures of the Procuring Agency:

……

Signed, sealed, delivered by _____the _____ (for the Procuring Agency)

Witness to the signatures of the Bidder: ……

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Integrity Pact

Integrity Pact

DECLARATION OF FEES, COMMISSION AND BROKERAGE ETC. PAYABLE BYTHE SUPPLIERS OF GOODS, SERVICES & WORKS IN CONTRACTS WORTH RS.10.00 MILLION OR MORE

Contract Number: Contract Value: Contract Title:

Dated:

[Name of Supplier] hereby declares that it has not obtained or induced the procurement of any contract, right, interest, privilege or other obligation or benefit from Government of Pakistan or any administrative subdivision or agency thereof or any other entity owned or controlled by it (GoP) through any corrupt business practice.

Without limiting the generality of the foregoing [Name of Supplier] represents and warrants that it has fully declared the brokerage, commission, fee etc. paid or payable to anyone and not given or agreed to give and shall not give or agree to give to anyone within or outside Pakistan either directly or indirectly through any natural or juridical person, including its affiliate, agent, associate, broker, consultant, director, promoter, shareholder, sponsor or subsidiary, any commission, gratification, bribe, finder's fee or kickback, whether described as consultations fee or otherwise, with the object of obtaining or inducing the procurement of a contract, right, interest, privilege or other obligation or benefit in whatsoever form from GoP, except that which has been expressly declared pursuant hereto.

[Name of Supplier] certifies that it has made and will make full disclosure of all agreements and arrangements with all persons in respect of or related to the transaction with GoP and has not taken any action or will not take any action to circumvent the above declaration, representative or warranty.

[Name of Supplier] accepts full responsibility and strict liability for making and false declaration, not making full disclosure, misrepresenting fact or taking any action likely to defeat the purpose of this declaration, representation and warranty. It agrees that any contract, right interest, privilege or other obligation or benefit obtained or procured as aforesaid shall, without prejudice to any other right and remedies available to GoP under any law, contract or other instrument, be voidable at the option of GoP.

Notwithstanding any rights and remedies exercised by GoP in this regard, [Name of Supplier] agrees to indemnify GoP for any loss or damage incurred by it on account of its corrupt business practices and further pay compensation to GoP in an amount equivalent to ten time the sum of any commission, gratification, bribe, finder's fee or kickback given by [Name of Supplier] as aforesaid for the purpose of obtaining or inducing the procurement of any contract, right, interest, privilege or other obligation or benefit in whatsoever form from GoP.

Performance Guarantee Form

Performance Guarantee Form

To: **Comsats University, Islamabad (Lahore Campus) (Comsats University, Islamabad), Additional Registrar Comsats University Islamabad, Defence Road, Lahore., Lahore City, Lahore (District), Lahore Division (Division), Punjab (Province).**

WHEREAS *[name of Bidder]* (hereinafter called "the Bidder") has undertaken, in pursuance of Contract No. *[reference number of the contract]* dated *[insert date]* for provision of Goods*(*hereinafter called "the Contract").

AND WHEREAS it has been stipulated by you in the said Contract that the Bidder shall furnish you with a Bank Guarantee by a reputable bank for the sum specified therein as security for compliance with the Bidder's performance obligations in accordance with the Contract.

AND WHEREAS we have agreed to give the Bidders guarantee:

THEREFORE, WE hereby affirm that we are Guarantors and responsible to you, on behalf of the Bidder, up to a total of *[amount of the guarantee in words and figures]*, and we undertake to pay you, upon your first written demand declaring the Bidder to be in default under the Contract and without cavil or argument, any sum or sums within the limits of *[amount of guarantee]* as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until the: *[insert date]*

Signature and seal of the Guarantors

_____

[name of bank or financial institution]

_____

[address]

_____

[date}

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Annexure

1. DESIGN (ELECTRICAL, irradiance, layout, lightening arresters etc)

Information (Read-Only)

See Form Under Additional Forms and Documents: **1. DESIGN (ELECTRICAL, irradiance, layout, lightening arresters etc)** (page number: 90)

2. DESIGN (Parking Shed)

Information (Read-Only)

See Form Under Additional Forms and Documents: **2. DESIGN (Parking Shed)** (page number: 127)

3. DESIGN (Rooftop structure)

Information (Read-Only)

See Form Under Additional Forms and Documents: **3. DESIGN (Rooftop structure)** (page number: 251)

4. Specifications and system data checklist

Information (Read-Only)

See Form Under Additional Forms and Documents: **4. Specifications and system data checklist** (page number: 291)

5. Engineer Estimate for Solarization of CUI Lahore

Information (Read-Only)

See Form Under Additional Forms and Documents: **5. Engineer Estimate for Solarization of CUI Lahore** (page number: 300)

6. Eligibility & evaluation criteria

Information (Read-Only)

See Form Under Additional Forms and Documents: **6. Eligibility & evaluation criteria** (page number: 307)

7. EPADS generated prebid_minutes

Information (Read-Only)

See Form Under Additional Forms and Documents: **7. EPADS generated prebid_minutes** (page number: 311)

8. Financial Submission

Financial Submission (Vendor)

Document Required

See Form Under Additional Forms and Documents: **8. Financial Submission** (page number: 319)

9. Payment schedule

Information (Read-Only)

See Form Under Additional Forms and Documents: **9. Payment schedule** (page number: 323)

Procurement Forms

Past Construction Experiences

See Form Under Additional Forms and Documents: **Past Construction Experiences** (page number: 324)

Contractor's Key Personnel Representative and Their Schedules

See Form Under Additional Forms and Documents: **Contractor's Key Personnel Representative and Their Schedules** (page number: 330)

Financial Resources

See Form Under Additional Forms and Documents: **Financial Resources** (page number: 334)

Past Experience and Completed Contracts

See Form Under Additional Forms and Documents: **Past Experience and Completed Contracts** (page number: 335)

Historical Contract Non-Performance, and Pending Litigation and Litigation History

See Form Under Additional Forms and Documents: **Historical Contract Non-Performance, and Pending Litigation and Litigation History** (page number: 336)

Current Contracts and Their Progress

See Form Under Additional Forms and Documents: **Current Contracts and Their Progress** (page number: 338)

Financial Capacity and Net Worth Evaluation Form

See Form Under Additional Forms and Documents: **Financial Capacity and Net Worth Evaluation Form** (page number: 339)

Average Annual Turnover

See Form Under Additional Forms and Documents: **Average Annual Turnover** (page number: 341)

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

PUBLIC PROCUREMENT REGULATORY AUTHORITY
(PPRA)
EPADS

Additional Forms and Documents

COMSATS UNIVERSITY ISLAMABAD (CUI)
LAHORE CAMPUS DESIGN

SECTION 1: CALCULATION OF cable lengths

SECTION 2: Layouts, section drawings

SECTION 3: Irradiance analysis

SECTION 1: CALCULATION OF cable lengths:

		ITEM		A	B	C	D	Arch	Park Shed	Total
1	DC wire for PV	6 mm Sq. DC flexible wire 1500V DC Copper conductor, Cu XLPO for array to DB(Double Insulated)	m	3182	3182	3189	1910	2000	4545	18000
2	DC wire for PV	25 mm Sq. DC flexible wire 1500V DC Copper conductor, Cu XLPO from array DB to Main DB(Double Insulated)	m	110	110	110	65	70	155	620

3	DC wire for PV	16 mm Sq. DC flexible wire 1500V DC Copper conductor, Cu XLPO from array DB to Main DB(Double Insulated)	m	110	110	110	65	70	155	620
4	AC wire from LV panel to Inverter	Cu, XLPE/PVC 0.6/1 kV, 4*120 mm Sq. AC stranded(Double Insulated)	m	53	53	53	32	34	75	300
5	AC wire for inverter grounding	Cu, PVC 0.6/1 kV, 1*70 Cu, PVC 0.6/1 kV, 1*70mm Sq. AC flexible wire stranded	m	65	65	65	40	42	93	370
6	DC wire for PV panel and PV frames to grounding point	PVC 1*16 mm Sq. AC standard Wire	m	265	265	265	160	167	378	1500

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

7	Copper Bare Conductor	25 mm Sq	M	44	44	44	27	28	63	250
8	Cable Tray	laying string wires or as per International Standard or complete in all respect.	M	44	44	44	27	28	63	250

SECTION 2: CUI Lahore PV Solar system Design Drawings. Following is the Appendix of design Drawings:

1. CUI Lahore Layout with marking of planned PV solar panel installation and location of Transformers

2. Layout of Campus showing roof tops of
   a-Block (Physics and Chemistry Department)
   b-Block (Electrical Engg. and Computer Engg. Department)
   c-Block (Computer Science Department)

   And raised structure parking using PV panels for parking sheds opposite Masjid

3. Layout and positioning of Parking shed opposite Masjid. It features a shaded car parking for 89 cars using 354 PV solar panels (700 W) (7' x 4') each. This setup will produce 250 KW DC. One or two inverters can be used to convert this to LT level. (An inter room of size 7' x 12' will be build close to the transformer and 250 KVA generator)

4. Layout of Parking shed with Transformer marking
5. Raised shed structure for PV Panels on Parking lot opposite Masjid GRID SECTION
6. Raised shed structure for PV Panels on Parking lot opposite Masjid with grouting details

7. Raised shed structure for PV Panels on Parking lot opposite Masjid parking grid details

8. Layout and panel installation drawing of Blocks A, B and C with following distribution:

   1. A-Block- 250 Panels- 175 KW

2. B-Block- 250 Panels- 175 KW

3. C-Block- 250 Panels- 175 KW

9. Layout and Panel installation Drawing of D Block with following Panel utilization:

    1. D-Block-150 Panels-105 KW

10. Layout and panel distribution drawing of Architecture and Design department with following PV solar panel utilization:

    1. Archi Block-158 Panels-110 KW

11. Proposed inverter room (Air-conditioned for parking shed with space for housing two inverters, two PFI plants, AC and DC distribution points, Generator to PV system synch panel. For roof top blocks appropriate place in the building beneath the staircase will be preferred. In case of non-availability of space due to a technical reason a room will be constructed close to the building to reduce the DC cable lengths.

12. Lightening arrestor with RCC base structure design

13. Detail of earthing bore pit for lightening arrester

14. Detailed Schematic Single Line Diagram

15. Single Block Single Line Diagram

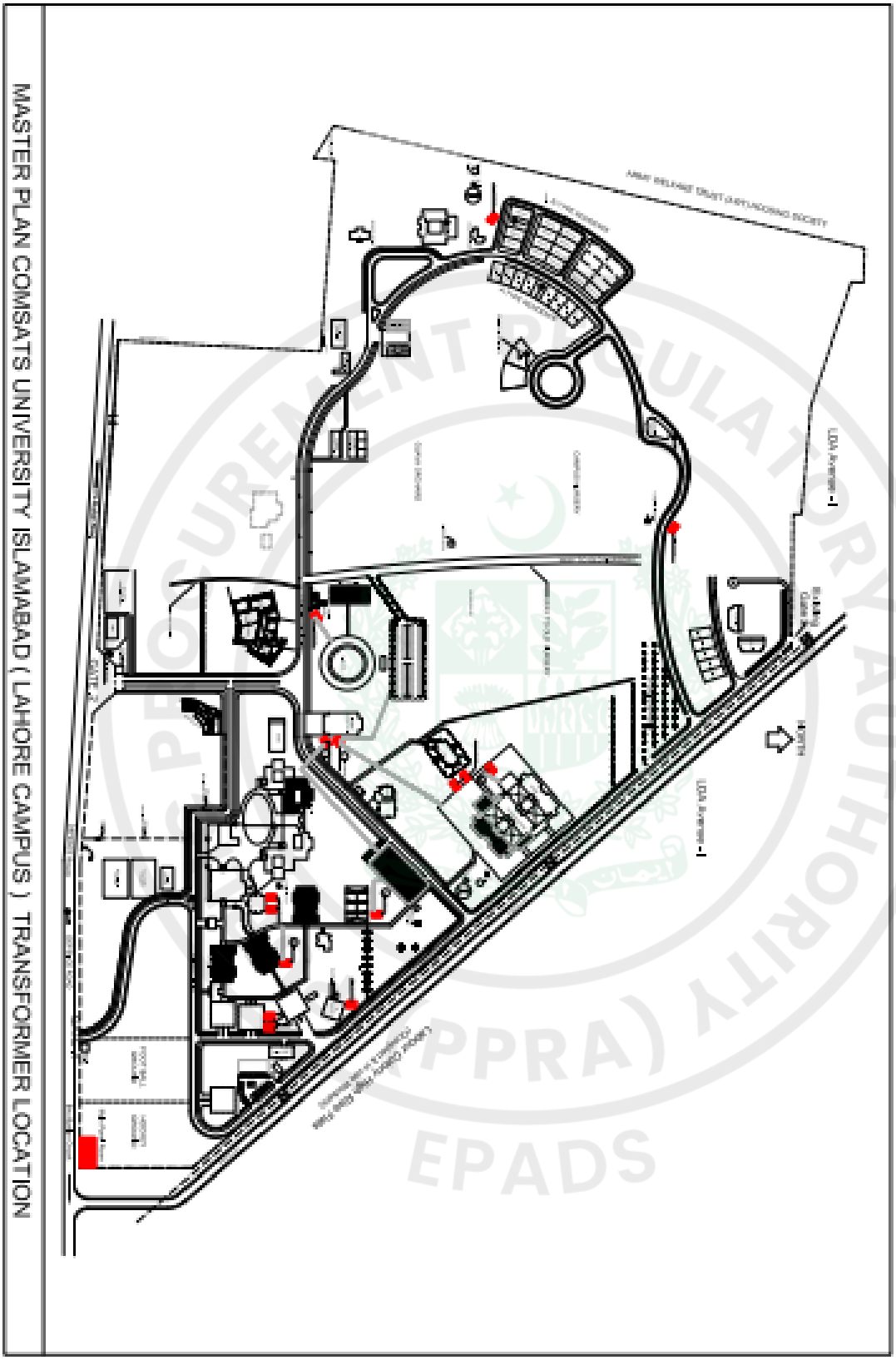
16. Solar PV to Generator Synchronizer Diagram

17. Present Electrical system SLD

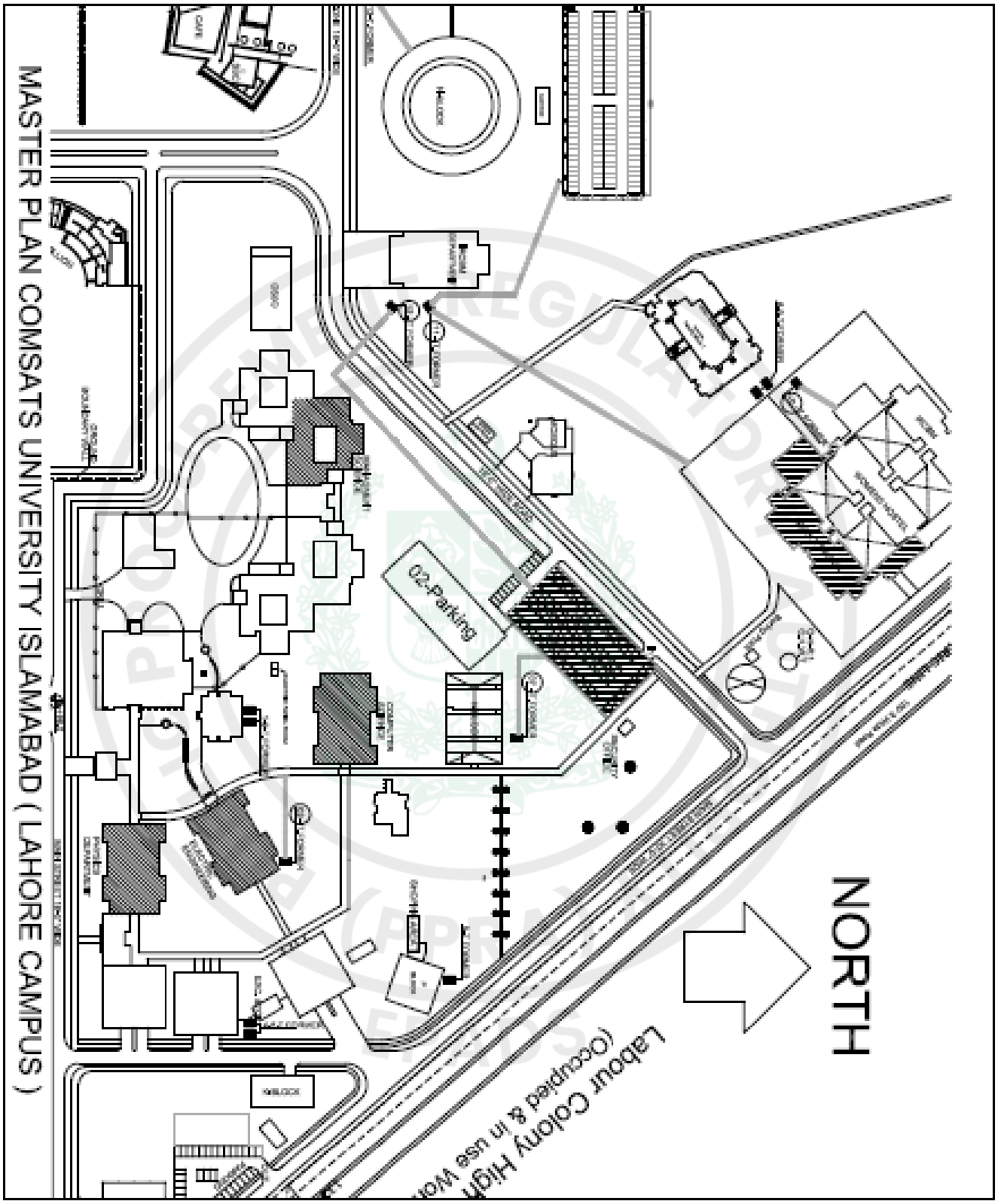
18. Solar Irradiance Analysis

19. Vetted L2 and L3 details of Rooftop is attached as a separate file

20. Vetted raised structure design for parking lot is attached as a separate file

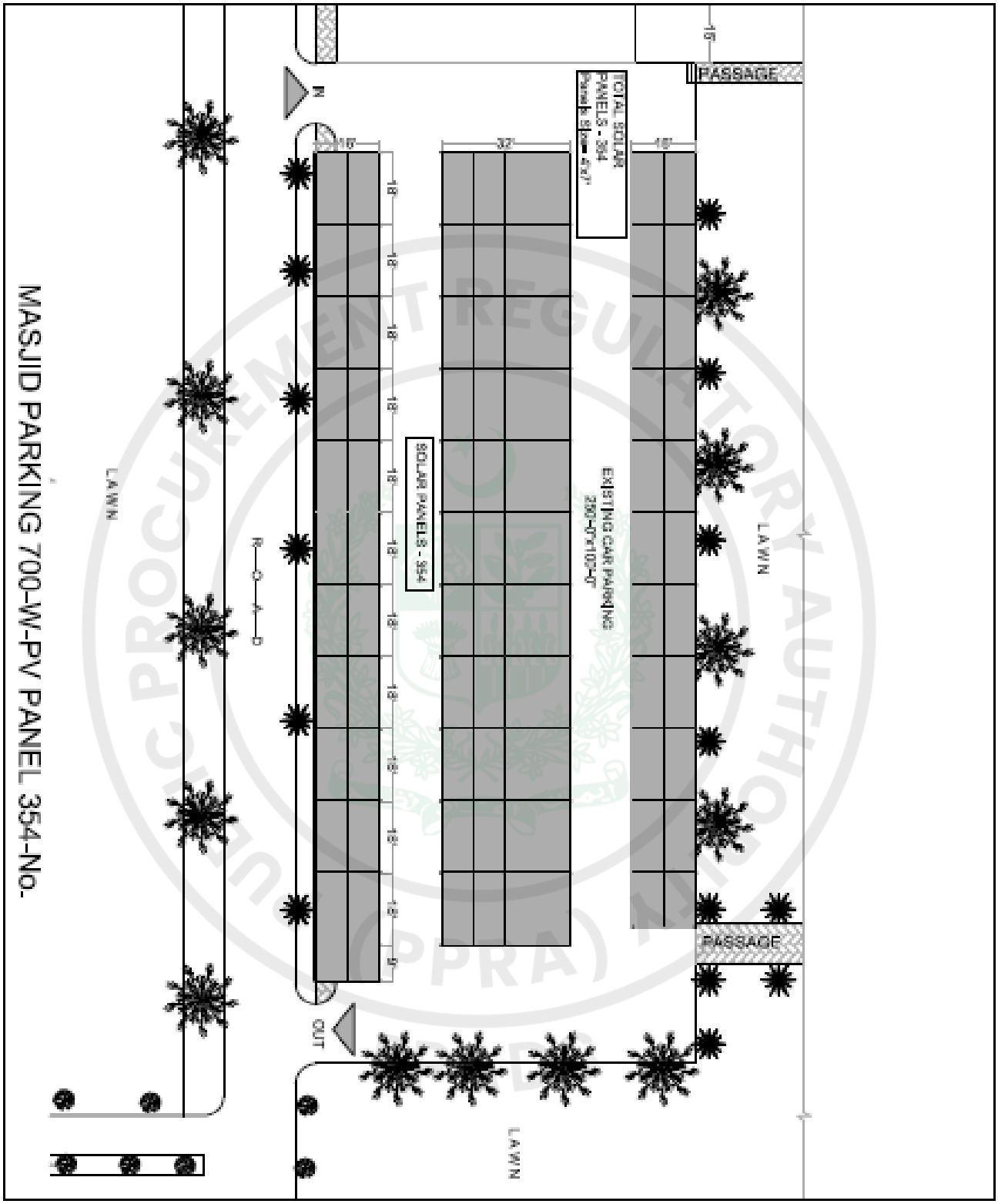


DIAGRAM#1: CUI Lahore Layout with marking of planned PV solar panel installation and location of Transformers



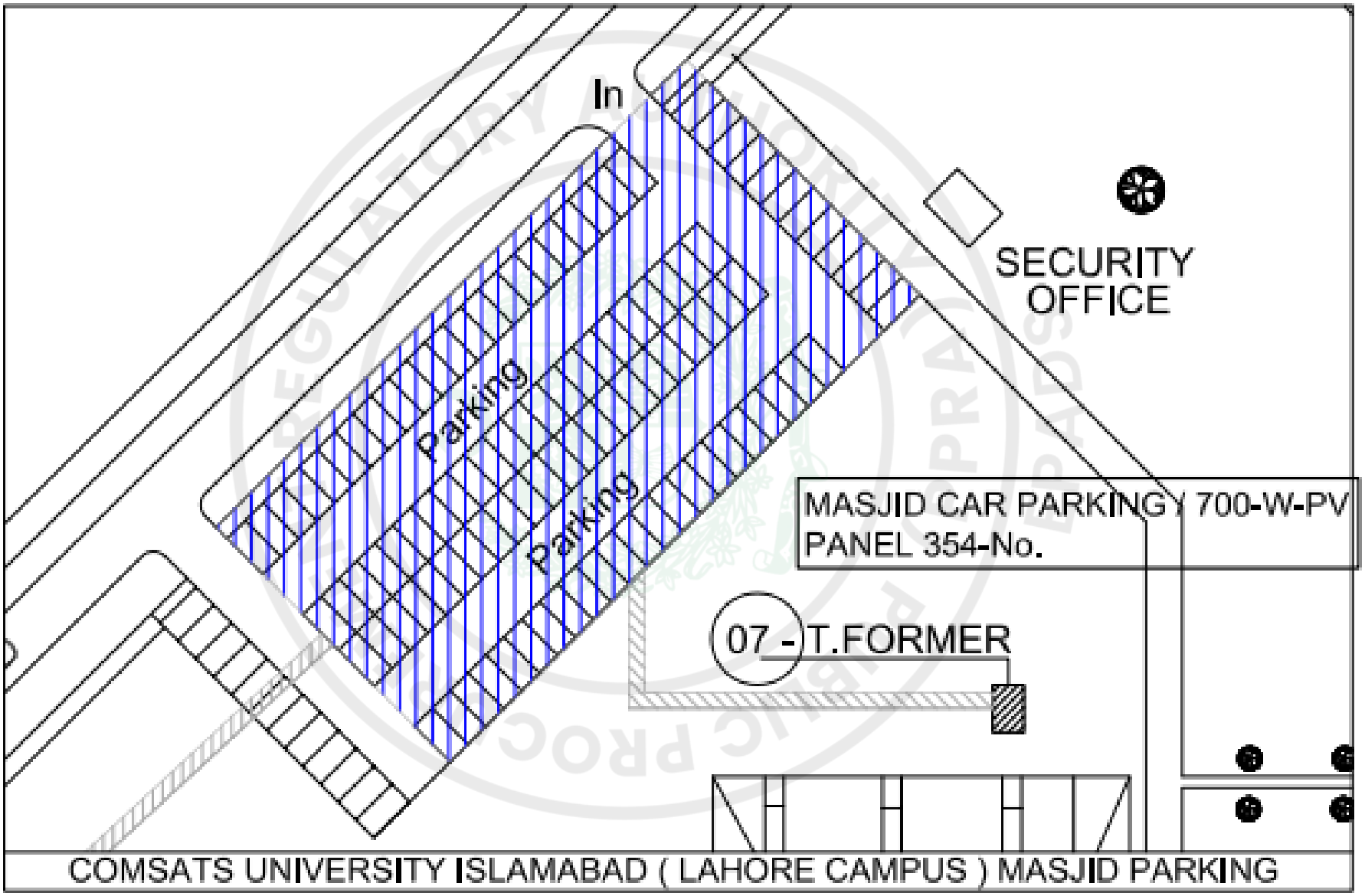
DRAWING#2: LAYOUT OF ROOF TOPS AND PARKING SHEDS WHERE PV SOLAR PANELWILL BE INSTALLED

PUBLIC PROCUREMENT REGULATORY AUTHORITY
(PPRA)
EPADS



DRAWING#3: Layout and positioning of PV solar panels on raised structure for Parking lot opposite Masjid

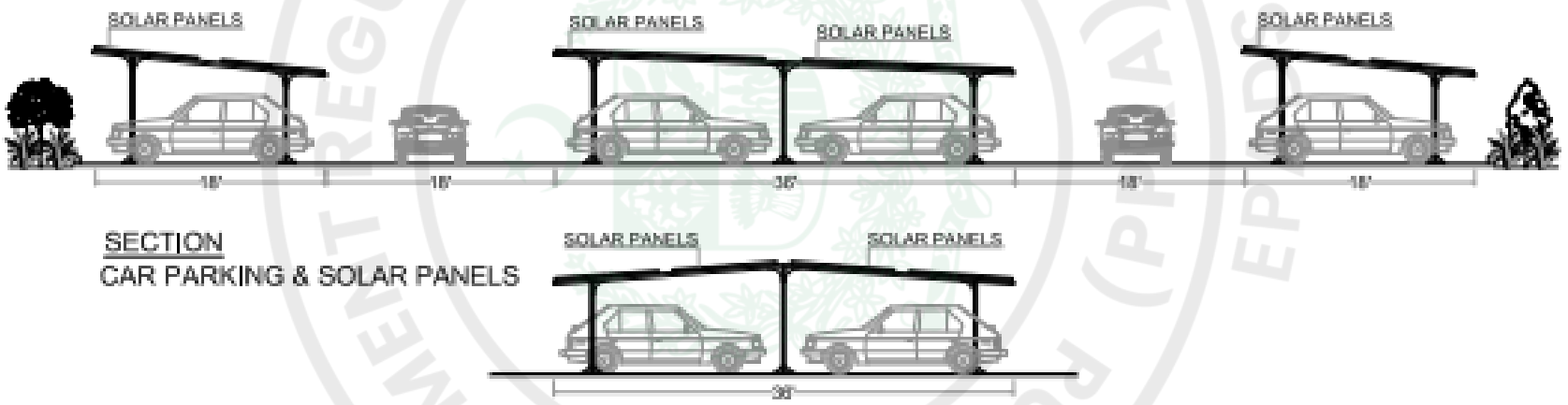
PUBLIC PROCUREMENT REGULATORY AUTHORITY
(PPRA)
EPADS



e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

DIAGRAM#4: Parking shed Layout with transformer marking

PUBLIC PROCUREMENT REGULATORY AUTHORITY
(PPRA)
EPADS



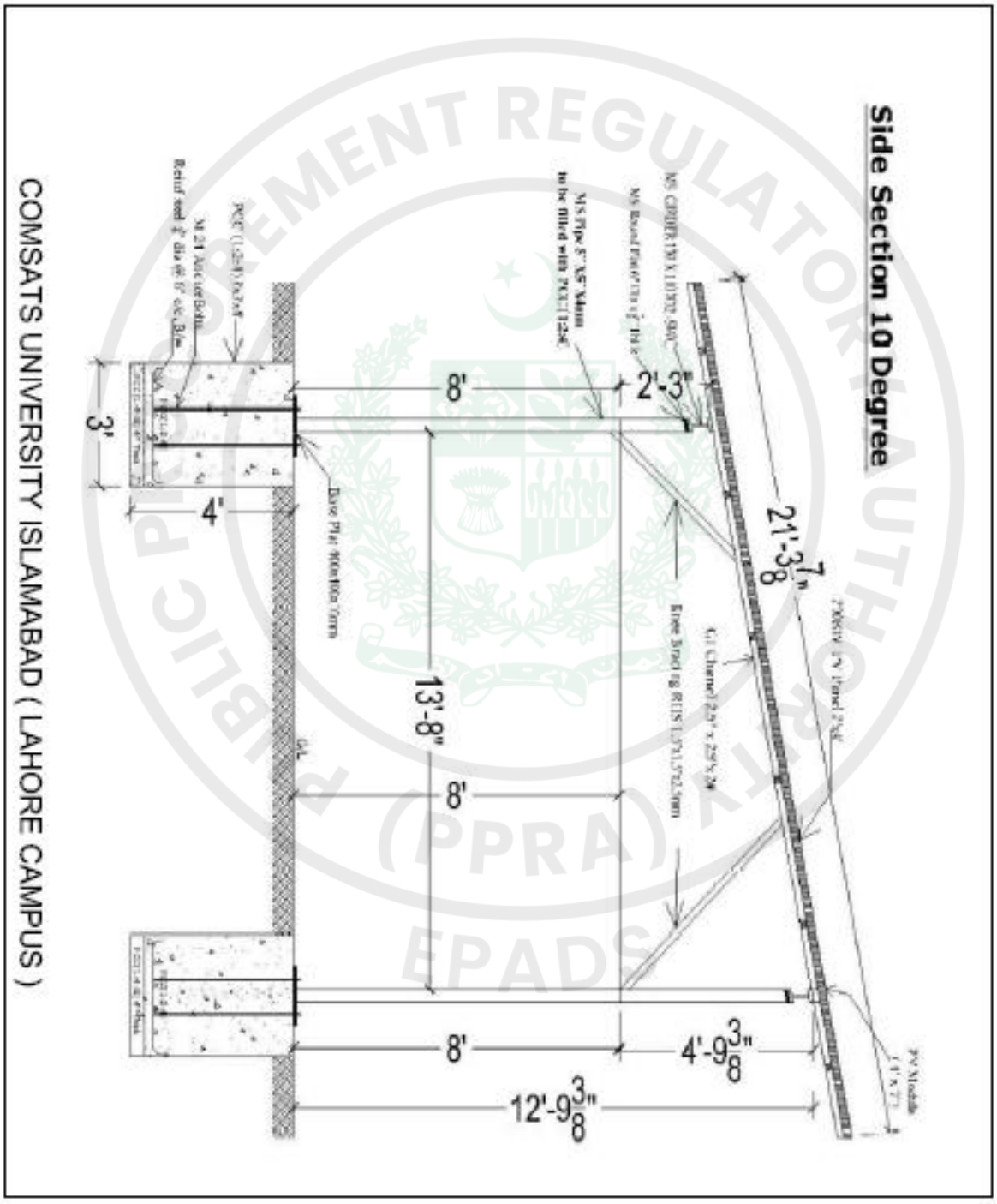
COMSATS UNIVERSITY ISLAMABAD (LAHORE CAMPUS) MASJID PARKING GRID SECTOIN

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

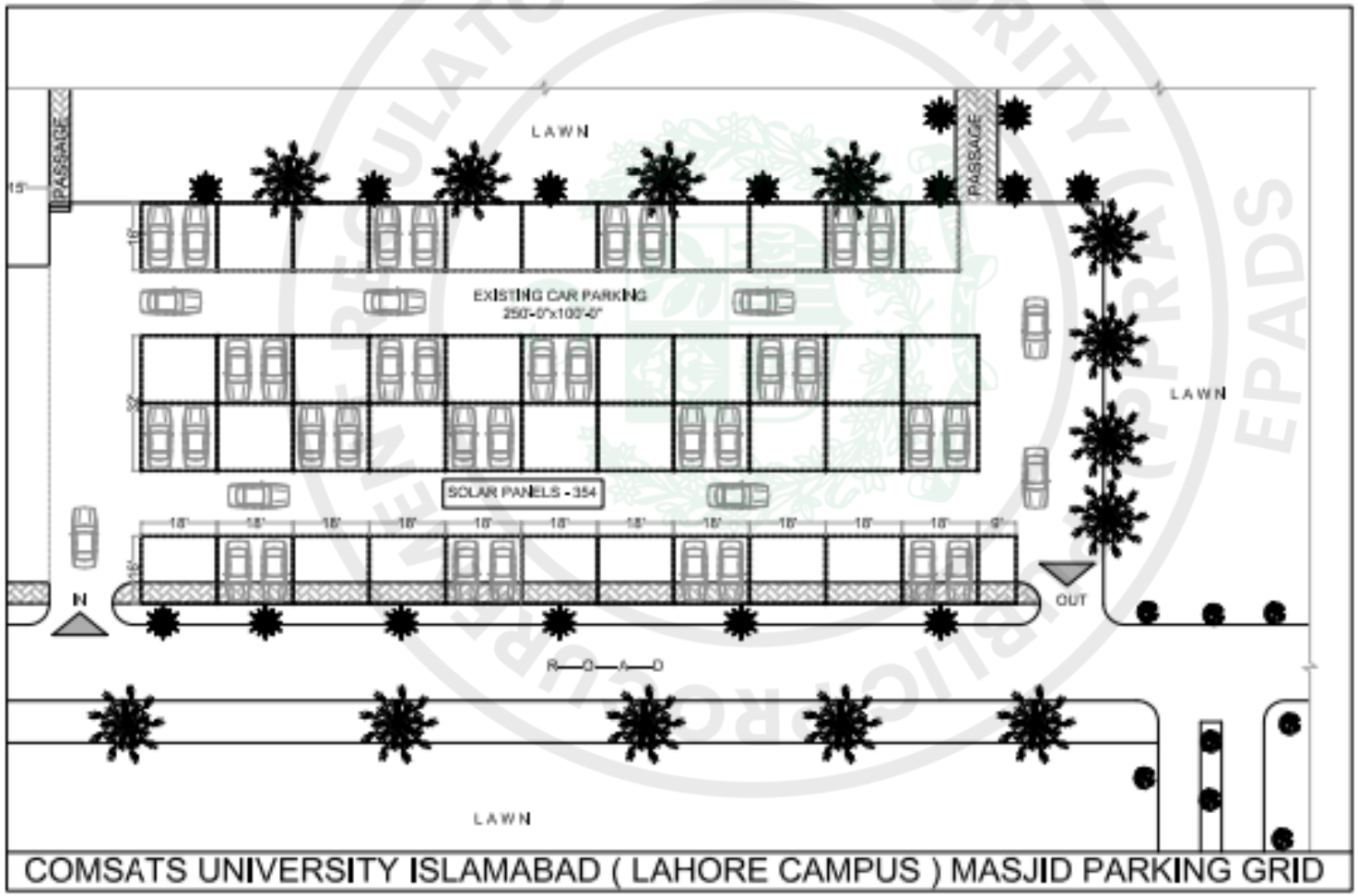
DRAWING#5: Raised shed structure for PV Panels on Parking lot opposite Masjid GRID SECTION

DRAWING#6: Raised shed structure for PV Panels on Parking lot opposite Masjid with grouting details



DRAWING#7: Raised shed structure for PV Panels on Parking lot opposite Masjid parking grid details

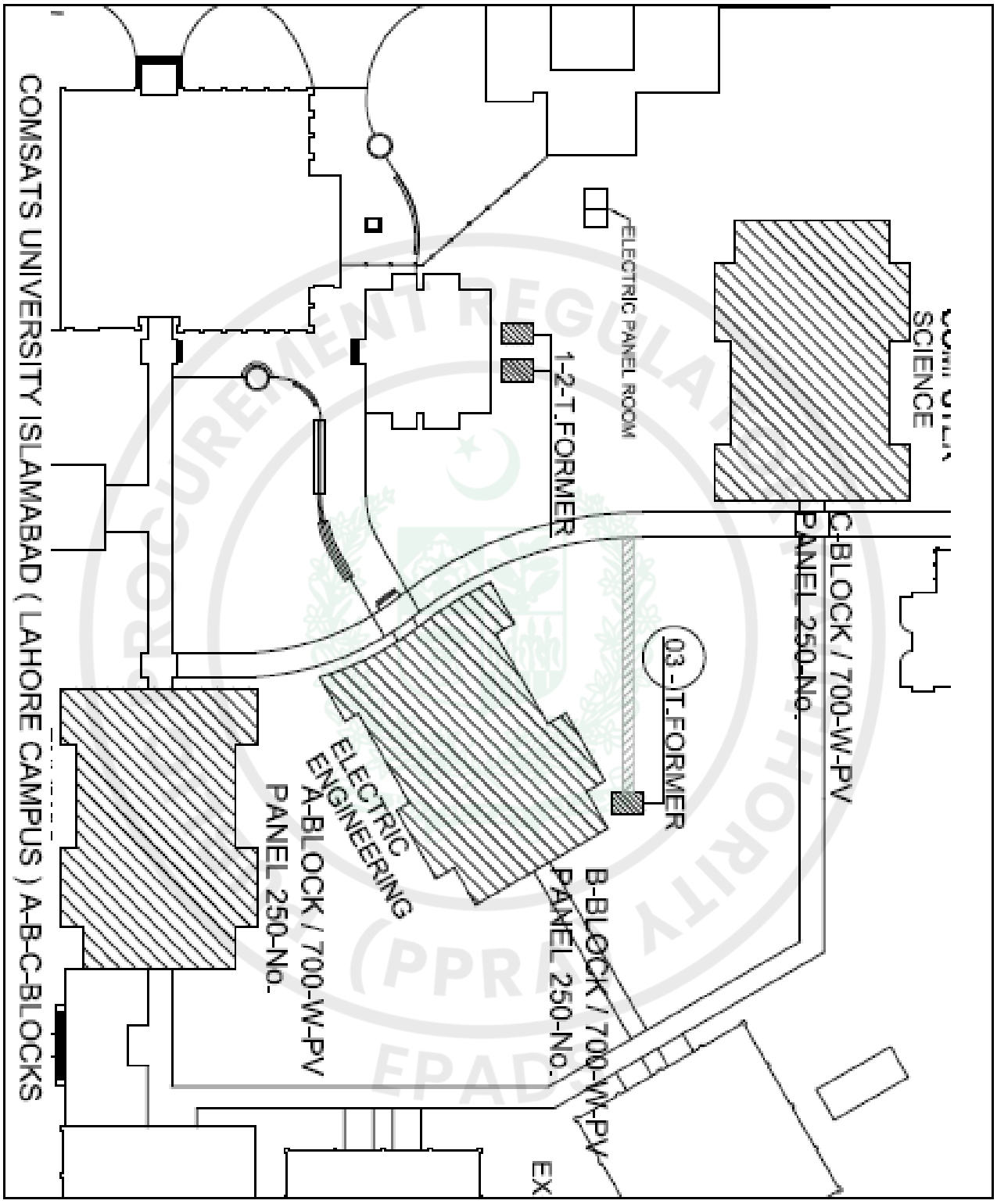
PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS



COMSATS UNIVERSITY ISLAMABAD (LAHORE CAMPUS) MASJID PARKING GRID

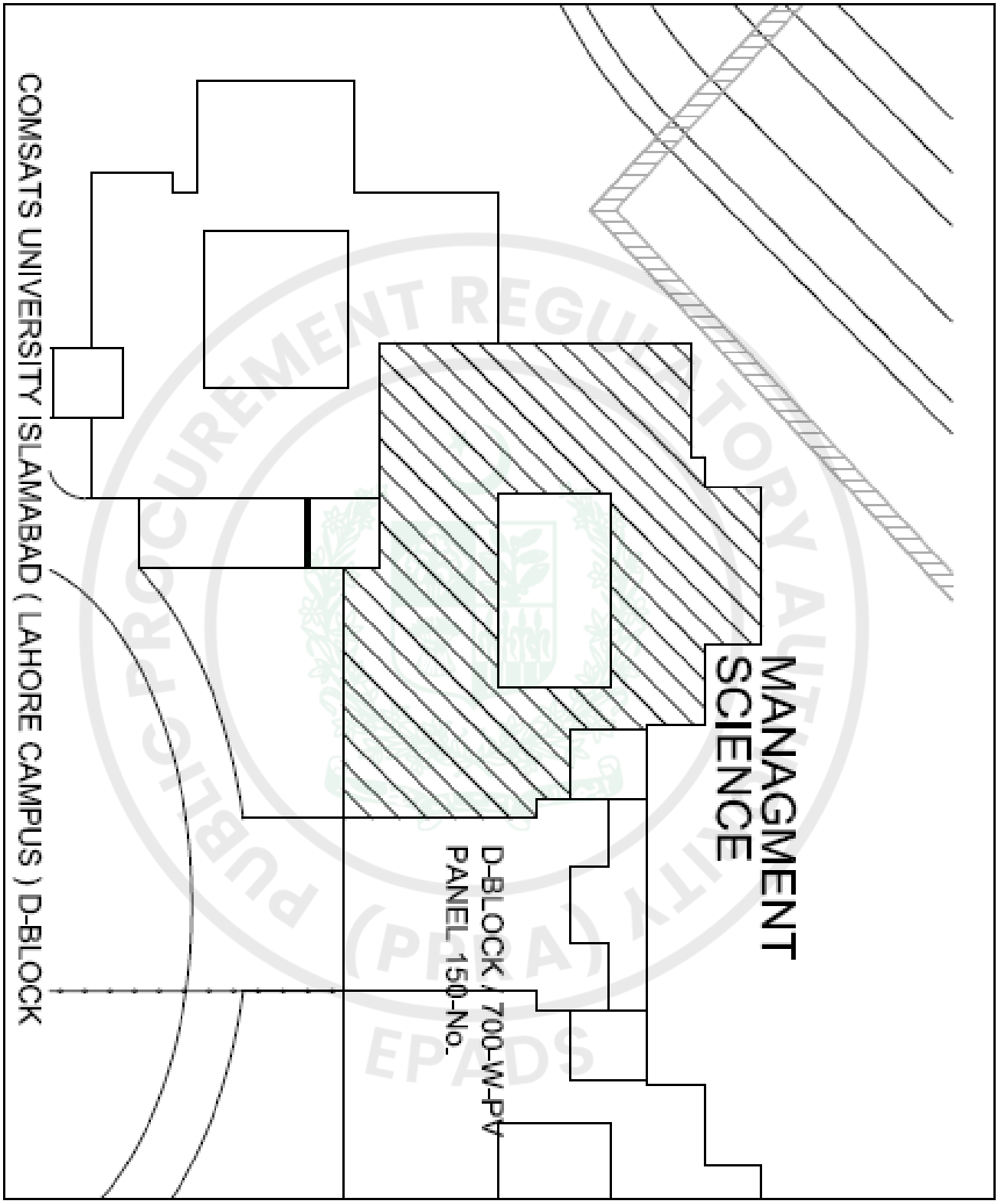
PAKISTAN ENVIRONMENTAL PROTECTION AGENCY (PAKEPA) REGULATORY AUTHORITY EPADS

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026



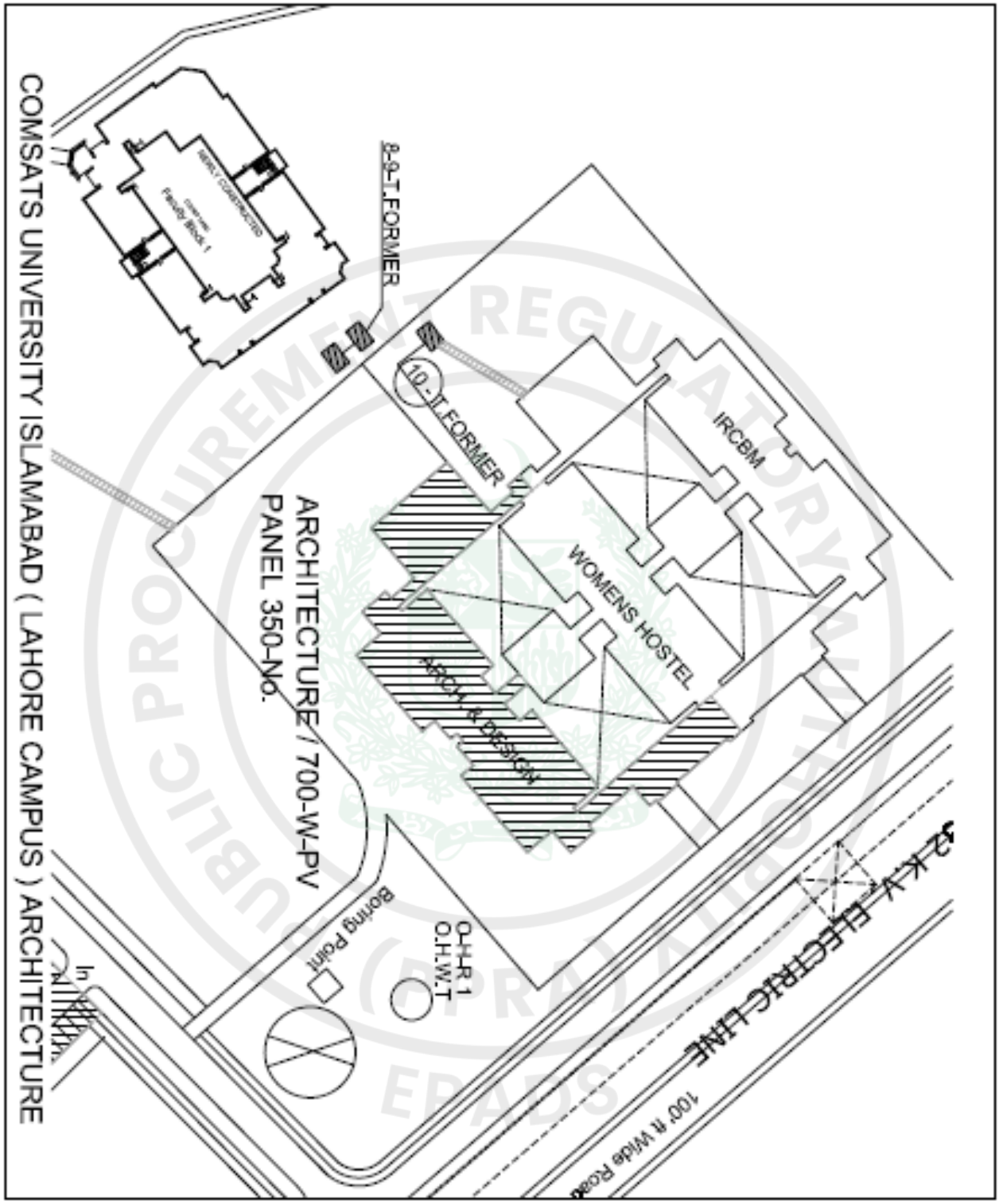
DRAWING#8: Layout and panel installation on rooftops of A, B, C Blocks

PUBLIC PROCUREMENT REGULATORY AUTHORITY
(PPRA)
EPADS

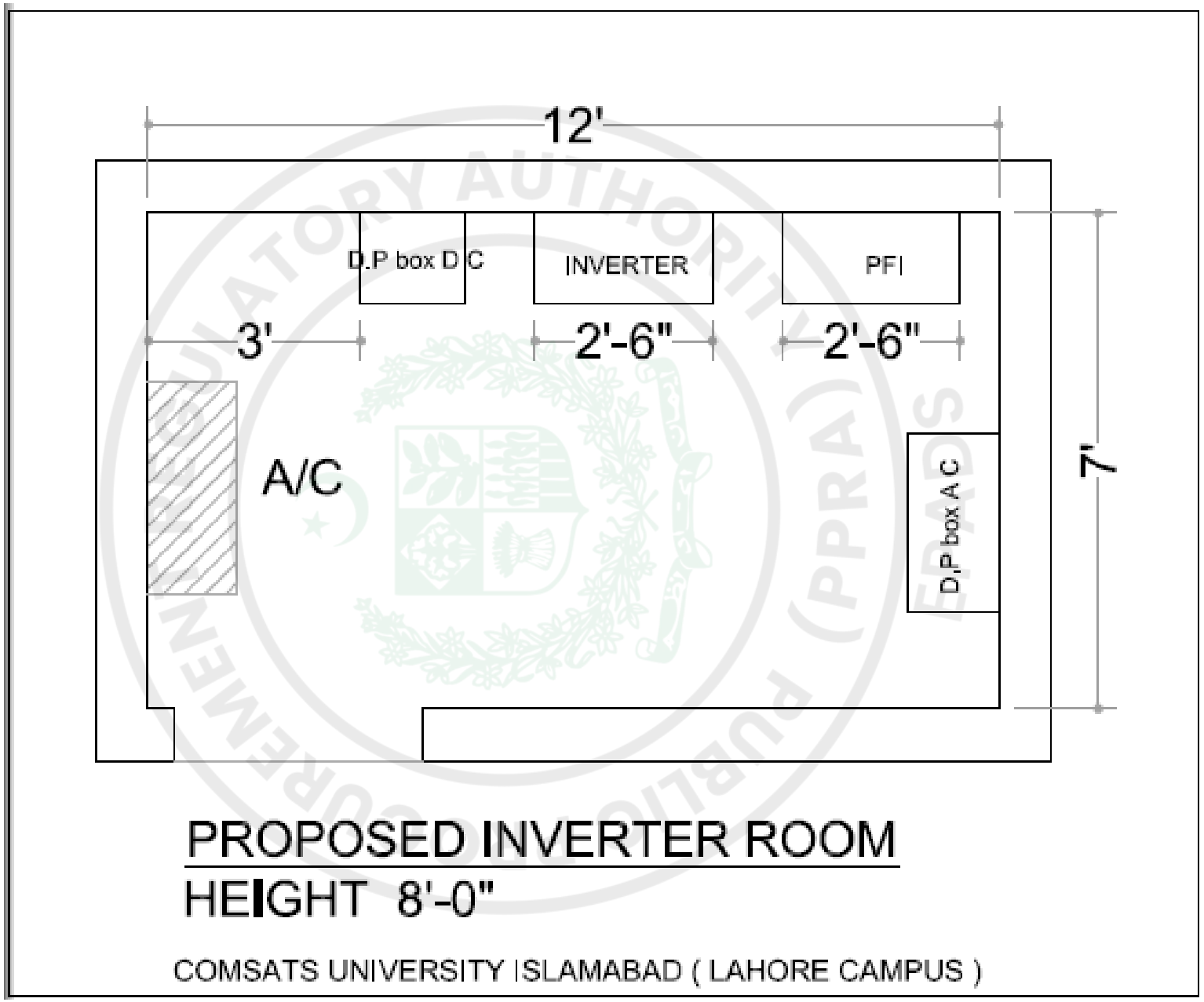


DRAWING#9: Layout and panel installation on rooftops of D Blocks

PUBLIC PROCUREMENT REGULATORY AUTHORITY
(PPRA)
EPADS



DRAWING#10: Layout and panel installation on rooftop of Architecture Department



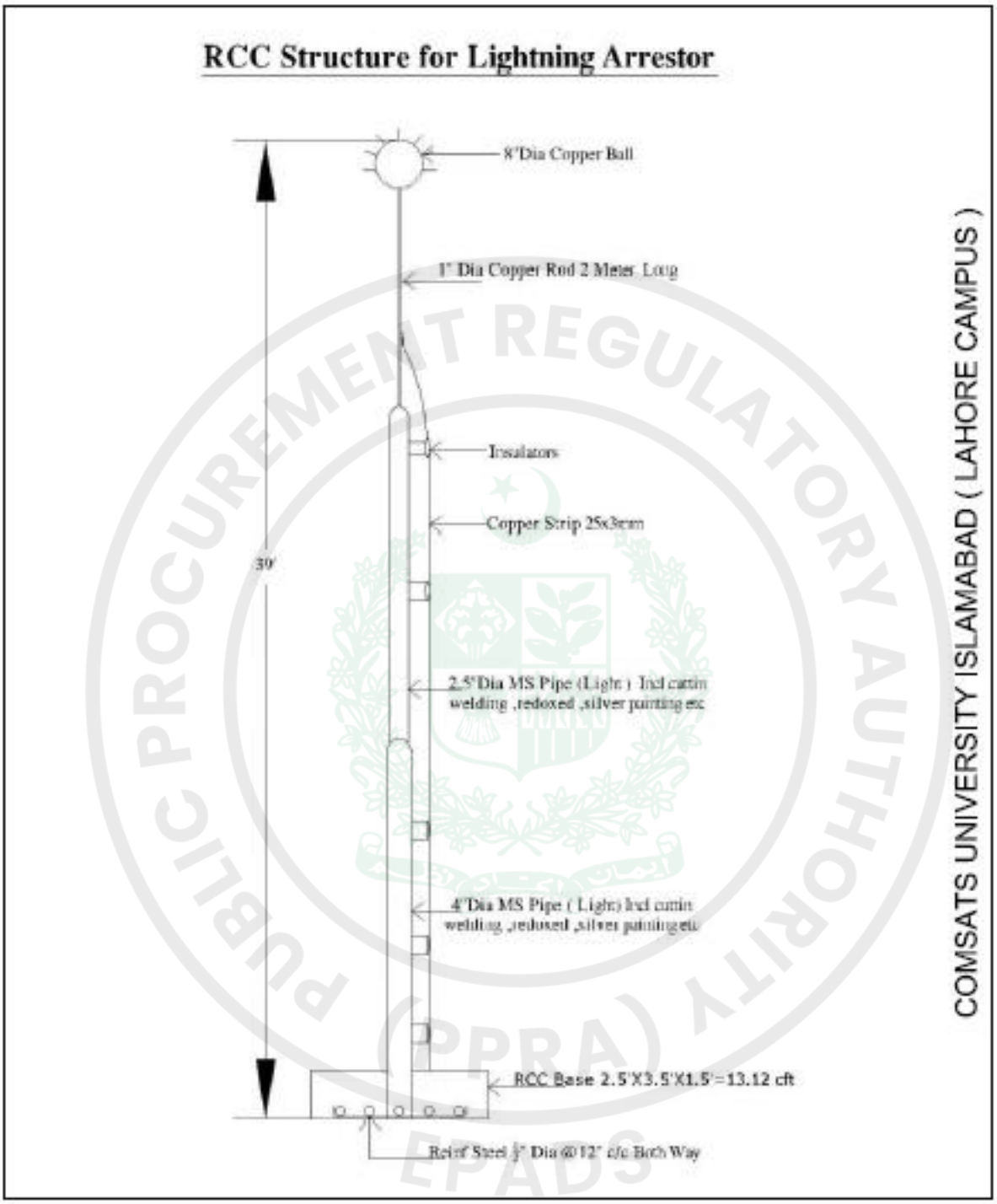
PROPOSED INVERTER ROOM
HEIGHT 8'-0"

COMSATS UNIVERSITY ISLAMABAD (LAHORE CAMPUS)

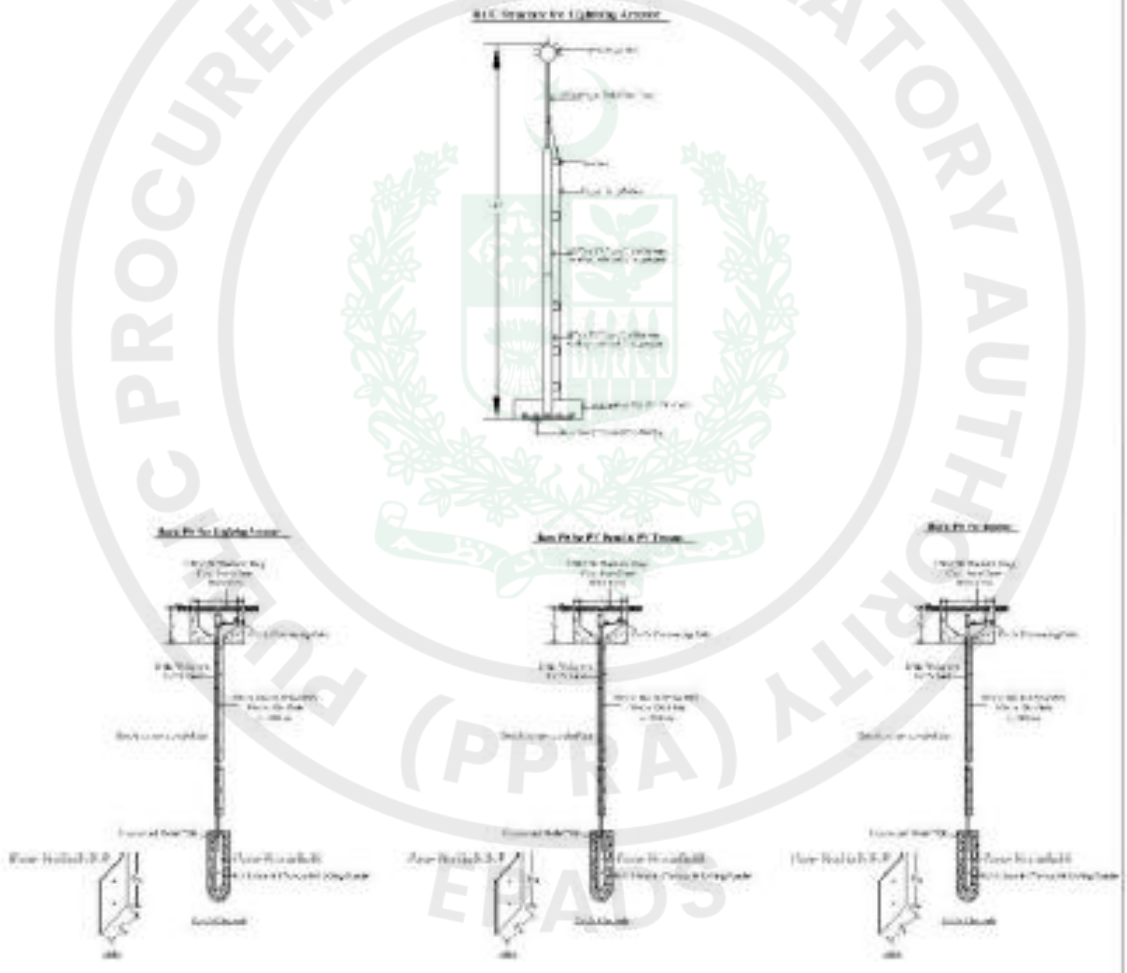
e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

DRAWING#11: Inverter Room

PUBLIC PROCUREMENT REGULATORY AUTHORITY
(PPRA)
EPADS



DRAWING#12: Lightening Arrester with RCC base structure



COMSATS UNIVERSITY ISLAMABAD (LAHORE CAMPUS)

Detail of Earth / Bore Pit for Lightning Arrestor

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

DRAWING#13: Detail of earth bore pit for lightening arrester

Design Criteria

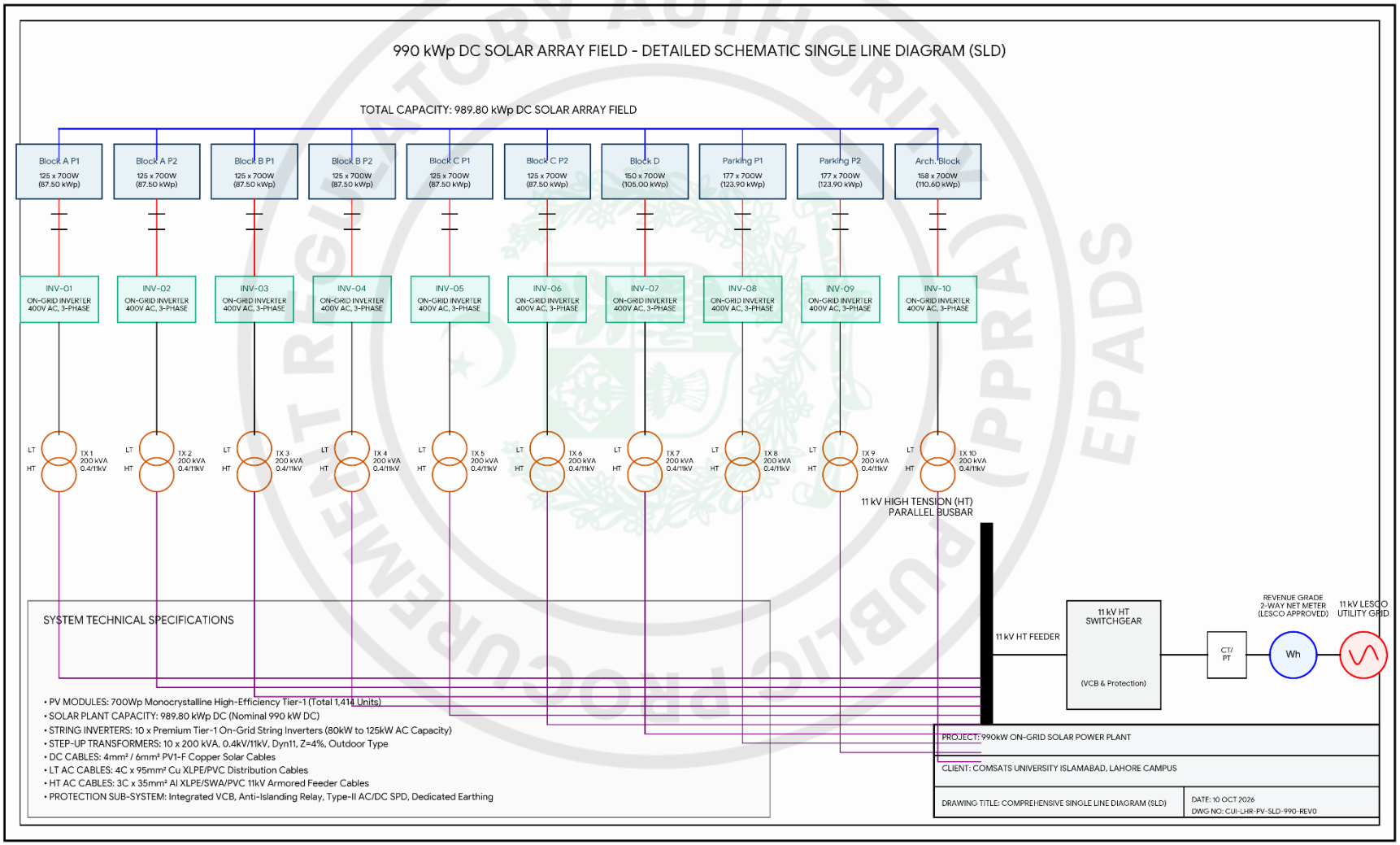
- Wind Speed (Basic)= 160km/hr
- Risk Category = II
- Importance Factor (I) = 1.00
- Terrain Category = 2
- Structure Life = 25 Year
- Soil Bearing Capacity (SBC) = 0.75 Ton/sft
- Tilt of PV Modules = 10 Deg
- Code References = ACI 318-13 AISC 360

STRUCTURAL MEMBER SCHEDULE

M EMBER	SECTION	THICKNESS	MATERIAL
Column	SHS 5"X5"	4.0mm	ASTM AS Gr.B
M ain Rafter	RHS 4"X2"	3.2mm	ASTM AS Gr.B
Top Chord/ Purlin	RHS 2"X1.5	2.5mm	ASTM AS Gr.B
Bracing	RHS 1.5"X1.5"	2.5mm	ASTM AS Gr.B
Cleat/ Gusset plate	PL 8 mm	—	ASTM AS
B ase Plate	PL 16 mm	—	ASTM AS
Anchor Bolts	M24	—	8.8 GRAD

COMSATS UNIVERSITY ISLAMABAD (LAHORE CAMPUS)

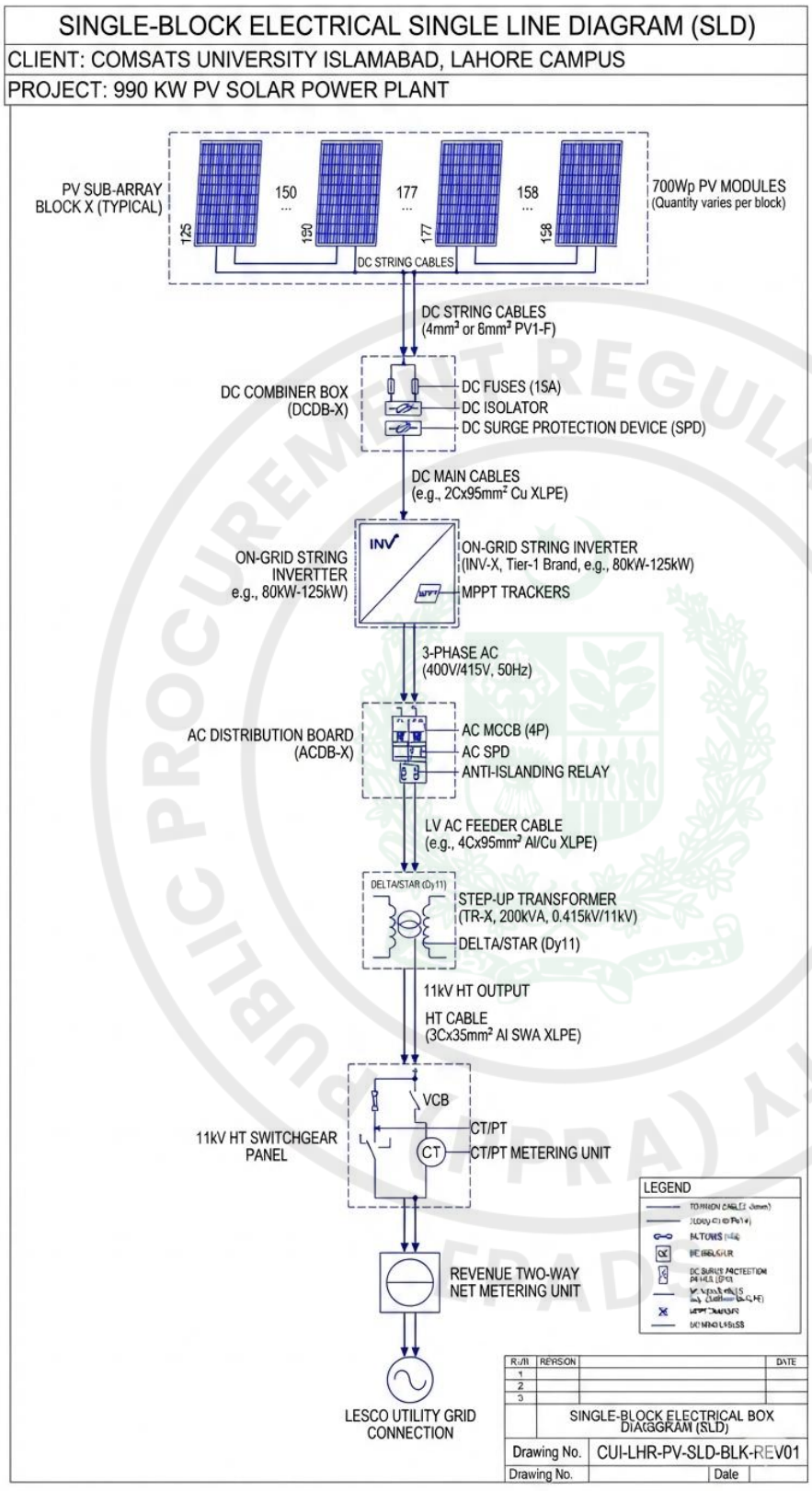
PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS



Page 115 of 341
e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

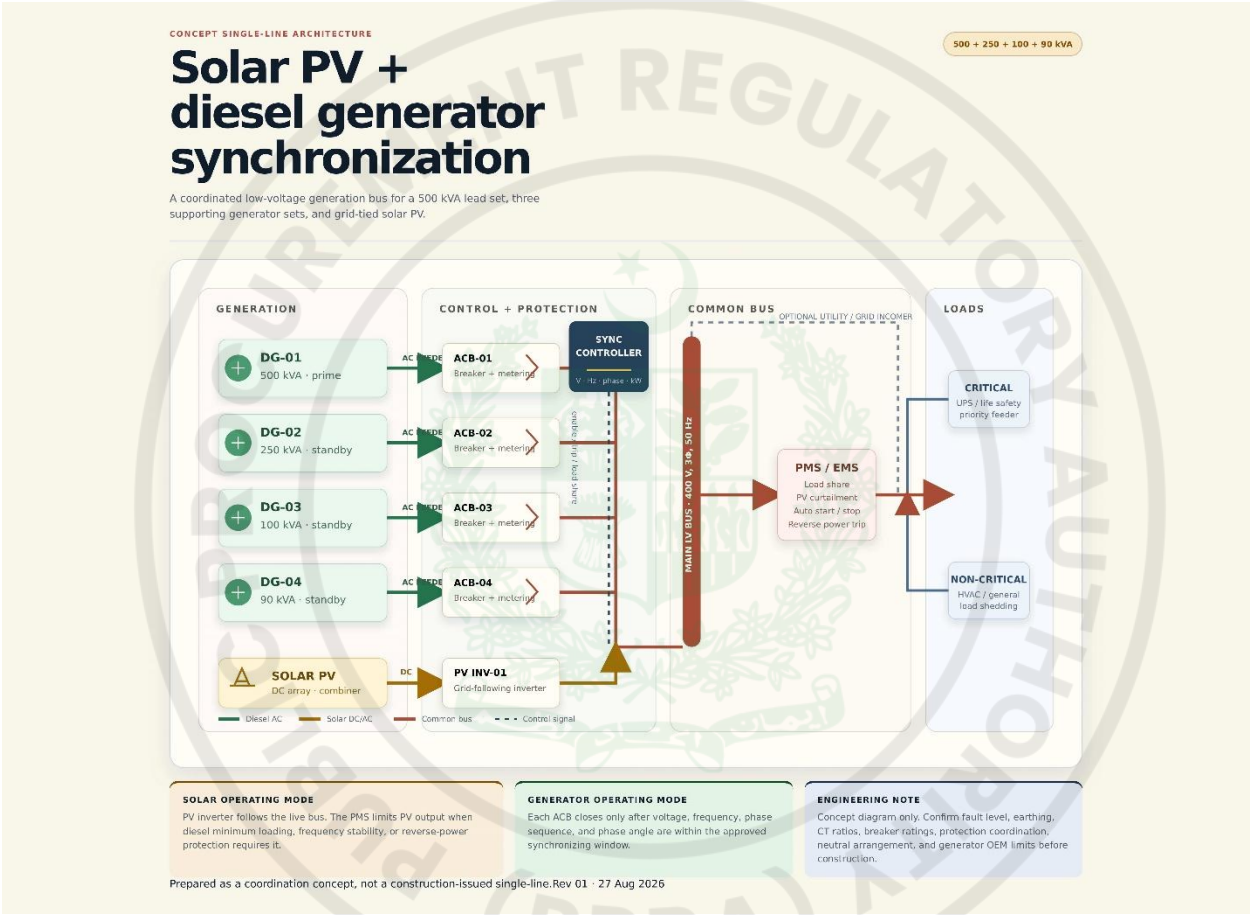
DRAWING#14: Detailed Schematic Single Line Diagram

PUBLIC PROCUREMENT REGULATORY AUTHORITY
(PPRA)
EPADS



e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

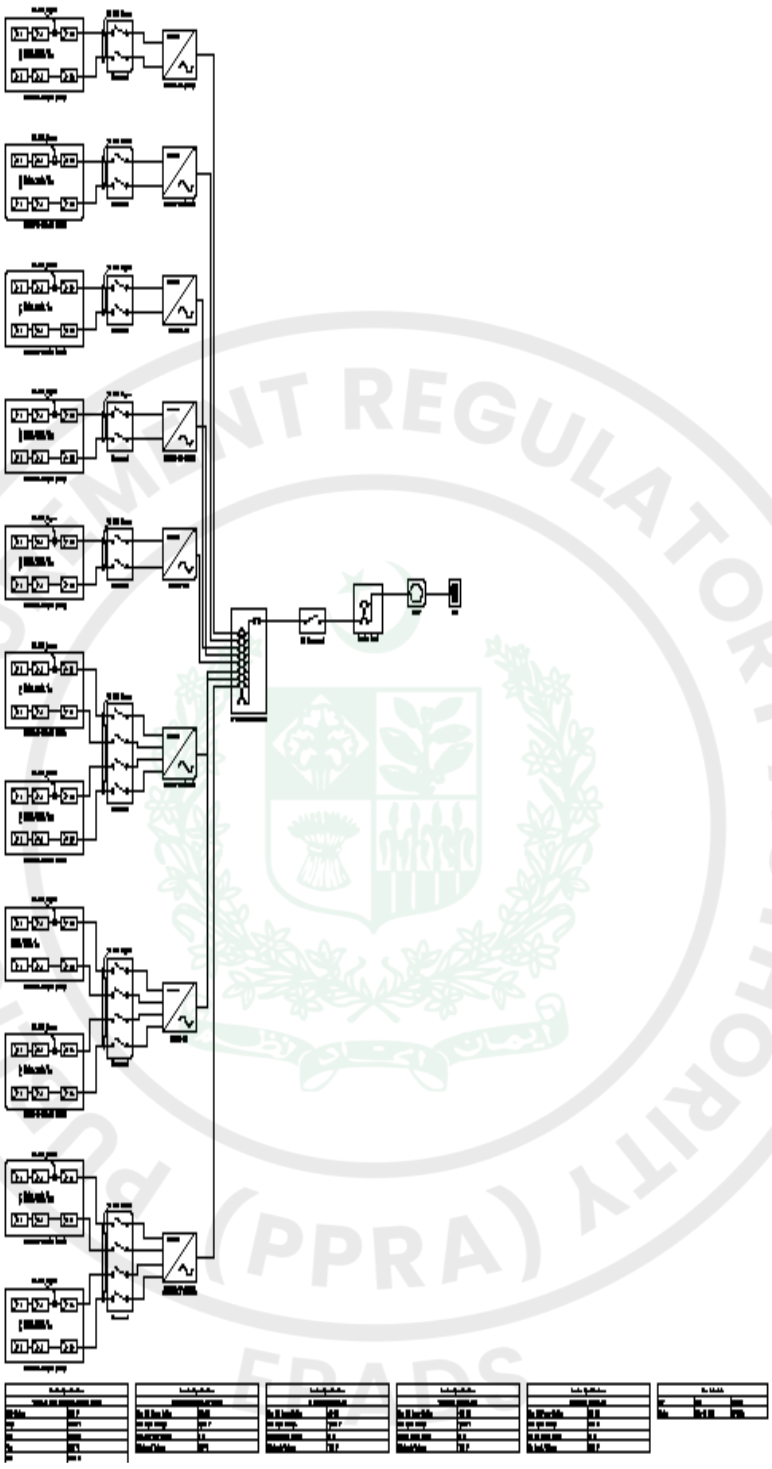
DIAGRAM#15: Single Block Single Line Diagram



PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

DIAGRAM#16: Solar PV to Generator Synchronizer Diagram

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS



PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Transformer Electric Load Detail

Sr. No	Capacity	Transformer Location	Load / Phase (at Peak Hours)			Apparent Power			
			R	Y	B	R	Y	B	Total
1	200 KVA	GM Shah Block (Admin)	114	77	70	25080	16940	15400	57420
2	200 KVA	GM Shah Block (Admin)	65	56	47	14300	12320	10340	36960
3	200 KVA	B-Block	120	117	112	26400	25740	24640	76780
4	200 KVA	Telephone Exchange	115	125	120	25300	27500	26400	79200
5	100 KVA	K-Block	35	33	41	7700	7260	9020	23980
6	200 KVA	Graduate Labs (Physics)	132	109	105	29040	23980	23100	76120
7	400 KVA	H-Block	95	118	100	20900	25960	22000	68860
8	200 KVA	Architecture Department	85	80	60	18700	17600	13200	49500
9	400 KVA	Faculty Block - PhD	367	365	280	80740	80300	61600	222640
10	630 KVA	IRCBM	60	130	50	13200	28600	11000	52800

11	400 KVA	Pharmacy Department - Block-II	225	210	258	49500	46200	56760	152460
12	400 KVA	Bank+ sports+ part N block	27	30	22	5940	6600	4840	17380
13	200 KVA	N-Block	11	126	137	2420	27720	30140	60280
14	200 KVA	Staff Colony	18	15	19	3960	3300	4180	11440
15	200 KVA	Officer Colony - Girls Hostel	57	51	44	12540	11220	9680	33440

Panels at						PFI
						FOR Apparent Power
A						0.8 PF
A block lighting		Exch Trafo	Inverter under stairs		Inverter 1	79.2 KW
B						
B Block lighting Load			Inverter under stairs		Inverter 2	76.7 KW
B Block AC			Inverter under stairs		Inverter 3	
A Block AC			Inverter under stairs			
C						
C Block lighting load			Inverter under stairs		Inverter 3	94.38 KW

A new cable required from Admin Block to C Block (150 ft)			Inverter under stairs		
C Block lighting Load (Two possibilities (i) Within C Block under stairs or (ii) in Complaint cell					Inverter 4
D					
D Block lighting load			Inverter at D Block DP panel room		Inverter 5
AC load	(New AC cable is required 80 ft)		Inverter at D Block DP panel room		Inverter 6
H Block	Parking lot				
A new room can be built			Inverter in new room or old room		Inverter 7

PUBLIC PROCUREMENT REGULATORY AUTHORITY PPRA EPADS

H Block AC					
H Block lighting					
Security office					
Lighting load			Inverter in new room or old room		Inverter 8
Architecture					
400 KVA Trafo					
Lighting load DP in corridoor			Inverter under stairs, cable will be required (35 ft)		Inverter 9
AC load from 200 KVA			Inverter under stairs, cable will be required (35 ft)		Inverter 10

DIAGRAM#17: Present Electrical system SLD

SECTION 3:

SOLAR INTENSITY & IRRADIANCE ANALYSIS REPORT

Project: 990 kWp PV Solar Power Plant | Client: COMSATS University Islamabad, Lahore Campus

1. Regional Meteorological Baseline (Lahore Coordinates: 31.4015° N, 74.2120° E)

- **Global Horizontal Irradiance (GHI):** ~1,750 – 1,850 kWh/m²/year, establishing strong baseline solar resource availability.
- **Direct Normal Irradiance (DNI):** ~1,400 – 1,500 kWh/m²/year across the upper Punjab plain regions.
- **Peak Sun Hours (PSH):** 4.8 to 5.2 hours per day on an annual averaging cycle.
- **Optimal Tilt Configuration:** 24° to 26° South for fixed ground/roof mounts; 10° to 15° for flush-mount architectural setups to minimize wind-uplift loads.

2. Site-Specific Rooftop & Structure Assessment Matrix

Structural Location	Solar Intensity	Shading Risk	Engineering & Mounting Strategy
Block A (Parts 1 & 2)	High	Very Low	Fixed 24° South tilt; standard wind-ballasted or chemically anchored structural footings on RCC flat slab.
Block B (Parts 1 & 2)	High	Very Low	Fixed 24° South tilt; optimized inter-row pitch layout to completely mitigate inter-row self-shading profiles.
Block C (Parts 1 & 2)	High	Low	Fixed 24° South tilt; structural clearance height required to bypass localized overhead water reservoirs/stairwells.
Block D	High	Low-Med	Fixed low-profile or localized East-West configurations to maximize surface space around complex layout divisions.
Architecture Dept.	Med-High	Medium	Flush-mount low-tilt structural design (10°–15°) to integrate with structural load capacity and protect front aesthetics.
Parking Lot Canopy	Maximum	Zero	Raised cantilever structural steel canopy framed at 5°–10° South slope for unified drainage and maximum unobstructed exposure.

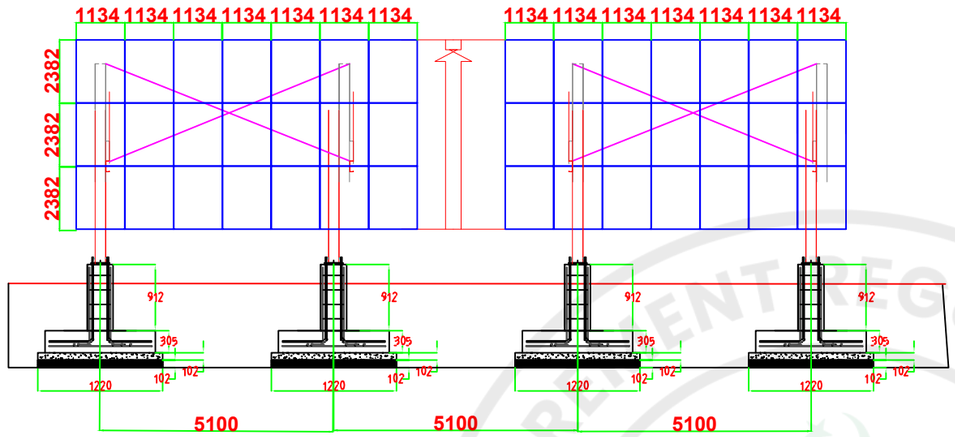
3. Micro-Climate Environmental Challenges & Mitigations

- **Atmospheric Soiling & Dust:** Lahore's high particulate matter and agricultural harvesting smoke impose up to 15%–25% soiling drops. Mitigation requires an integrated high-pressure water pipeline system installed permanently across all zones.
- **Winter Smog Window (Nov–Jan):** Dense seasonal smog severely reduces GHI. System depends on diffuse solar capture; string configurations rely on Tier-1 inverter low-threshold MPPT operational ranges to optimize ambient daylight conversion.
- **Summer Ambient Heat Derating:** Exceeding 45°C ambient temperatures push internal cell temperatures past 65°C. The open-air, elevated Parking Lot structure naturally benefits from airflow ventilation, reducing structural thermal losses versus roof surfaces.

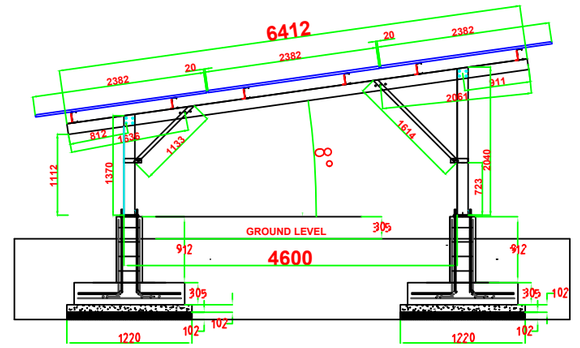
4. Expected Energy Generation Metrics

- **Plant Operating Performance Ratio (PR):** 75% to 78% average annual performance profile, factoring in local temperature coefficients and seasonal smog dynamics.
- **Daily Operational Generation Profile:** 3,800 to 4,400 kWh/day tracking variation cycles (~2,500 kWh/day in deep winter up to ~5,200 kWh/day in late spring).
- **Total Annual Energy Yield Forecast:** 1.45 to 1.55 Million kWh (Units) produced annually, driving massive utility savings under the current LESCO Net Metering regulatory network.

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

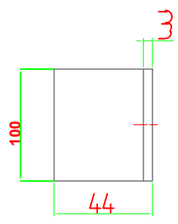


Front View

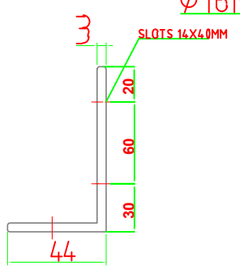


S-N SIDE VIEW

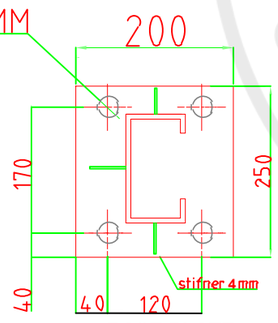
TOP VIEW



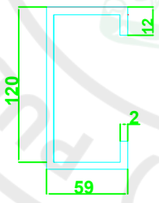
SIDE VIEW



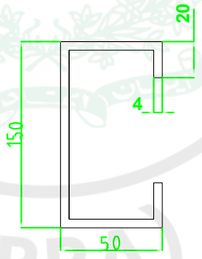
Support angle



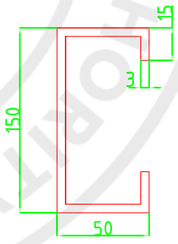
BASE PLATE
12mm



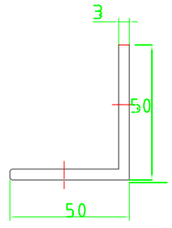
PURLIN



COLUMN



RAFTER



BRACE

SECTIONAL DETAILS

Engr. Khurram Shahzad
BSc. Civil Engineering
PEC # Civil/54490
Structural Design Engineer
Riaz-ud-Din Engineering (Pvt.) Limited

NOTE: ALL DIMENSIONS ARE IN (mm) UNLESS OTHERWISE SPECIFIED

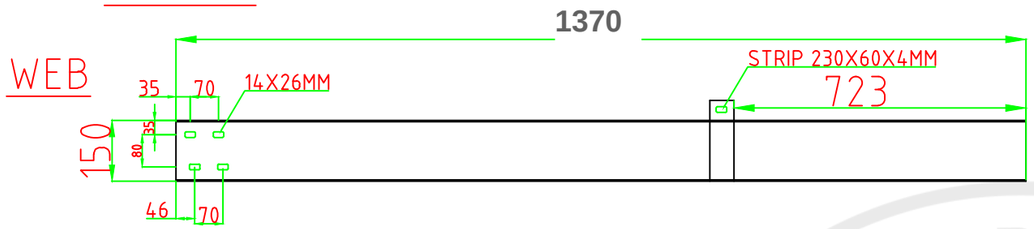
REV	DATED	DESCRIPTION	DRAWN BY	CHECKED BY	APPROVED BY
0		FOR CONSTRUCTION DRAWING	–	–	–

COMPUTER REF. NO.	– –
DATE	23-11-2023
CLIENT.	–
PROJECT.	XXXX
TITLE.	STRUCTURE DETAIL

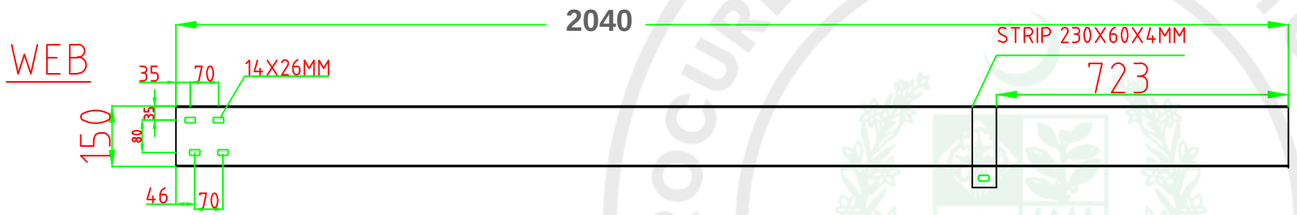
SCALE	SHEET SIZE	PROJECT NO.	DRAWING NO.	SHEET NO.	REV
1:250	A3	–	–		–

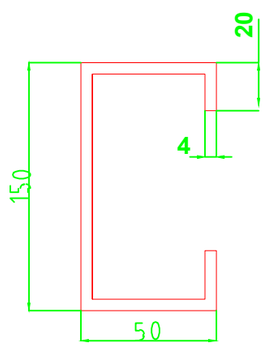
PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

FRONT COLUMN
QTY=22



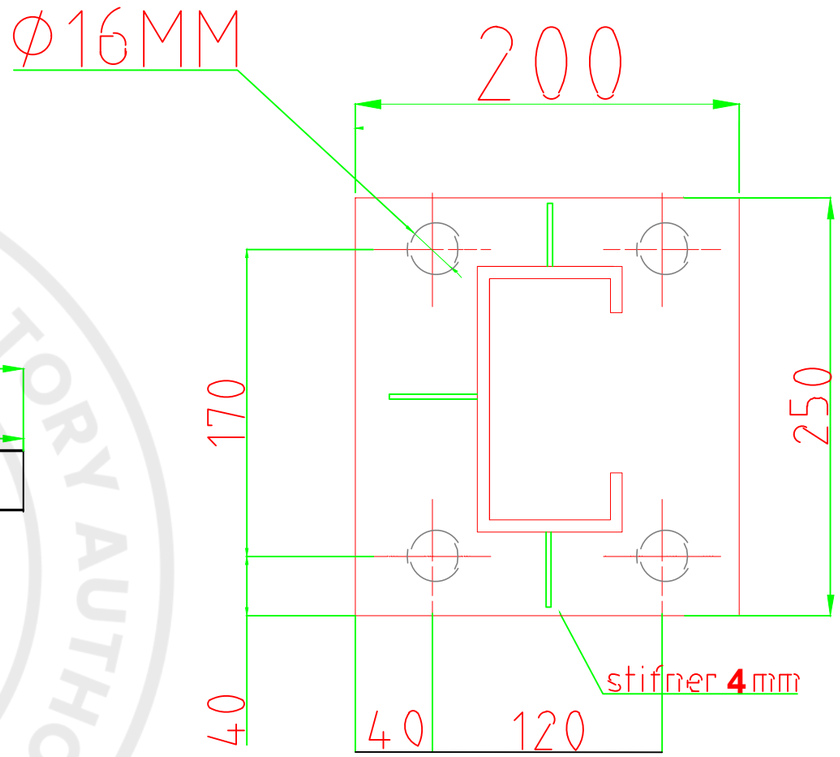
BACK COLUMN 1
QTY=17





COLUMN

QTY=44



BASE PLATE
12mm

Engr. Khurram Shahzad
BSc. Civil Engineering
PEC # Civil/54490
Structural Design Engineer
Riaz-ud-Din Engineering (Pvt.) Limited

NOTE: ALL DIMENSIONS ARE IN (mm) UNLESS OTHERWISE SPECIFIED

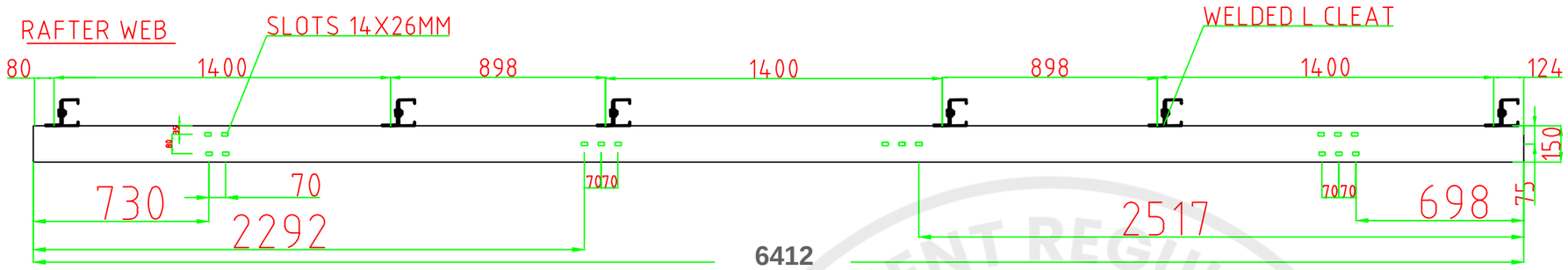
REV	DATED	DESCRIPTION	DRAWN BY	CHECKED BY	APPROVED BY
0		FOR CONSTRUCTION DRAWING	–	–	–

COMPUTER REF. NO.	– –
DATE	
CLIENT.	–
PROJECT.	XXXX
TITLE.	STRUCTURE DETAIL

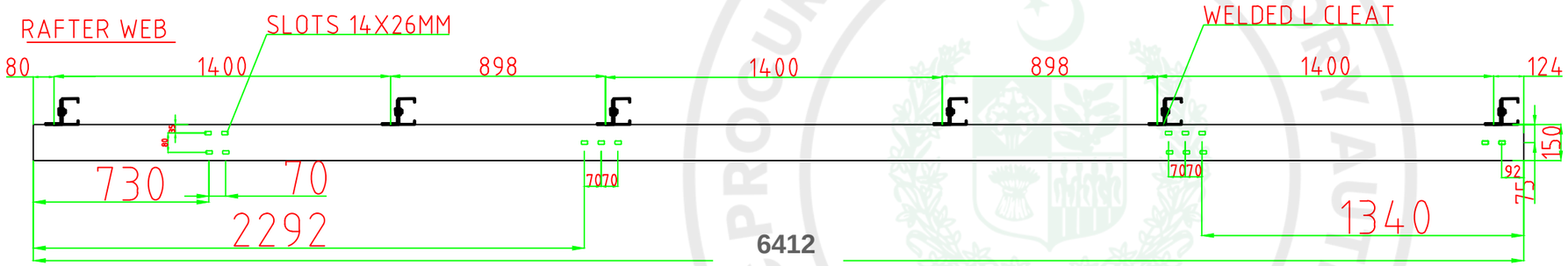
SCALE	SHEET SIZE	PROJECT NO.	DRAWING NO.	SHEET NO.	REV
1:250	A3	–	–		–

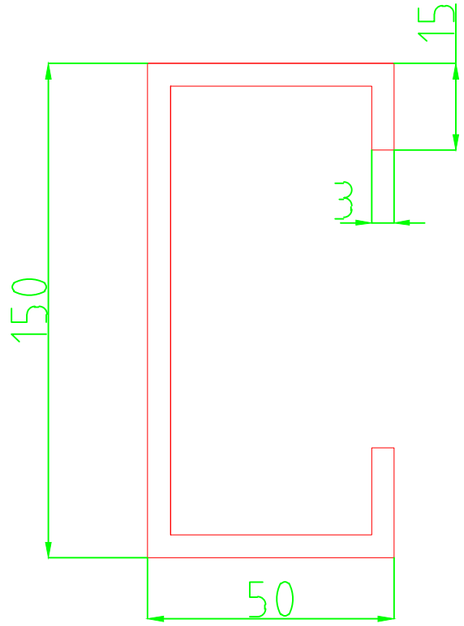
PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

RAFTER
QTY=17



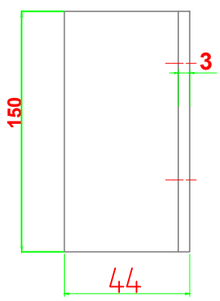
RAFTER
QTY=5



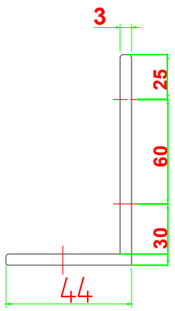


RAFTER

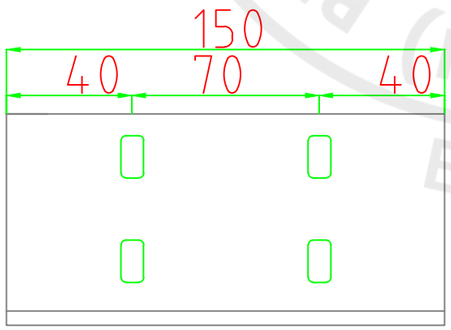
TOP VIEW



SIDE VIEW



FRONT VIEW



Engr. Khurram Shahzad
BSc. Civil Engineering
PEC # Civil/54490
Structural Design Engineer
Riaz-ud-Din Engineering (Pvt.) Limited

NOTE: ALL DIMENSIONS ARE IN (mm) UNLESS OTHERWISE SPECIFIED

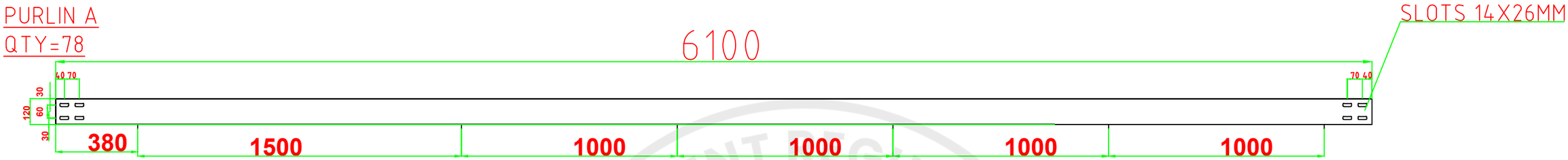
REV	DATED	DESCRIPTION	DRAWN BY	CHECKED BY	APPROVED BY
0		FOR CONSTRUCTION DRAWING	-	-	-

COMPUTER REF. NO. --
DATE
CLIENT. -
PROJECT. XXXX
TITLE. STRUCTURE DETAIL

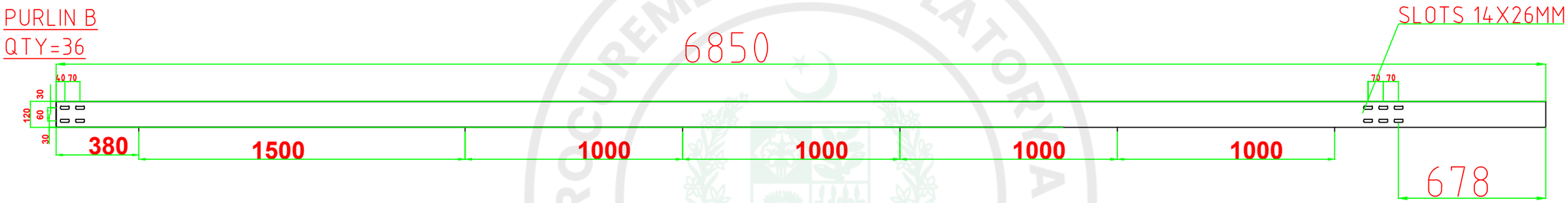
SCALE	SHEET SIZE	PROJECT NO.	DRAWING NO.	SHEET NO.	REV
1:250	A3	-	-		-

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

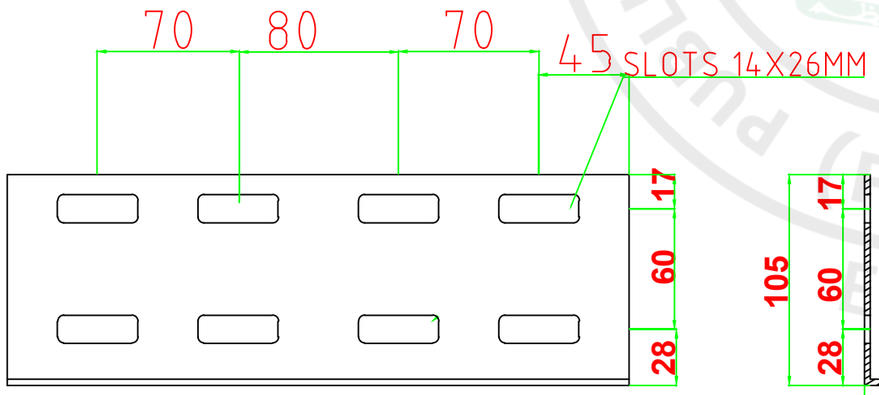
PURLIN A
QTY=78

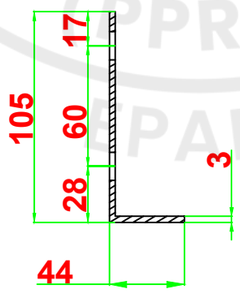


PURLIN B
QTY=36

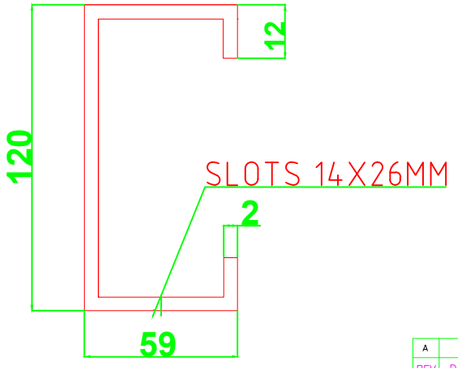


SLEEVE 3 MM
QTY=100





Engr. Khurram Shahzad
BSc. Civil Engineering
PEC # Civil/54490
Structural Design Engineer
Riaz-ud-Din Engineering (Pvt.) Limited



PURLIN

NOTE: ALL DIMENSIONS ARE IN (mm) UNLESS OTHERWISE SPECIFIED

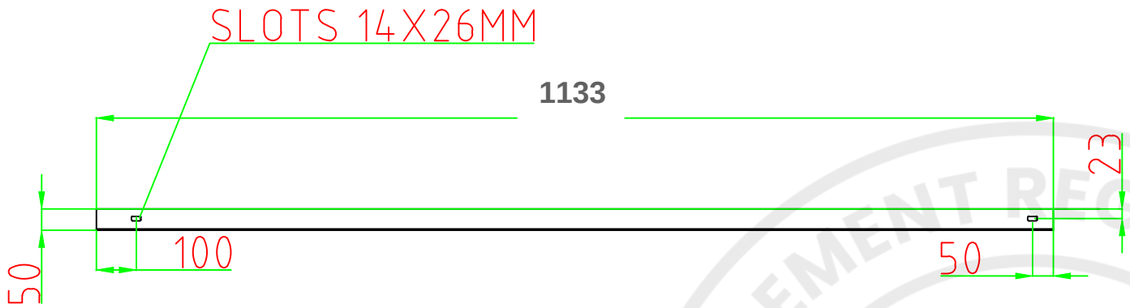
REV	DATED	DESCRIPTION	DRAWN BY	CHECKED BY	APPROVED BY
A		APPROVAL DRAWING	SHOAIB ABBAS	ENGR ATTIQUE	

COMPUTER REF. NO.
DATE
CLIENT.
PROJECT.
TITLE. SPL STR V3 2POLE HDG

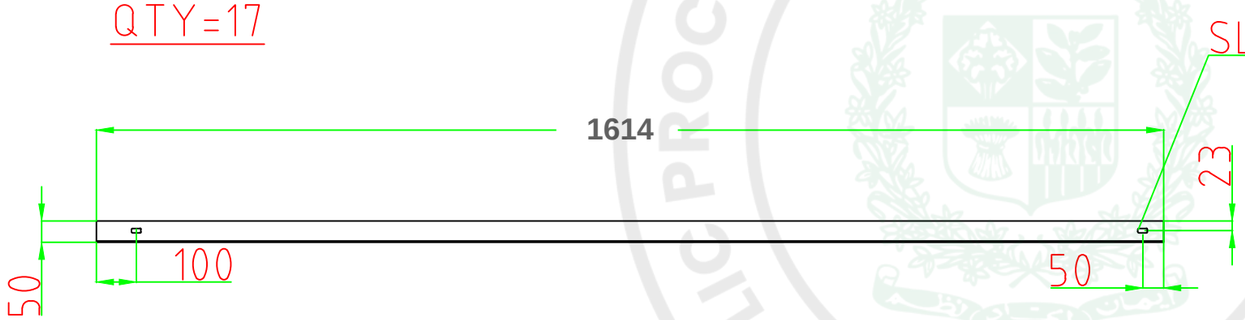
SCALE	SHEET SIZE	PROJECT NO.	DRAWING NO.	REV.
1:1	A3	L	–	–

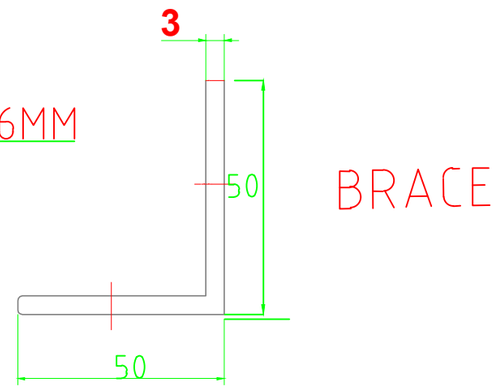
PUBLIC PROCUREMENT REGULATORY AUTHORITY EPADS

BRACE 1
QTY=22



BRACE 2
QTY=17





BRACE

Engr. Khurram Shahzad
BSc. Civil Engineering
PEC # Civil/54490
Structural Design Engineer
Riaz-ud-Din Engineering (Pvt.) Limited

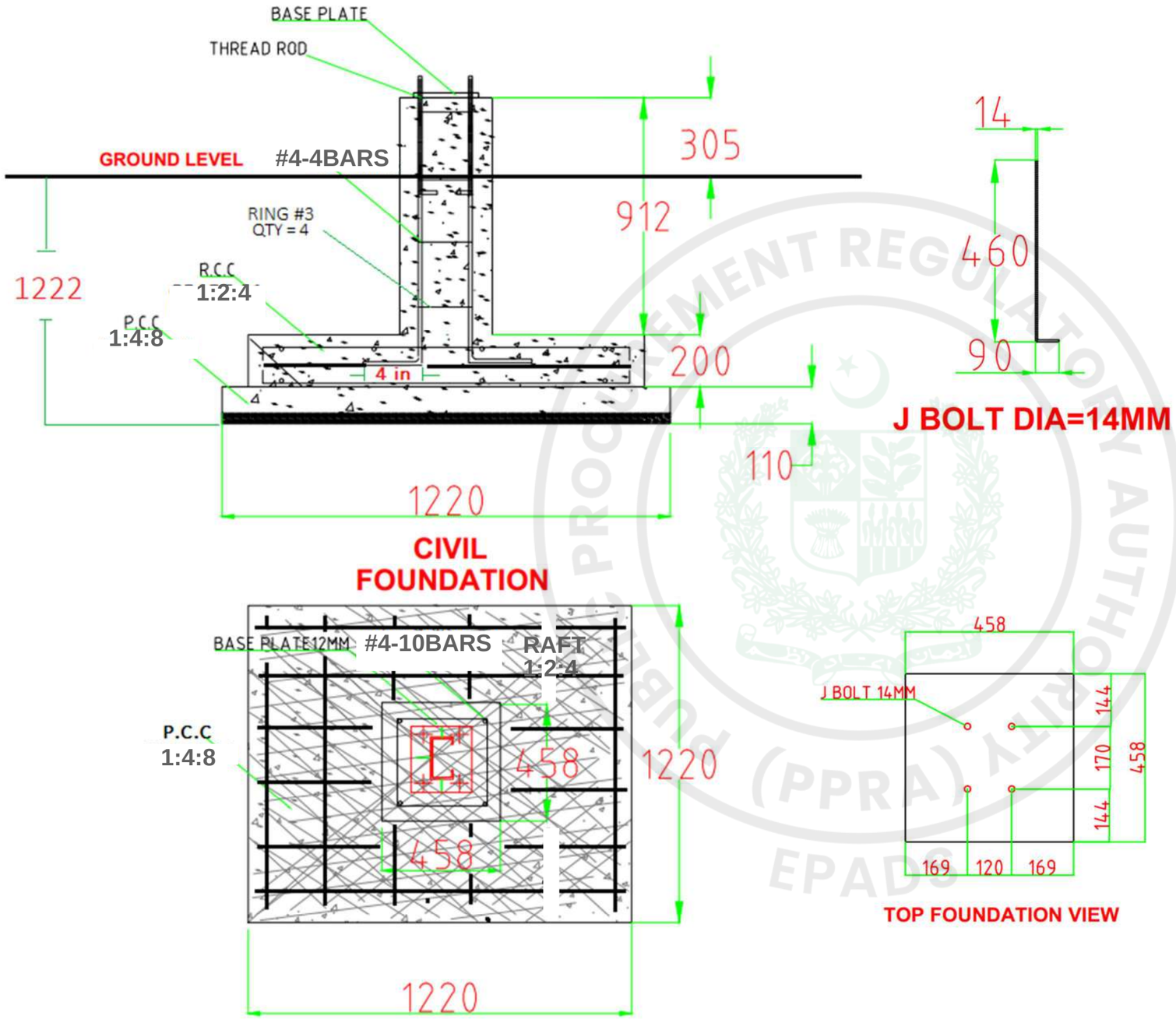
NOTE: ALL DIMENSIONS ARE IN (mm) UNLESS OTHERWISE SPECIFIED

REV	DATED	DESCRIPTION	DRAWN BY	CHECKED BY	APPROVED BY
0		FOR CONSTRUCTION DRAWING	–	–	–

COMPUTER REF. NO.	– –
DATE	04-09-2025
CLIENT.	–
PROJECT.	XXXX
TITLE.	STRUCTURE DETAIL

SCALE	SHEET SIZE	PROJECT NO.	DRAWING NO.	SHEET NO.	REV
1:250	A3	–	–		–

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS



TOP FOUNDATION VIEW

Notes:
DO NOT SCALE DRAWING
Unless otherwise specified Dimensions are in mm
Tolerances:
Linear = 0.1 mm Angular = 1 deg

Engr. Khurram Shahzad
BSc. Civil Engineering
PEC # Civil/54490
Structural Design Engineer
Riaz-Ud-Din Engineering (Pvt.) Limited

Revisions

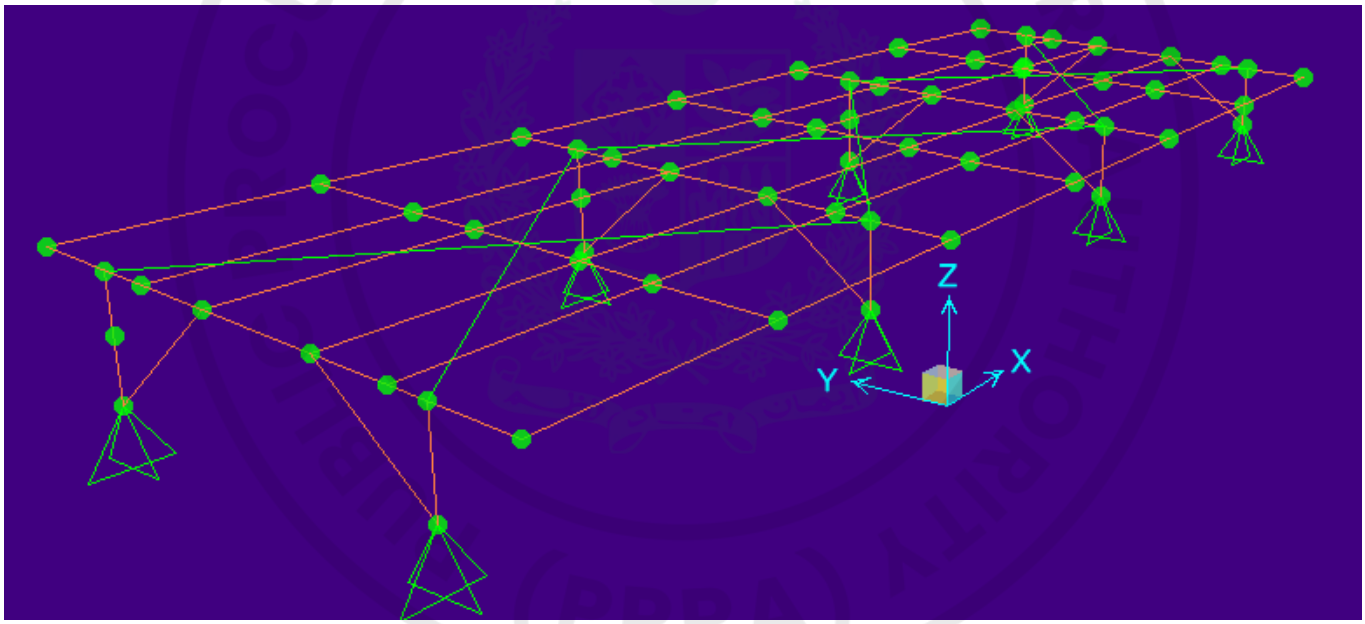
REV	DATE	DESCRIPTION	DRAWN BY	APPROVED BY
Client:				
Supplier:				
Project Title:				
Drawing Title:	**Shed Civil Foundation Design**			

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Solar Structure

DESIGN REPORT

11 September 2025



Engr. Khurram Shahzad
BSc. Civil Engineering
PEC # Civil/54490
Structural Design Engineer
Riaz-ud-Din Engineering (Pvt.) Limited

DESIGN CALCULATIONS FOR SOLAR STRUCTURE

Design Criteria

Following parameters are used for the structural design calculations of Solar Structure

1. Design Loads

1.1 Dead Loads

- Self weight of structure
- Load of Solar Panel = 2.5 Psf

1.2 Live Loads

- Live Load = 0 Psf

1.3 Wind Loads

As per UBC-97

Wind Design Parameters

Wind pressure P=Qs x Ce x Iw x Cq

- Exposure Category (Ce) = B (0.62)
- Wind Speed = 40 m/sec
- Wind Stagnation Pressure, **qs** = 20.8 psf (Table 16-F)
- Wind Importance Factor, **I**W = 1.00 (Table 16-K)
- Maximum Height = 15 Ft
- Pressure Co-efficient (Cq) =0.7 (Table 16-H)

  Wind pressure P=20.8*0.62*1*0.7 =9 Psf = 10 Psf

2. Load Combinations

As per AISC (LRFD) and UBC-97

3. Structural System

3.1 Structural Framing

Framing consists of designed U Support, U- Channel, C-Channel, Square, Tube, channel, Circular pipe, H-Beam, I girders, Angles & steel plates of mild steel.

Engr. Khurram Shahzad
BSc. Civil Engineering
PEC # Civil/54490
Structural Design Engineer
Riaz-ud-Din Engineering (Pvt.) Limited

4. Material Properties

4.1 Aluminium Sections

All Aluminum section used in analysis & design is conforming to 6061 T6 / 063T6

4.2 Mild Steel Sections

All mild steel sections used in analysis & design is conforming to ASTM designation *A36* having a minimum yield strength of *250 MPa (36 ksi).*

4.3 Concrete:

Reinforced concrete strength used in design, having minimum cylinder strength at 28 days of *3000 psi* for pedestals and foundation.

4.4 Reinforcing Steel:

The reinforcing steel of *Grade 60* deformed bars conforming to ASTM designation A615 having minimum characteristics yield strength of *60,000 psi* is used for all structural members.

4.5 Cold Form Steel:

The cold steel confirms to ASTM A653Qgr33 having a minimum characteristics yield strength of *36,000 psi* is used for all structural members.

5. Structural Analysis & Design

The analysis & design of frame elements is carried out by using *Sap 2000v20 structural* model is prepared.

5.1 Design Method

All design is carried out using ASD/LRFD method as defined in AISC360- 10/ ASD 2000/AA-LRFD 2000

5.2 Codes & References

Following codes are used in analysis and design.

- American Institute of Steel Construction, ASD 2000/AISC360-10/LRFD 2000
- Uniform Building Code, UBC-97

License #3010*17E5J6233KDPHRZ

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Engr. Khurram Shahzad
BSc. Civil Engineering
PEC # Civil/54490
Structural Design Engineer
Riaz-ud-Din Engineering (Pvt.) Limited

SAP2000 Analysis Report

Model Name: Model V3.sdb

11 September 2025

Contents

1. Model geometry 7
1.1. Joint coordinates 7
1.2. Joint restraints 9
1.3. Element connectivity 9
2. Material properties 12
3. Section properties 13
3.1. Frames 13
3.2. Cables 16
3.3. Solids 16
4. Load patterns 16
4.1. Definitions 16
4.2. Auto seismic loading 17
5. Load cases 17
5.1. Definitions 17
5.2. Static case load assignments 18
5.3. Response spectrum case load assignments 18
6. Load combinations 19
7. Structure results 20
7.1. Mass summary 20
7.2. Base reactions 23
8. Joint results 23
9. Frame results 30
10. Material take-off 103
11. Design preferences 104
11.1. Steel design 104
11.2. Concrete design 104
11.3. Aluminum design 105
11.4. Cold formed design 105
12. Design overwrites 105
12.1. Steel design 105
12.2. Cold formed design 111
13. Design summary 115
13.1. Steel design 115
13.2. Cold formed design 116

List of Figures

Figure 1: Finite element model 7
Figure 2: Deformed shape 20

List of Tables

Table 1: Joint Coordinates 7
Table 2: Joint Restraint Assignments 9
Table 3: Connectivity - Frame 9
Table 4: Frame Section Assignments 10
Table 5: Connectivity - Cable 12
Table 6: Cable Section Assignments 12
Table 7: Material Properties 02 - Basic Mechanical Properties 12
Table 8: Material Properties 03a - Steel Data 13

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 9: Material Properties 03b - Concrete Data ... 13
Table 10: Material Properties 03d - Cold Formed Data ... 13
Table 11: Material Properties 03e - Rebar Data ... 13
Table 12: Material Properties 03f - Tendon Data ... 13
Table 13: Frame Section Properties 01 - General, Part 1 of 4 ... 14
Table 13: Frame Section Properties 01 - General, Part 2 of 4 ... 14
Table 13: Frame Section Properties 01 - General, Part 3 of 4 ... 14
Table 13: Frame Section Properties 01 - General, Part 4 of 4 ... 14
Table 14: Frame Property Modifiers, Part 1 of 2 ... 15
Table 14: Frame Property Modifiers, Part 2 of 2 ... 15
Table 15: Cable Section Definitions, Part 1 of 2 ... 16
Table 15: Cable Section Definitions, Part 2 of 2 ... 16
Table 16: Solid Property Definitions ... 16
Table 17: Load Pattern Definitions ... 16
Table 18: Auto Seismic - UBC97, Part 1 of 3 ... 17
Table 18: Auto Seismic - UBC97, Part 2 of 3 ... 17
Table 18: Auto Seismic - UBC97, Part 3 of 3 ... 17
Table 19: Load Case Definitions, Part 1 of 2 ... 17
Table 19: Load Case Definitions, Part 2 of 2 ... 18
Table 20: Case - Static 1 - Load Assignments ... 18
Table 21: Function - Response Spectrum - User ... 18
Table 22: Combination Definitions ... 19
Table 23: Assembled Joint Masses, Part 1 of 2 ... 20
Table 23: Assembled Joint Masses, Part 2 of 2 ... 21
Table 24: Base Reactions ... 23
Table 25: Joint Displacements ... 23
Table 26: Joint Reactions ... 29
Table 27: Element Forces - Frames, Part 1 of 2 ... 30
Table 27: Element Forces - Frames, Part 2 of 2 ... 67
Table 28: Material List 2 - By Section Property ... 104
Table 29: Preferences - Steel Design - AISC360-05-IBC2006, Part 1 of 3 ... 104
Table 29: Preferences - Steel Design - AISC360-05-IBC2006, Part 2 of 3 ... 104
Table 29: Preferences - Steel Design - AISC360-05-IBC2006, Part 3 of 3 ... 104
Table 30: Preferences - Concrete Design - ACI 318-08/IBC2009, Part 1 of 2 ... 105
Table 30: Preferences - Concrete Design - ACI 318-08/IBC2009, Part 2 of 2 ... 105
Table 31: Preferences - Aluminum Design - AA-ASD 2000 ... 105
Table 32: Preferences - Cold Formed Design - AISI-LRFD96 ... 105
Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 1 of 6 ... 106
Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 2 of 6 ... 107
Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 3 of 6 ... 107
Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 4 of 6 ... 108
Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 5 of 6 ... 109
Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 6 of 6 ... 110
Table 34: Overwrites - Cold Formed Design - AISI-LRFD96, Part 1 of 4 ... 111
Table 34: Overwrites - Cold Formed Design - AISI-LRFD96, Part 2 of 4 ... 112
Table 34: Overwrites - Cold Formed Design - AISI-LRFD96, Part 3 of 4 ... 113
Table 34: Overwrites - Cold Formed Design - AISI-LRFD96, Part 4 of 4 ... 114
Table 35: Steel Design 1 - Summary Data - AISC360-05-IBC2006, Part 1 of 2 ... 115
Table 35: Steel Design 1 - Summary Data - AISC360-05-IBC2006, Part 2 of 2 ... 115
Table 36: Cold Formed Design 1 - Summary Data - AISI-LRFD96, Part 1 of 2 ... 116
Table 36: Cold Formed Design 1 - Summary Data - AISI-LRFD96, Part 2 of 2 ... 117

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

1. Model geometry

This section provides model geometry information, including items such as joint coordinates, joint restraints, and element connectivity.

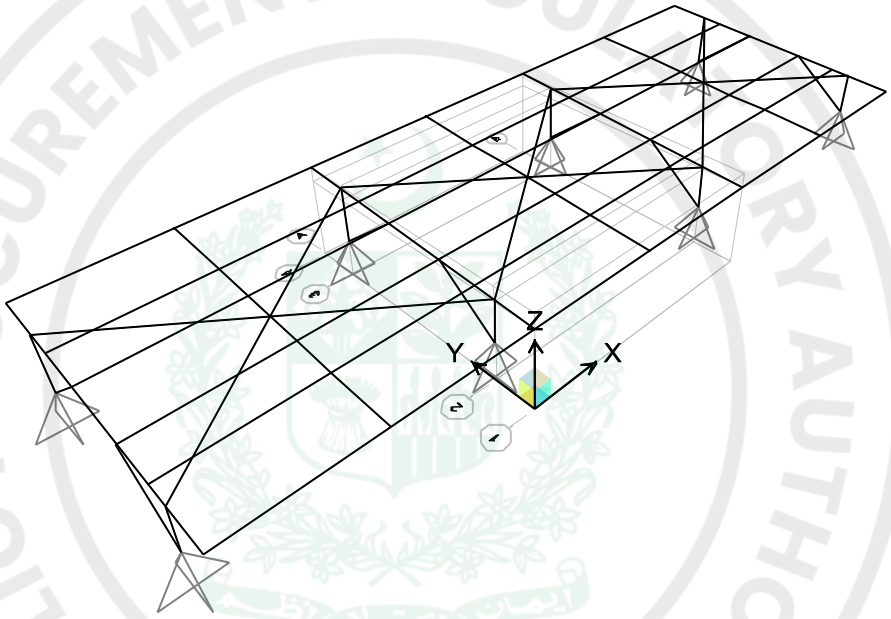


Figure 1: Finite element model

1.1. Joint coordinates

Table 1: Joint Coordinates

Table 1: Joint Coordinates

Joint	CoordSys	CoordType	GlobalX	GlobalY	GlobalZ
			mm	mm	mm
3	GLOBAL	Cartesian	0.	5142.	1465.85
4	GLOBAL	Cartesian	-5735.	950.	870.15
6	GLOBAL	Cartesian	11470.	950.	870.15
8	GLOBAL	Cartesian	-5735.	5142.	795.85
9	GLOBAL	Cartesian	0.	0.	1789.
10	GLOBAL	Cartesian	0.	6092.	2117.
11	GLOBAL	Cartesian	5735.	0.	1789.
12	GLOBAL	Cartesian	5735.	6092.	2117.
13	GLOBAL	Cartesian	0.	950.	1840.15
14	GLOBAL	Cartesian	0.	5142.	2065.85
15	GLOBAL	Cartesian	5735.	5142.	2065.85

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 1: Joint Coordinates

Joint	CoordSys	CoordType	GlobalX	GlobalY	GlobalZ
			mm	mm	mm
16	GLOBAL	Cartesian	5735.	950.	1840.15
17	GLOBAL	Cartesian	0.	1397.98	1864.27
18	GLOBAL	Cartesian	5735.	1397.98	1864.27
19	GLOBAL	Cartesian	11470.	5142.	795.85
20	GLOBAL	Cartesian	5735.	950.	870.15
21	GLOBAL	Cartesian	0.	950.	870.15
22	GLOBAL	Cartesian	5735.	5142.	795.85
23	GLOBAL	Cartesian	0.	5142.	795.85
25	GLOBAL	Cartesian	0.	2296.67	1912.66
26	GLOBAL	Cartesian	5735.	2296.67	1912.66
27	GLOBAL	Cartesian	0.	3694.65	1987.92
28	GLOBAL	Cartesian	5735.	3694.65	1987.92
29	GLOBAL	Cartesian	0.	4593.35	2036.31
30	GLOBAL	Cartesian	5735.	4593.35	2036.31
33	GLOBAL	Cartesian	11470.	0.	1789.
34	GLOBAL	Cartesian	11470.	6092.	2117.
35	GLOBAL	Cartesian	11470.	5142.	2065.85
36	GLOBAL	Cartesian	11470.	950.	1840.15
37	GLOBAL	Cartesian	11470.	1397.98	1864.27
38	GLOBAL	Cartesian	11470.	2296.67	1912.66
39	GLOBAL	Cartesian	11470.	3694.65	1987.92
40	GLOBAL	Cartesian	11470.	4593.35	2036.31
57	GLOBAL	Cartesian	2867.5	6092.	2117.
58	GLOBAL	Cartesian	2867.5	4593.35	2036.31
59	GLOBAL	Cartesian	2867.5	3694.65	1987.92
60	GLOBAL	Cartesian	2867.5	2296.67	1912.66
61	GLOBAL	Cartesian	2867.5	1397.98	1864.27
62	GLOBAL	Cartesian	2867.5	0.	1789.
63	GLOBAL	Cartesian	8602.5	6092.	2117.
64	GLOBAL	Cartesian	8602.5	4593.35	2036.31
65	GLOBAL	Cartesian	8602.5	3694.65	1987.92
66	GLOBAL	Cartesian	8602.5	2296.67	1912.66
67	GLOBAL	Cartesian	8602.5	1397.98	1864.27
68	GLOBAL	Cartesian	8602.5	0.	1789.
78	GLOBAL	Cartesian	-5735.	0.	1789.
79	GLOBAL	Cartesian	-5735.	6092.	2117.
80	GLOBAL	Cartesian	-5735.	950.	1840.15
81	GLOBAL	Cartesian	-5735.	5142.	2065.85
82	GLOBAL	Cartesian	-5735.	1397.98	1864.27
83	GLOBAL	Cartesian	-5735.	2296.67	1912.66
84	GLOBAL	Cartesian	-5735.	3694.65	1987.92
85	GLOBAL	Cartesian	-5735.	4593.35	2036.31
86	GLOBAL	Cartesian	-2867.5	6092.	2117.
87	GLOBAL	Cartesian	-2867.5	4593.35	2036.31
88	GLOBAL	Cartesian	-2867.5	3694.65	1987.92
89	GLOBAL	Cartesian	-2867.5	2296.67	1912.66
90	GLOBAL	Cartesian	-2867.5	1397.98	1864.27
91	GLOBAL	Cartesian	-2867.5	0.	1789.
94	GLOBAL	Cartesian	-5735.	5142.	1465.85
104	GLOBAL	Cartesian	5735.	5142.	1465.85
105	GLOBAL	Cartesian	11470.	5142.	1465.85

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

1.2. Joint restraints

Table 2: Joint Restraint Assignments

Table 2: Joint Restraint Assignments

Joint	U1	U2	U3	R1	R2	R3
4	Yes	Yes	Yes	No	No	No
6	Yes	Yes	Yes	No	No	No
8	Yes	Yes	Yes	No	No	No
19	Yes	Yes	Yes	No	No	No
20	Yes	Yes	Yes	No	No	No
21	Yes	Yes	Yes	No	No	No
22	Yes	Yes	Yes	No	No	No
23	Yes	Yes	Yes	No	No	No

1.3. Element connectivity

Table 3: Connectivity - Frame

Table 3: Connectivity - Frame

Frame	JointI	JointJ	Length mm
7	20	16	970.
9	6	36	970.
12	21	13	970.
14	4	80	970.
20	22	15	1270.
22	19	35	1270.
25	23	14	1270.
27	8	81	1270.
31	8	84	1875.06
32	4	83	1703.04
33	23	27	1875.06
34	21	25	1703.04
35	22	28	1875.06
36	20	26	1703.04
37	19	39	1875.06
38	6	38	1703.04
42	79	10	5735.
43	85	29	5735.
44	84	27	5735.
45	83	25	5735.
46	82	17	5735.
47	78	9	5735.
48	91	90	1400.
49	10	12	5735.
50	29	30	5735.
51	27	28	5735.
52	25	26	5735.
53	17	18	5735.
54	9	11	5735.
57	33	34	6100.82

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 3: Connectivity - Frame

Frame	JointI	JointJ	Length mm
58	12	34	5735.
59	30	40	5735.
60	28	39	5735.
61	26	38	5735.
62	18	37	5735.
63	11	33	5735.
64	90	89	900.
65	89	88	1400.
66	88	87	900.
67	87	86	1500.82
72	78	79	6100.82
76	9	10	6100.82
88	11	12	6100.82
106	62	61	1400.
107	61	60	900.
108	60	59	1400.
109	59	58	900.
110	58	57	1500.82
111	68	67	1400.
112	67	66	900.
113	66	65	1400.
114	65	64	900.
115	64	63	1500.82

Table 4: Frame Section Assignments

Table 4: Frame Section Assignments

Frame	AnalSect	DesignSect	MatProp
7	Col 150X50X15X3	Col 150X50X15X3	Default
9	Col 150X50X15X3	Col 150X50X15X3	Default
12	Col 150X50X15X3	Col 150X50X15X3	Default
14	Col 150X50X15X3	Col 150X50X15X3	Default
20	Col 150X50X15X3	Col 150X50X15X3	Default
22	Col 150X50X15X3	Col 150X50X15X3	Default
25	Col 150X50X15X3	Col 150X50X15X3	Default
27	Col 150X50X15X3	Col 150X50X15X3	Default
31	L 50X3	L 50X3	Default
32	L 50X3	L 50X3	Default
33	L 50X3	L 50X3	Default
34	L 50X3	L 50X3	Default
35	L 50X3	L 50X3	Default
36	L 50X3	L 50X3	Default
37	L 50X3	L 50X3	Default
38	L 50X3	L 50X3	Default

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 4: Frame Section Assignments

Frame	AnalSect	DesignSect	MatProp
42	Purlin 150x70x15x1.7	Purlin 150x70x15x1.7	Default
43	Purlin 150x70x15x1.7	Purlin 150x70x15x1.7	Default
44	Purlin 150x70x15x1.7	Purlin 150x70x15x1.7	Default
45	Purlin 150x70x15x1.7	Purlin 150x70x15x1.7	Default
46	Purlin 150x70x15x1.7	Purlin 150x70x15x1.7	Default
47	Purlin 150x70x15x1.7	Purlin 150x70x15x1.7	Default
48	SAG 6	SAG 6	Default
49	Purlin 150x70x15x1.7	Purlin 150x70x15x1.7	Default
50	Purlin 150x70x15x1.7	Purlin 150x70x15x1.7	Default
51	Purlin 150x70x15x1.7	Purlin 150x70x15x1.7	Default
52	Purlin 150x70x15x1.7	Purlin 150x70x15x1.7	Default
53	Purlin 150x70x15x1.7	Purlin 150x70x15x1.7	Default
54	Purlin 150x70x15x1.7	Purlin 150x70x15x1.7	Default
57	Raf 150X70X15X3	Raf 150X70X15X3	Default
58	Purlin 150x70x15x1.7	Purlin 150x70x15x1.7	Default
59	Purlin 150x70x15x1.7	Purlin 150x70x15x1.7	Default
60	Purlin 150x70x15x1.7	Purlin 150x70x15x1.7	Default
61	Purlin 150x70x15x1.7	Purlin 150x70x15x1.7	Default
62	Purlin 150x70x15x1.7	Purlin 150x70x15x1.7	Default
63	Purlin 150x70x15x1.7	Purlin 150x70x15x1.7	Default
64	SAG 6	SAG 6	Default
65	SAG 6	SAG 6	Default
66	SAG 6	SAG 6	Default
67	SAG 6	SAG 6	Default
72	Raf 150X70X15X3	Raf 150X70X15X3	Default
76	Raf 150X70X15X3	Raf 150X70X15X3	Default
88	Raf 150X70X15X3	Raf 150X70X15X3	Default
106	SAG 6	SAG 6	Default
107	SAG 6	SAG 6	Default
108	SAG 6	SAG 6	Default
109	SAG 6	SAG 6	Default
110	SAG 6	SAG 6	Default
111	SAG 6	SAG 6	Default
112	SAG 6	SAG 6	Default
113	SAG 6	SAG 6	Default
114	SAG 6	SAG 6	Default

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 4: Frame Section Assignments

Frame	AnalSect	DesignSect	MatProp
115	SAG 6	SAG 6	Default

Table 5: Connectivity - Cable

Table 5: Connectivity - Cable

Cable	JointI	JointJ	Length mm
68	81	13	7107.32
69	80	14	7107.32
133	14	16	7107.32
134	13	15	7107.32
135	15	36	7107.32
136	16	35	7107.32

Table 6: Cable Section Assignments

Table 6: Cable Section Assignments

Cable	CableSect	MatProp
68	CAB1 12	Default
69	CAB1 12	Default
133	CAB1 12	Default
134	CAB1 12	Default
135	CAB1 12	Default
136	CAB1 12	Default

2. Material properties

This section provides material property information for materials used in the model.

Table 7: Material Properties 02 - Basic Mechanical Properties

Table 7: Material Properties 02 - Basic Mechanical Properties

Material	UnitWeight Kgf/mm3	UnitMass Kgf-s2/mm4	E1 Kgf/mm2	G12 Kgf/mm2	U12	A1 1/C
4000Psi	2.4028E-06	2.4501E-10	2534.564	1056.068	0.2	9.9000E-06
A36	7.8490E-06	8.0038E-10	20389.019	7841.93	0.3	1.1700E-05
A416Gr270	7.8490E-06	8.0038E-10	20037.484			1.1700E-05
A572Gr50	7.8490E-06	8.0038E-10	20389.019	7841.93	0.3	1.1700E-05
A615Gr60	7.8490E-06	8.0038E-10	20389.019			1.1700E-05
A653SQGr33	7.8490E-06	8.0038E-10	20740.554	7977.136	0.3	1.1700E-05
A653SQGr50	7.8490E-06	8.0038E-10	20740.554	7977.136	0.3	1.1700E-05

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 8: Material Properties 03a - Steel Data

Table 8: Material Properties 03a - Steel Data

Material	Fy	Fu	FinalSlope
	Kgf/mm2	Kgf/mm2	
A36	25.311	40.778	-0.1
A572Gr50	35.153	45.7	-0.1

Table 9: Material Properties 03b - Concrete Data

Table 9: Material Properties 03b - Concrete Data

Material	Fc	eFc	FinalSlope
	Kgf/mm2	Kgf/mm2	
4000Psi	2.812	2.812	-0.1

Table 10: Material Properties 03d - Cold Formed Data

Table 10: Material Properties 03d - Cold Formed Data

Material	Fy	Fu
	Kgf/mm2	Kgf/mm2
A653SQGr33	25.309	40.778
A653SQGr50	35.153	45.7

Table 11: Material Properties 03e - Rebar Data

Table 11: Material Properties 03e - Rebar Data

Material	Fy	Fu	FinalSlope
	Kgf/mm2	Kgf/mm2	
A615Gr60	42.184	63.276	-0.1

Table 12: Material Properties 03f - Tendon Data

Table 12: Material Properties 03f - Tendon Data

Material	Fy	Fu	FinalSlope
	Kgf/mm2	Kgf/mm2	
A416Gr270	172.322	189.829	-0.1

3. Section properties

This section provides section property information for objects used in the model.

3.1. Frames

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 13: Frame Section Properties 01 - General, Part 1 of 4

Table 13: Frame Section Properties 01 - General, Part 1 of 4

SectionName	Material	Shape	t3	t2	tf	tw	Area	TorsConst
			mm	mm	mm	mm	mm2	mm4
Col 150X50X15X3	A653SQGr33	Cold Formed C	150.	50.		3.	763.57	2290.71
L 50X3	A36	Angle	50.	50.	3.	3.	291.	853.16
Purlin 150x70x15x1.7	A653SQGr33	Cold Formed C	150.	70.		1.7	511.43	492.67
Raf 150X70X15X3	A653SQGr33	Cold Formed C	150.	70.		2.5	742.38	1546.63
SAG 6	A36	Circle	6.				28.27	127.23

Table 13: Frame Section Properties 01 - General, Part 2 of 4

Table 13: Frame Section Properties 01 - General, Part 2 of 4

SectionName	I33	I22	I23	AS2	AS3
	mm4	mm4	mm4	mm2	mm2
Col 150X50X15X3	2454231.07	221816.76	0.	393.9	187.8
L 50X3	71493.51	71493.51	42699.74	150.	150.
Purlin 150x70x15x1.7	1837222.89	319358.91	0.	227.63	183.26
Raf 150X70X15X3	2629871.72	448600.89	0.	330.75	261.5
SAG 6	63.62	63.62	0.	25.45	25.45

Table 13: Frame Section Properties 01 - General, Part 3 of 4

Table 13: Frame Section Properties 01 - General, Part 3 of 4

SectionName	S33	S22	Z33	Z22	R33	R22
	mm3	mm3	mm3	mm3	mm	mm
Col 150X50X15X3	32723.08	6147.99	32723.08	6147.99	56.694	17.044
L 50X3	1964.83	1964.83	3538.1	3538.1	15.674	15.674
Purlin 150x70x15x1.7	24496.31	6568.21	24496.31	6568.21	59.936	24.989
Raf 150X70X15X3	35064.96	9223.15	35064.96	9223.15	59.519	24.582
SAG 6	21.21	21.21	36.	36.	1.5	1.5

Table 13: Frame Section Properties 01 - General, Part 4 of 4

Table 13: Frame Section Properties 01 - General, Part 4 of 4

SectionName	AMod	A2Mod	A3Mod	JMod	I2Mod	I3Mod	MMod	WMod
Col 150X50X15X3	1.	1.	1.	1.	1.	1.	1.	1.
L 50X3	1.	1.	1.	1.	1.	1.	1.	1.
Purlin 150x70x15x1.7	1.	1.	1.	1.	1.	1.	1.	1.
Raf 150X70X15X3	1.	1.	1.	1.	1.	1.	1.	1.
SAG 6	1.	1.	1.	1.	1.	1.	1.	1.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 14: Frame Property Modifiers, Part 1 of 2

Table 14: Frame Property Modifiers, Part 1 of 2

Frame	AMod	AS2Mod	AS3Mod	JMod	I22Mod	I33Mod	MassMod	WeightMod
31	1.	1.	1.	1.	1.	1.	1.	1.
32	1.	1.	1.	1.	1.	1.	1.	1.
33	1.	1.	1.	1.	1.	1.	1.	1.
34	1.	1.	1.	1.	1.	1.	1.	1.
35	1.	1.	1.	1.	1.	1.	1.	1.
36	1.	1.	1.	1.	1.	1.	1.	1.
37	1.	1.	1.	1.	1.	1.	1.	1.
38	1.	1.	1.	1.	1.	1.	1.	1.
48	1.	1.	1.	1.	1.	1.	1.	1.
64	1.	1.	1.	1.	1.	1.	1.	1.
65	1.	1.	1.	1.	1.	1.	1.	1.
66	1.	1.	1.	1.	1.	1.	1.	1.
67	1.	1.	1.	1.	1.	1.	1.	1.
106	1.	1.	1.	1.	1.	1.	1.	1.
107	1.	1.	1.	1.	1.	1.	1.	1.
108	1.	1.	1.	1.	1.	1.	1.	1.
109	1.	1.	1.	1.	1.	1.	1.	1.
110	1.	1.	1.	1.	1.	1.	1.	1.
111	1.	1.	1.	1.	1.	1.	1.	1.
112	1.	1.	1.	1.	1.	1.	1.	1.
113	1.	1.	1.	1.	1.	1.	1.	1.
114	1.	1.	1.	1.	1.	1.	1.	1.
115	1.	1.	1.	1.	1.	1.	1.	1.

Table 14: Frame Property Modifiers, Part 2 of 2

Table 14: Frame Property Modifiers, Part 2 of 2

Frame	EAModifier	EIModifier
31	0.8	0.8
32	0.8	0.8
33	0.8	0.8
34	0.8	0.8
35	0.8	0.8
36	0.8	0.8
37	0.8	0.8
38	0.8	0.8
48	0.8	0.8
64	0.8	0.8
65	0.8	0.8
66	0.8	0.8
67	0.8	0.8
106	0.8	0.8
107	0.8	0.8
108	0.8	0.8
109	0.8	0.8
110	0.8	0.8
111	0.8	0.8
112	0.8	0.8
113	0.8	0.8

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 14: Frame Property Modifiers, Part 2 of 2

Frame	EAModifier	EIModifier
114	0.8	0.8
115	0.8	0.8

3.2. Cables

Table 15: Cable Section Definitions, Part 1 of 2

Table 15: Cable Section Definitions, Part 1 of 2

CableSect	Material	Diameter	Area	TorsConst	I	AS
		mm	mm2	mm4	mm4	mm2
CAB1 12	A416Gr270	12.	113.1	2035.75	1017.88	101.79

Table 15: Cable Section Definitions, Part 2 of 2

Table 15: Cable Section Definitions, Part 2 of 2

CableSect	AMod	A2Mod	A3Mod	JMod	I2Mod	I3Mod	MMod	WMod
CAB1 12	1.	1.	1.	1.	1.	1.	1.	1.

3.3. Solids

Table 16: Solid Property Definitions

Table 16: Solid Property Definitions

SolidProp	Material	MatAngleA	MatAngleB	MatAngleC
		Degrees	Degrees	Degrees
Solid1	4000Psi	0.	0.	0.

4. Load patterns

This section provides loading information as applied to the model.

4.1. Definitions

Table 17: Load Pattern Definitions

Table 17: Load Pattern Definitions

LoadPat	DesignType	SelfWtMult	AutoLoad
DEAD	Dead	1.	
LIVE	Live	0.	
WX	Wind	0.	None

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 17: Load Pattern Definitions

LoadPat	DesignType	SelfWtMult	AutoLoad
WY	Wind	0.	None
TEMP	Temperature	0.	
EQ	Quake	0.	UBC97
MODAL	Other	0.	

4.2. Auto seismic loading

Table 18: Auto Seismic - UBC97, Part 1 of 3

Table 18: Auto Seismic - UBC97, Part 1 of 3

LoadPat	Dir	PercentEcc	Ct	R	SoilType
EQ	X	0.05	0.035	5.5	SC

Table 18: Auto Seismic - UBC97, Part 2 of 3

Table 18: Auto Seismic - UBC97, Part 2 of 3

LoadPat	Z	Ca	Cv	SourceType	SourceDist	Na	Nv
					km		
EQ	0.2	0.24	0.32	B	0.	1.3	1.6

Table 18: Auto Seismic - UBC97, Part 3 of 3

Table 18: Auto Seismic - UBC97, Part 3 of 3

LoadPat	I	TUsed	WeightUsed	BaseShear	FtUsed
		Sec	Kgf	Kgf	Kgf
EQ	1.	0.1472	648.89	70.79	0.

5. Load cases

This section provides load case information.

5.1. Definitions

Table 19: Load Case Definitions, Part 1 of 2

Table 19: Load Case Definitions, Part 1 of 2

Case	Type	InitialCond	ModalCase	BaseCase	MassSource	DesActOpt
DEAD	LinStatic	Zero				Prog Det
LIVE	LinStatic	Zero				Prog Det
WX	LinStatic	Zero				Prog Det
WY	LinStatic	Zero				Prog Det
TEMP	LinStatic	Zero				Prog Det
EQ	LinStatic	Zero				Prog Det

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 19: Load Case Definitions, Part 1 of 2

Case	Type	InitialCond	ModalCase	BaseCase	MassSource	DesActOpt
MODAL	LinStatic	Zero				Prog Det

Table 19: Load Case Definitions, Part 2 of 2

Table 19: Load Case Definitions, Part 2 of 2

Case	DesignAct
DEAD	Non-Composite
LIVE	Short-Term Composite
WX	Short-Term Composite
WY	Short-Term Composite
TEMP	Short-Term Composite
EQ	Short-Term Composite
MODAL	Other

5.2. Static case load assignments

Table 20: Case - Static 1 - Load Assignments

Table 20: Case - Static 1 - Load Assignments

Case	LoadType	LoadName	LoadSF
DEAD	Load pattern	DEAD	1.
LIVE	Load pattern	LIVE	1.
WX	Load pattern	WX	1.
WY	Load pattern	WY	1.
TEMP	Load pattern	TEMP	1.
EQ	Load pattern	EQ	1.
MODAL	Load pattern	MODAL	1.

5.3. Response spectrum case load assignments

Table 21: Function - Response Spectrum - User

Table 21: Function - Response Spectrum - User

Name	Period	Accel	FuncDamp
	Sec		
UNIFRS	0.	1.	0.05
UNIFRS	1.	1.	

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

6. Load combinations

This section provides load combination information.

Table 22: Combination Definitions

Table 22: Combination Definitions

ComboName	ComboType	CaseName	ScaleFactor
1.4D+1.2T	Linear Add	DEAD	1.4
1.4D+1.2T		TEMP	1.2
1.4D-1.2T	Linear Add	DEAD	1.4
1.4D-1.2T		TEMP	-1.2
1.2D+1.6L+1.2T	Linear Add	DEAD	1.2
1.2D+1.6L+1.2T		LIVE	1.6
1.2D+1.6L+1.2T		TEMP	1.2
1.2D+1.6L-1.2T	Linear Add	DEAD	1.2
1.2D+1.6L-1.2T		LIVE	1.6
1.2D+1.6L-1.2T		TEMP	-1.2
1.2D+1.6L+0.8W+1.2T	Linear Add	DEAD	1.2
1.2D+1.6L+0.8W+1.2T		LIVE	1.6
1.2D+1.6L+0.8W+1.2T		WX	0.8
1.2D+1.6L+0.8W+1.2T		TEMP	1.2
1.2D+1.6L+.8W-1.2T	Linear Add	DEAD	1.2
1.2D+1.6L+.8W-1.2T		LIVE	1.6
1.2D+1.6L+.8W-1.2T		WX	0.8
1.2D+1.6L+.8W-1.2T		TEMP	-1.2
0.9D+1.3W+1.2T	Linear Add	DEAD	0.9
0.9D+1.3W+1.2T		WX	1.3
0.9D+1.3W+1.2T		TEMP	1.2
0.9D+1.3W-1.2T	Linear Add	DEAD	0.9
0.9D+1.3W-1.2T		WX	1.3
0.9D+1.3W-1.2T		TEMP	-1.2
1.2D+0.5L+1.3WX	Linear Add	DEAD	1.2
1.2D+0.5L+1.3WX		LIVE	0.5
1.2D+0.5L+1.3WX		WX	1.3
1.2D+0.5L+EQ	Linear Add	DEAD	1.2
1.2D+0.5L+EQ		LIVE	0.5
1.2D+0.5L+EQ		EQ	1.
0.9D+EQX	Linear Add	DEAD	0.9
0.9D+EQX		EQ	1.
Mass source	Linear Add	MODAL	1.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

7. Structure results

This section provides structure results, including items such as structural periods and base reactions.



Figure 2: Deformed shape

7.1. Mass summary

Table 23: Assembled Joint Masses, Part 1 of 2

Table 23: Assembled Joint Masses, Part 1 of 2

Joint	MassSource	U1	U2	U3	R1	R2	R3	CenterX
		Kgf-s2/mm	Kgf-s2/mm	Kgf-s2/mm	Kgf-mm-s2	Kgf-mm-s2	Kgf-mm-s2	mm
3	MSSSRC1	3.881E-04	3.881E-04	3.881E-04	0.	0.	0.	0.
4	MSSSRC1	4.947E-04	4.947E-04	4.947E-04	0.	0.	0.	-5735.
6	MSSSRC1	4.947E-04	4.947E-04	4.947E-04	0.	0.	0.	11470.
8	MSSSRC1	4.231E-04	4.231E-04	4.231E-04	0.	0.	0.	-5735.
9	MSSSRC1	0.0015	0.0015	0.0015	0.	0.	0.	0.
10	MSSSRC1	0.0015	0.0015	0.0015	0.	0.	0.	0.
11	MSSSRC1	0.0015	0.0015	0.0015	0.	0.	0.	5735.
12	MSSSRC1	0.0015	0.0015	0.0015	0.	0.	0.	5735.
13	MSSSRC1	0.0014	0.0014	0.0014	0.	0.	0.	0.
14	MSSSRC1	0.0013	0.0013	0.0013	0.	0.	0.	0.
15	MSSSRC1	0.0013	0.0013	0.0013	0.	0.	0.	5735.
16	MSSSRC1	0.0014	0.0014	0.0014	0.	0.	0.	5735.
17	MSSSRC1	0.0016	0.0016	0.0016	0.	0.	0.	0.
18	MSSSRC1	0.0016	0.0016	0.0016	0.	0.	0.	5735.
19	MSSSRC1	4.231E-04	4.231E-04	4.231E-04	0.	0.	0.	11470.
20	MSSSRC1	4.947E-04	4.947E-04	4.947E-04	0.	0.	0.	5735.
21	MSSSRC1	4.947E-04	4.947E-04	4.947E-04	0.	0.	0.	0.
22	MSSSRC1	4.231E-04	4.231E-04	4.231E-04	0.	0.	0.	5735.
23	MSSSRC1	4.231E-04	4.231E-04	4.231E-04	0.	0.	0.	0.
25	MSSSRC1	0.0021	0.0021	0.0021	0.	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 23: Assembled Joint Masses, Part 1 of 2

Joint	MassSource	U1	U2	U3	R1	R2	R3	CenterX
		Kgf-s2/mm	Kgf-s2/mm	Kgf-s2/mm	Kgf-mm-s2	Kgf-mm-s2	Kgf-mm-s2	mm
26	MSSSRC1	0.0021	0.0021	0.0021	0.	0.	0.	5735.
27	MSSSRC1	0.0021	0.0021	0.0021	0.	0.	0.	0.
28	MSSSRC1	0.0021	0.0021	0.0021	0.	0.	0.	5735.
29	MSSSRC1	0.0016	0.0016	0.0016	0.	0.	0.	0.
30	MSSSRC1	0.0016	0.0016	0.0016	0.	0.	0.	5735.
33	MSSSRC1	8.695E-04	8.695E-04	8.695E-04	0.	0.	0.	11470.
34	MSSSRC1	8.695E-04	8.695E-04	8.695E-04	0.	0.	0.	11470.
35	MSSSRC1	9.509E-04	9.509E-04	9.509E-04	0.	0.	0.	11470.
36	MSSSRC1	0.001	0.001	0.001	0.	0.	0.	11470.
37	MSSSRC1	9.876E-04	9.876E-04	9.876E-04	0.	0.	0.	11470.
38	MSSSRC1	0.0015	0.0015	0.0015	0.	0.	0.	11470.
39	MSSSRC1	0.0015	0.0015	0.0015	0.	0.	0.	11470.
40	MSSSRC1	0.001	0.001	0.001	0.	0.	0.	11470.
57	MSSSRC1	0.0012	0.0012	0.0012	0.	0.	0.	2867.5
58	MSSSRC1	0.0012	0.0012	0.0012	0.	0.	0.	2867.5
59	MSSSRC1	0.0012	0.0012	0.0012	0.	0.	0.	2867.5
60	MSSSRC1	0.0012	0.0012	0.0012	0.	0.	0.	2867.5
61	MSSSRC1	0.0012	0.0012	0.0012	0.	0.	0.	2867.5
62	MSSSRC1	0.0012	0.0012	0.0012	0.	0.	0.	2867.5
63	MSSSRC1	0.0012	0.0012	0.0012	0.	0.	0.	8602.5
64	MSSSRC1	0.0012	0.0012	0.0012	0.	0.	0.	8602.5
65	MSSSRC1	0.0012	0.0012	0.0012	0.	0.	0.	8602.5
66	MSSSRC1	0.0012	0.0012	0.0012	0.	0.	0.	8602.5
67	MSSSRC1	0.0012	0.0012	0.0012	0.	0.	0.	8602.5
68	MSSSRC1	0.0012	0.0012	0.0012	0.	0.	0.	8602.5
78	MSSSRC1	8.695E-04	8.695E-04	8.695E-04	0.	0.	0.	-5735.
79	MSSSRC1	8.695E-04	8.695E-04	8.695E-04	0.	0.	0.	-5735.
80	MSSSRC1	0.001	0.001	0.001	0.	0.	0.	-5735.
81	MSSSRC1	9.509E-04	9.509E-04	9.509E-04	0.	0.	0.	-5735.
82	MSSSRC1	9.876E-04	9.876E-04	9.876E-04	0.	0.	0.	-5735.
83	MSSSRC1	0.0015	0.0015	0.0015	0.	0.	0.	-5735.
84	MSSSRC1	0.0015	0.0015	0.0015	0.	0.	0.	-5735.
85	MSSSRC1	0.001	0.001	0.001	0.	0.	0.	-5735.
86	MSSSRC1	0.0012	0.0012	0.0012	0.	0.	0.	-2867.5
87	MSSSRC1	0.0012	0.0012	0.0012	0.	0.	0.	-2867.5
88	MSSSRC1	0.0012	0.0012	0.0012	0.	0.	0.	-2867.5
89	MSSSRC1	0.0012	0.0012	0.0012	0.	0.	0.	-2867.5
90	MSSSRC1	0.0012	0.0012	0.0012	0.	0.	0.	-2867.5
91	MSSSRC1	0.0012	0.0012	0.0012	0.	0.	0.	-2867.5
94	MSSSRC1	3.881E-04	3.881E-04	3.881E-04	0.	0.	0.	-5735.
104	MSSSRC1	3.881E-04	3.881E-04	3.881E-04	0.	0.	0.	5735.
105	MSSSRC1	3.881E-04	3.881E-04	3.881E-04	0.	0.	0.	11470.
SumAccelUX	MSSSRC1	0.0698	0.	0.	0.	0.	0.	2867.5
SumAccelUY	MSSSRC1	0.	0.0698	0.	0.	0.	0.	2867.5
SumAccelUZ	MSSSRC1	0.	0.	0.0698	0.	0.	0.	2867.5

Table 23: Assembled Joint Masses, Part 2 of 2

Table 23: Assembled Joint Masses, Part 2 of 2

Joint	MassSource	CenterY	CenterZ
		mm	mm
3	MSSSRC1	5142.	1465.85
4	MSSSRC1	950.	870.15

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 23: Assembled Joint Masses, Part 2 of 2

Joint	MassSource	CenterY	CenterZ
		mm	mm
6	MSSSRC1	950.	870.15
8	MSSSRC1	5142.	795.85
9	MSSSRC1	0.	1789.
10	MSSSRC1	6092.	2117.
11	MSSSRC1	0.	1789.
12	MSSSRC1	6092.	2117.
13	MSSSRC1	950.	1840.15
14	MSSSRC1	5142.	2065.85
15	MSSSRC1	5142.	2065.85
16	MSSSRC1	950.	1840.15
17	MSSSRC1	1397.98	1864.27
18	MSSSRC1	1397.98	1864.27
19	MSSSRC1	5142.	795.85
20	MSSSRC1	950.	870.15
21	MSSSRC1	950.	870.15
22	MSSSRC1	5142.	795.85
23	MSSSRC1	5142.	795.85
25	MSSSRC1	2296.67	1912.66
26	MSSSRC1	2296.67	1912.66
27	MSSSRC1	3694.65	1987.92
28	MSSSRC1	3694.65	1987.92
29	MSSSRC1	4593.35	2036.31
30	MSSSRC1	4593.35	2036.31
33	MSSSRC1	0.	1789.
34	MSSSRC1	6092.	2117.
35	MSSSRC1	5142.	2065.85
36	MSSSRC1	950.	1840.15
37	MSSSRC1	1397.98	1864.27
38	MSSSRC1	2296.67	1912.66
39	MSSSRC1	3694.65	1987.92
40	MSSSRC1	4593.35	2036.31
57	MSSSRC1	6092.	2117.
58	MSSSRC1	4593.35	2036.31
59	MSSSRC1	3694.65	1987.92
60	MSSSRC1	2296.67	1912.66
61	MSSSRC1	1397.98	1864.27
62	MSSSRC1	0.	1789.
63	MSSSRC1	6092.	2117.
64	MSSSRC1	4593.35	2036.31
65	MSSSRC1	3694.65	1987.92
66	MSSSRC1	2296.67	1912.66
67	MSSSRC1	1397.98	1864.27
68	MSSSRC1	0.	1789.
78	MSSSRC1	0.	1789.
79	MSSSRC1	6092.	2117.
80	MSSSRC1	950.	1840.15
81	MSSSRC1	5142.	2065.85
82	MSSSRC1	1397.98	1864.27
83	MSSSRC1	2296.67	1912.66
84	MSSSRC1	3694.65	1987.92
85	MSSSRC1	4593.35	2036.31
86	MSSSRC1	6092.	2117.
87	MSSSRC1	4593.35	2036.31
88	MSSSRC1	3694.65	1987.92

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 23: Assembled Joint Masses, Part 2 of 2

Joint	MassSource	CenterY	CenterZ
		mm	mm
89	MSSSRC1	2296.67	1912.66
90	MSSSRC1	1397.98	1864.27
91	MSSSRC1	0.	1789.
94	MSSSRC1	5142.	1465.85
104	MSSSRC1	5142.	1465.85
105	MSSSRC1	5142.	1465.85
SumAccelUX	MSSSRC1	3049.71	1881.6
SumAccelUY	MSSSRC1	3049.71	1881.6
SumAccelUZ	MSSSRC1	3049.71	1881.6

7.2. Base reactions

Table 24: Base Reactions

Table 24: Base Reactions

OutputCase	GlobalFX	GlobalFY	GlobalFZ	GlobalMX	GlobalMY	GlobalMZ
	Kgf	Kgf	Kgf	Kgf-mm	Kgf-mm	Kgf-mm
DEAD	-2.164E-14	1.335E-12	3557.65	10742721.18	-10201547.6	5.028E-09
LIVE	0.	0.	0.	0.	0.	0.
WX	8.655E-14	-4.331E-12	-11521.74	-34708553.	33038583.87	-1.539E-08
WY	0.	0.	0.	0.	0.	0.
TEMP	0.	0.	0.	0.	0.	0.

8. Joint results

This section provides joint results, including items such as displacements and reactions.

Table 25: Joint Displacements

Table 25: Joint Displacements

Joint	OutputCase	U1	U2	U3	R1	R2	R3
		mm	mm	mm	Radians	Radians	Radians
3	DEAD	-0.001477	-0.128956	-0.018763	0.000034	-3.463E-06	0.000173
3	LIVE	0.	0.	0.	0.	0.	0.
3	WX	0.012057	0.463323	0.062577	-0.000127	0.000022	-0.000595
3	WY	0.	0.	0.	0.	0.	0.
3	TEMP	0.	0.	0.	0.	0.	0.
4	DEAD	0.	0.	0.	-0.00006	-0.000108	0.001229
4	LIVE	0.	0.	0.	0.	0.	0.
4	WX	0.	0.	0.	0.000205	0.000048	-0.00454
4	WY	0.	0.	0.	0.	0.	0.
4	TEMP	0.	0.	0.	0.	0.	0.
6	DEAD	0.	0.	0.	-0.000074	0.000102	-0.001283
6	LIVE	0.	0.	0.	0.	0.	0.
6	WX	0.	0.	0.	0.000252	-0.00001	0.004758
6	WY	0.	0.	0.	0.	0.	0.
6	TEMP	0.	0.	0.	0.	0.	0.
8	DEAD	0.	0.	0.	0.0001	-0.000149	-0.00155

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 25: Joint Displacements

Joint	OutputCase	U1	U2	U3	R1	R2	R3
		mm	mm	mm	Radians	Radians	Radians
8	LIVE	0.	0.	0.	0.	0.	0.
8	WX	0.	0.	0.	-0.000346	0.000064	0.005809
8	WY	0.	0.	0.	0.	0.	0.
8	TEMP	0.	0.	0.	0.	0.	0.
9	DEAD	-0.00288	0.078419	-1.59169	0.002127	-0.001203	-0.000062
9	LIVE	0.	0.	0.	0.	0.	0.
9	WX	0.018412	-0.267269	5.582386	-0.007455	0.004208	0.00021
9	WY	0.	0.	0.	0.	0.	0.
9	TEMP	0.	0.	0.	0.	0.	0.
10	DEAD	-0.009398	0.077476	-1.666081	-0.002197	-0.001197	-0.000059
10	LIVE	0.	0.	0.	0.	0.	0.
10	WX	0.041401	-0.268602	5.834463	0.007692	0.004188	0.000213
10	WY	0.	0.	0.	0.	0.	0.
10	TEMP	0.	0.	0.	0.	0.	0.
11	DEAD	-0.002519	0.077187	-1.59461	0.002131	0.001202	0.000067
11	LIVE	0.	0.	0.	0.	0.	0.
11	WX	0.016063	-0.26296	5.592594	-0.007465	-0.004205	-0.000227
11	WY	0.	0.	0.	0.	0.	0.
11	TEMP	0.	0.	0.	0.	0.	0.
12	DEAD	-0.010034	0.075988	-1.663231	-0.002194	0.001198	0.000064
12	LIVE	0.	0.	0.	0.	0.	0.
12	WX	0.042746	-0.2634	5.824498	0.007682	-0.00419	-0.000231
12	WY	0.	0.	0.	0.	0.	0.
12	TEMP	0.	0.	0.	0.	0.	0.
13	DEAD	-0.004818	-0.005125	-0.027608	0.000449	-8.920E-06	-2.359E-06
13	LIVE	0.	0.	0.	0.	0.	0.
13	WX	0.029304	0.026003	0.092562	-0.001628	0.000044	0.000011
13	WY	0.	0.	0.	0.	0.	0.
13	TEMP	0.	0.	0.	0.	0.	0.
14	DEAD	-0.004788	-0.009654	-0.035422	-0.000519	-8.080E-06	2.504E-08
14	LIVE	0.	0.	0.	0.	0.	0.
14	WX	0.029689	0.036846	0.118616	0.001867	0.000038	-2.844E-06
14	WY	0.	0.	0.	0.	0.	0.
14	TEMP	0.	0.	0.	0.	0.	0.
15	DEAD	-0.00993	-0.010984	-0.035501	-0.000516	-3.264E-06	8.060E-07
15	LIVE	0.	0.	0.	0.	0.	0.
15	WX	0.037642	0.041496	0.11889	0.001856	0.000014	9.937E-08
15	WY	0.	0.	0.	0.	0.	0.
15	TEMP	0.	0.	0.	0.	0.	0.
16	DEAD	-0.004952	-0.006519	-0.027541	0.000452	-1.231E-06	2.763E-06
16	LIVE	0.	0.	0.	0.	0.	0.
16	WX	0.020759	0.030875	0.092328	-0.00164	8.031E-06	-0.000012
16	WY	0.	0.	0.	0.	0.	0.
16	TEMP	0.	0.	0.	0.	0.	0.
17	DEAD	-0.003985	-0.003476	-0.027076	-0.000121	-0.001305	-0.000068
17	LIVE	0.	0.	0.	0.	0.	0.
17	WX	0.02388	0.021479	0.064466	0.000378	0.004566	0.000243
17	WY	0.	0.	0.	0.	0.	0.
17	TEMP	0.	0.	0.	0.	0.	0.
18	DEAD	-0.005565	-0.005013	-0.02501	-0.000117	0.001306	0.000069
18	LIVE	0.	0.	0.	0.	0.	0.
18	WX	0.025636	0.026851	0.057244	0.000364	-0.004567	-0.000245
18	WY	0.	0.	0.	0.	0.	0.
18	TEMP	0.	0.	0.	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 25: Joint Displacements

Joint	OutputCase	U1	U2	U3	R1	R2	R3
		mm	mm	mm	Radians	Radians	Radians
19	DEAD	0.	0.	0.	0.000091	0.000134	0.001445
19	LIVE	0.	0.	0.	0.	0.	0.
19	WX	0.	0.	0.	-0.000316	1.788E-06	-0.005421
19	WY	0.	0.	0.	0.	0.	0.
19	TEMP	0.	0.	0.	0.	0.	0.
20	DEAD	0.	0.	0.	-0.000184	-7.033E-06	0.000342
20	LIVE	0.	0.	0.	0.	0.	0.
20	WX	0.	0.	0.	0.000649	0.000028	-0.001173
20	WY	0.	0.	0.	0.	0.	0.
20	TEMP	0.	0.	0.	0.	0.	0.
21	DEAD	0.	0.	0.	-0.000185	-2.834E-06	-0.000515
21	LIVE	0.	0.	0.	0.	0.	0.
21	WX	0.	0.	0.	0.000652	0.000023	0.001833
21	WY	0.	0.	0.	0.	0.	0.
21	TEMP	0.	0.	0.	0.	0.	0.
22	DEAD	0.	0.	0.	0.000249	-0.00001	-0.000664
22	LIVE	0.	0.	0.	0.	0.	0.
22	WX	0.	0.	0.	-0.000886	0.000039	0.002353
22	WY	0.	0.	0.	0.	0.	0.
22	TEMP	0.	0.	0.	0.	0.	0.
23	DEAD	0.	0.	0.	0.000249	-1.567E-06	0.000366
23	LIVE	0.	0.	0.	0.	0.	0.
23	WX	0.	0.	0.	-0.000886	0.000016	-0.001257
23	WY	0.	0.	0.	0.	0.	0.
23	TEMP	0.	0.	0.	0.	0.	0.
25	DEAD	-0.00576	0.009421	-0.192229	-0.000142	-0.001234	-0.000081
25	LIVE	0.	0.	0.	0.	0.	0.
25	WX	0.027986	-0.023142	0.627675	0.000498	0.004318	0.000283
25	WY	0.	0.	0.	0.	0.	0.
25	TEMP	0.	0.	0.	0.	0.	0.
26	DEAD	-0.005776	0.007774	-0.189459	-0.000148	0.001236	0.000082
26	LIVE	0.	0.	0.	0.	0.	0.
26	WX	0.02855	-0.017384	0.617986	0.000519	-0.004324	-0.000286
26	WY	0.	0.	0.	0.	0.	0.
26	TEMP	0.	0.	0.	0.	0.	0.
27	DEAD	-0.006648	-0.006608	-0.187909	0.000133	-0.00122	-0.000049
27	LIVE	0.	0.	0.	0.	0.	0.
27	WX	0.030786	0.027819	0.62577	-0.000462	0.004269	0.000173
27	WY	0.	0.	0.	0.	0.	0.
27	TEMP	0.	0.	0.	0.	0.	0.
28	DEAD	-0.006164	-0.007967	-0.190117	0.000125	0.001218	0.00005
28	LIVE	0.	0.	0.	0.	0.	0.
28	WX	0.029524	0.032568	0.633492	-0.000437	-0.004262	-0.000175
28	WY	0.	0.	0.	0.	0.	0.
28	TEMP	0.	0.	0.	0.	0.	0.
29	DEAD	-0.006352	-0.01178	-0.036771	0.000153	-0.001306	-0.000075
29	LIVE	0.	0.	0.	0.	0.	0.
29	WX	0.031282	0.04567	0.098795	-0.000507	0.004567	0.000256
29	WY	0.	0.	0.	0.	0.	0.
29	TEMP	0.	0.	0.	0.	0.	0.
30	DEAD	-0.008493	-0.013038	-0.039195	0.000156	0.001305	0.000075
30	LIVE	0.	0.	0.	0.	0.	0.
30	WX	0.036206	0.050067	0.107274	-0.00052	-0.004565	-0.000259
30	WY	0.	0.	0.	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 25: Joint Displacements

Joint	OutputCase	U1	U2	U3	R1	R2	R3
		mm	mm	mm	Radians	Radians	Radians
30	TEMP	0.	0.	0.	0.	0.	0.
33	DEAD	-0.002142	0.034515	-0.580873	0.000778	-0.004166	-0.000196
33	LIVE	0.	0.	0.	0.	0.	0.
33	WX	0.013827	-0.114175	2.012688	-0.002695	0.014589	0.000721
33	WY	0.	0.	0.	0.	0.	0.
33	TEMP	0.	0.	0.	0.	0.	0.
34	DEAD	-0.010658	0.034336	-0.625211	-0.000821	-0.00417	-0.000207
34	LIVE	0.	0.	0.	0.	0.	0.
34	WX	0.044245	-0.117317	2.159268	0.00284	0.014604	0.000698
34	WY	0.	0.	0.	0.	0.	0.
34	TEMP	0.	0.	0.	0.	0.	0.
35	DEAD	-0.012881	0.001668	-0.013603	-0.000198	-0.000301	-0.000018
35	LIVE	0.	0.	0.	0.	0.	0.
35	WX	0.034609	-0.004246	0.042839	0.000711	0.000074	0.000025
35	WY	0.	0.	0.	0.	0.	0.
35	TEMP	0.	0.	0.	0.	0.	0.
36	DEAD	-0.007184	0.004081	-0.01078	0.000155	-0.000232	-0.000018
36	LIVE	0.	0.	0.	0.	0.	0.
36	WX	0.011174	-0.008536	0.034179	-0.000566	0.000053	1.862E-06
36	WY	0.	0.	0.	0.	0.	0.
36	TEMP	0.	0.	0.	0.	0.	0.
37	DEAD	-0.007796	0.005037	-0.017365	-0.000059	-0.003956	-0.000195
37	LIVE	0.	0.	0.	0.	0.	0.
37	WX	0.030136	-0.011015	0.039411	0.00017	0.013832	0.000652
37	WY	0.	0.	0.	0.	0.	0.
37	TEMP	0.	0.	0.	0.	0.	0.
38	DEAD	-0.005759	0.01009	-0.084122	-0.000044	-0.003854	-0.000262
38	LIVE	0.	0.	0.	0.	0.	0.
38	WX	0.028972	-0.027841	0.254607	0.000149	0.013479	0.00092
38	WY	0.	0.	0.	0.	0.	0.
38	TEMP	0.	0.	0.	0.	0.	0.
39	DEAD	-0.005608	0.002794	-0.068501	0.000063	-0.003826	-0.000132
39	LIVE	0.	0.	0.	0.	0.	0.
39	WX	0.027935	-0.006736	0.209574	-0.000213	0.013382	0.000458
39	WY	0.	0.	0.	0.	0.	0.
39	TEMP	0.	0.	0.	0.	0.	0.
40	DEAD	-0.011259	0.000737	-0.010985	0.000052	-0.003962	-0.000212
40	LIVE	0.	0.	0.	0.	0.	0.
40	WX	0.043828	-0.000087	0.017278	-0.000158	0.013851	0.000762
40	WY	0.	0.	0.	0.	0.	0.
40	TEMP	0.	0.	0.	0.	0.	0.
57	DEAD	-0.009716	-0.012538	-2.377926	0.00674	-9.039E-07	-1.660E-06
57	LIVE	0.	0.	0.	0.	0.	0.
57	WX	0.042074	0.048679	8.327778	0.006946	3.161E-06	5.852E-06
57	WY	0.	0.	0.	0.	0.	0.
57	TEMP	0.	0.	0.	0.	0.	0.
58	DEAD	-0.007422	-0.108288	-0.599931	-0.004672	7.324E-07	-5.028E-07
58	LIVE	0.	0.	0.	0.	0.	0.
58	WX	0.033744	0.386036	2.060661	0.000122	-2.563E-06	1.858E-06
58	WY	0.	0.	0.	0.	0.	0.
58	TEMP	0.	0.	0.	0.	0.	0.
59	DEAD	-0.006406	-0.093409	-0.87367	0.003872	1.002E-06	-5.374E-07
59	LIVE	0.	0.	0.	0.	0.	0.
59	WX	0.030155	0.334013	3.018609	-0.000986	-3.574E-06	1.741E-06

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 25: Joint Displacements

Joint	OutputCase	U1	U2	U3	R1	R2	R3
		mm	mm	mm	Radians	Radians	Radians
59	WY	0.	0.	0.	0.	0.	0.
59	TEMP	0.	0.	0.	0.	0.	0.
60	DEAD	-0.005768	-0.094629	-0.852595	-0.003744	-1.123E-06	-6.640E-07
60	LIVE	0.	0.	0.	0.	0.	0.
60	WX	0.028268	0.339162	2.930841	0.001059	4.010E-06	2.172E-06
60	WY	0.	0.	0.	0.	0.	0.
60	TEMP	0.	0.	0.	0.	0.	0.
61	DEAD	-0.004775	-0.108761	-0.587881	0.003969	-6.332E-07	-5.302E-07
61	LIVE	0.	0.	0.	0.	0.	0.
61	WX	0.024758	0.387908	2.018624	-0.000334	2.213E-06	1.958E-06
61	WY	0.	0.	0.	0.	0.	0.
61	TEMP	0.	0.	0.	0.	0.	0.
62	DEAD	-0.0027	-0.016584	-2.299016	-0.005398	9.705E-07	-1.520E-06
62	LIVE	0.	0.	0.	0.	0.	0.
62	WX	0.017237	0.062338	8.060151	-0.006865	-3.395E-06	5.358E-06
62	WY	0.	0.	0.	0.	0.	0.
62	TEMP	0.	0.	0.	0.	0.	0.
63	DEAD	-0.010346	0.25426	-7.422672	0.007415	0.000457	0.000025
63	LIVE	0.	0.	0.	0.	0.	0.
63	WX	0.043495	-0.885205	25.968636	0.004575	-0.001593	-0.000078
63	WY	0.	0.	0.	0.	0.	0.
63	TEMP	0.	0.	0.	0.	0.	0.
64	DEAD	-0.009876	0.190417	-6.235004	-0.004814	0.000642	0.000037
64	LIVE	0.	0.	0.	0.	0.	0.
64	WX	0.040017	-0.659755	21.769446	0.000614	-0.002245	-0.000138
64	WY	0.	0.	0.	0.	0.	0.
64	TEMP	0.	0.	0.	0.	0.	0.
65	DEAD	-0.005886	0.187258	-6.177493	0.003631	0.000605	0.000023
65	LIVE	0.	0.	0.	0.	0.	0.
65	WX	0.028729	-0.648915	21.5724	-0.000142	-0.002118	-0.000081
65	WY	0.	0.	0.	0.	0.	0.
65	TEMP	0.	0.	0.	0.	0.	0.
66	DEAD	-0.005767	0.190623	-6.219162	-0.003491	0.000612	0.000045
66	LIVE	0.	0.	0.	0.	0.	0.
66	WX	0.028761	-0.659969	21.705417	0.000172	-0.002142	-0.00016
66	WY	0.	0.	0.	0.	0.	0.
66	TEMP	0.	0.	0.	0.	0.	0.
67	DEAD	-0.00668	0.190881	-6.226351	0.004042	0.000645	0.000034
67	LIVE	0.	0.	0.	0.	0.	0.
67	WX	0.027886	-0.661466	21.7421	-0.000588	-0.002259	-0.000111
67	WY	0.	0.	0.	0.	0.	0.
67	TEMP	0.	0.	0.	0.	0.	0.
68	DEAD	-0.002331	0.252056	-7.365664	-0.00606	0.000461	0.000021
68	LIVE	0.	0.	0.	0.	0.	0.
68	WX	0.014945	-0.878645	25.779792	-0.004539	-0.001608	-0.000084
68	WY	0.	0.	0.	0.	0.	0.
68	TEMP	0.	0.	0.	0.	0.	0.
78	DEAD	-0.00315	0.019579	-0.603787	0.000802	0.004159	0.000195
78	LIVE	0.	0.	0.	0.	0.	0.
78	WX	0.020276	-0.06195	2.092832	-0.00278	-0.014567	-0.000717
78	WY	0.	0.	0.	0.	0.	0.
78	TEMP	0.	0.	0.	0.	0.	0.
79	DEAD	-0.008881	0.017099	-0.60449	-0.000799	0.004176	0.000207
79	LIVE	0.	0.	0.	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 25: Joint Displacements

Joint	OutputCase	U1	U2	U3	R1	R2	R3
		mm	mm	mm	Radians	Radians	Radians
79	WX	0.040276	-0.057044	2.086784	0.002763	-0.014624	-0.000696
79	WY	0.	0.	0.	0.	0.	0.
79	TEMP	0.	0.	0.	0.	0.	0.
80	DEAD	0.001278	-0.012106	-0.010486	0.000179	0.000226	0.000023
80	LIVE	0.	0.	0.	0.	0.	0.
80	WX	0.025406	0.048063	0.033151	-0.000652	-0.000015	-0.000019
80	WY	0.	0.	0.	0.	0.	0.
80	TEMP	0.	0.	0.	0.	0.	0.
81	DEAD	-0.006278	-0.014435	-0.013946	-0.000176	0.000286	0.000023
81	LIVE	0.	0.	0.	0.	0.	0.
81	WX	0.048224	0.052063	0.044036	0.000633	-9.451E-06	-0.00004
81	WY	0.	0.	0.	0.	0.	0.
81	TEMP	0.	0.	0.	0.	0.	0.
82	DEAD	-0.00136	-0.011806	-0.004397	-0.000034	0.003959	0.000202
82	LIVE	0.	0.	0.	0.	0.	0.
82	WX	0.018	0.047882	-0.005944	0.000081	-0.013845	-0.000675
82	WY	0.	0.	0.	0.	0.	0.
82	TEMP	0.	0.	0.	0.	0.	0.
83	DEAD	-0.005843	-0.007092	-0.063898	-0.000069	0.00386	0.000263
83	LIVE	0.	0.	0.	0.	0.	0.
83	WX	0.027791	0.032242	0.183879	0.000235	-0.0135	-0.000924
83	WY	0.	0.	0.	0.	0.	0.
83	TEMP	0.	0.	0.	0.	0.	0.
84	DEAD	-0.007139	-0.01241	-0.085297	0.000033	0.003821	0.000132
84	LIVE	0.	0.	0.	0.	0.	0.
84	WX	0.032154	0.046429	0.268312	-0.000107	-0.013364	-0.000459
84	WY	0.	0.	0.	0.	0.	0.
84	TEMP	0.	0.	0.	0.	0.	0.
85	DEAD	-0.003912	-0.014605	-0.025389	0.000074	0.003958	0.000218
85	LIVE	0.	0.	0.	0.	0.	0.
85	WX	0.024801	0.053557	0.067658	-0.000234	-0.013837	-0.000783
85	WY	0.	0.	0.	0.	0.	0.
85	TEMP	0.	0.	0.	0.	0.	0.
86	DEAD	-0.00914	0.246454	-7.417398	0.007422	-0.000452	-0.000021
86	LIVE	0.	0.	0.	0.	0.	0.
86	WX	0.040839	-0.857961	25.95018	0.004549	0.001577	0.000065
86	WY	0.	0.	0.	0.	0.	0.
86	TEMP	0.	0.	0.	0.	0.	0.
87	DEAD	-0.005132	0.183166	-6.238317	-0.004807	-0.000645	-0.000035
87	LIVE	0.	0.	0.	0.	0.	0.
87	WX	0.028041	-0.634449	21.781029	0.000592	0.002257	0.000129
87	WY	0.	0.	0.	0.	0.	0.
87	TEMP	0.	0.	0.	0.	0.	0.
88	DEAD	-0.006894	0.180096	-6.182387	0.003625	-0.000609	-0.000019
88	LIVE	0.	0.	0.	0.	0.	0.
88	WX	0.03147	-0.623918	21.589447	-0.000122	0.002129	0.000066
88	WY	0.	0.	0.	0.	0.	0.
88	TEMP	0.	0.	0.	0.	0.	0.
89	DEAD	-0.005801	0.182898	-6.213518	-0.003495	-0.000608	-0.000041
89	LIVE	0.	0.	0.	0.	0.	0.
89	WX	0.027889	-0.633003	21.685549	0.000188	0.002128	0.000145
89	WY	0.	0.	0.	0.	0.	0.
89	TEMP	0.	0.	0.	0.	0.	0.
90	DEAD	-0.002673	0.183298	-6.223306	0.00405	-0.000643	-0.000031

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 25: Joint Displacements

Joint	OutputCase	U1	U2	U3	R1	R2	R3
		mm	mm	mm	Radians	Radians	Radians
90	LIVE	0.	0.	0.	0.	0.	0.
90	WX	0.02094	-0.635002	21.731439	-0.000614	0.002249	0.000101
90	WY	0.	0.	0.	0.	0.	0.
90	TEMP	0.	0.	0.	0.	0.	0.
91	DEAD	-0.003015	0.244885	-7.371744	-0.006052	-0.000466	-0.000018
91	LIVE	0.	0.	0.	0.	0.	0.
91	WX	0.019344	-0.85362	25.801058	-0.004568	0.001625	0.000073
91	WY	0.	0.	0.	0.	0.	0.
91	TEMP	0.	0.	0.	0.	0.	0.
94	DEAD	-0.073452	-0.05203	-0.007433	0.00002	-0.000027	-0.00072
94	LIVE	0.	0.	0.	0.	0.	0.
94	WX	0.037259	0.185306	0.023232	-0.000076	0.000041	0.002723
94	WY	0.	0.	0.	0.	0.	0.
94	TEMP	0.	0.	0.	0.	0.	0.
104	DEAD	-0.006393	-0.129132	-0.018805	0.000035	-8.066E-06	-0.000313
104	LIVE	0.	0.	0.	0.	0.	0.
104	WX	0.023862	0.46394	0.062721	-0.00013	0.00003	0.001112
104	WY	0.	0.	0.	0.	0.	0.
104	TEMP	0.	0.	0.	0.	0.	0.
105	DEAD	0.063299	-0.045759	-0.007253	8.183E-06	0.000012	0.000673
105	LIVE	0.	0.	0.	0.	0.	0.
105	WX	0.006615	0.163396	0.0226	-0.000033	0.000024	-0.002548
105	WY	0.	0.	0.	0.	0.	0.
105	TEMP	0.	0.	0.	0.	0.	0.

Table 26: Joint Reactions

Table 26: Joint Reactions

Joint	OutputCase	F1	F2	F3	M1	M2	M3
		Kgf	Kgf	Kgf	Kgf-mm	Kgf-mm	Kgf-mm
4	DEAD	5.85	72.49	253.48	0.	0.	0.
4	LIVE	0.	0.	0.	0.	0.	0.
4	WX	-9.61	-207.84	-780.68	0.	0.	0.
4	WY	0.	0.	0.	0.	0.	0.
4	TEMP	0.	0.	0.	0.	0.	0.
6	DEAD	-5.87	72.92	253.83	0.	0.	0.
6	LIVE	0.	0.	0.	0.	0.	0.
6	WX	9.69	-209.35	-781.9	0.	0.	0.
6	WY	0.	0.	0.	0.	0.	0.
6	TEMP	0.	0.	0.	0.	0.	0.
8	DEAD	5.	-71.49	250.48	0.	0.	0.
8	LIVE	0.	0.	0.	0.	0.	0.
8	WX	-9.23	204.41	-761.69	0.	0.	0.
8	WY	0.	0.	0.	0.	0.	0.
8	TEMP	0.	0.	0.	0.	0.	0.
19	DEAD	-4.98	-70.79	250.2	0.	0.	0.
19	LIVE	0.	0.	0.	0.	0.	0.
19	WX	9.14	201.93	-760.68	0.	0.	0.
19	WY	0.	0.	0.	0.	0.	0.
19	TEMP	0.	0.	0.	0.	0.	0.
20	DEAD	0.86	173.46	642.08	0.	0.	0.
20	LIVE	0.	0.	0.	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 26: Joint Reactions

Joint	OutputCase	F1	F2	F3	M1	M2	M3
		Kgf	Kgf	Kgf	Kgf-mm	Kgf-mm	Kgf-mm
20	WX	-2.98	-553.56	-2129.98	0.	0.	0.
20	WY	0.	0.	0.	0.	0.	0.
20	TEMP	0.	0.	0.	0.	0.	0.
21	DEAD	-0.92	175.24	643.07	0.	0.	0.
21	LIVE	0.	0.	0.	0.	0.	0.
21	WX	3.24	-559.75	-2133.42	0.	0.	0.
21	WY	0.	0.	0.	0.	0.	0.
21	TEMP	0.	0.	0.	0.	0.	0.
22	DEAD	0.88	-176.67	632.66	0.	0.	0.
22	LIVE	0.	0.	0.	0.	0.	0.
22	WX	-3.08	564.73	-2088.11	0.	0.	0.
22	WY	0.	0.	0.	0.	0.	0.
22	TEMP	0.	0.	0.	0.	0.	0.
23	DEAD	-0.81	-175.16	631.85	0.	0.	0.
23	LIVE	0.	0.	0.	0.	0.	0.
23	WX	2.83	559.44	-2085.28	0.	0.	0.
23	WY	0.	0.	0.	0.	0.	0.
23	TEMP	0.	0.	0.	0.	0.	0.

9. Frame results

This section provides frame force results.

Table 27: Element Forces - Frames, Part 1 of 2

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
7	0.	DEAD	-452.56	-68.44	-5.497E-02
7	485.	DEAD	-449.66	-68.44	-5.497E-02
7	970.	DEAD	-446.75	-68.44	-5.497E-02
7	0.	LIVE	0.	0.	0.
7	485.	LIVE	0.	0.	0.
7	970.	LIVE	0.	0.	0.
7	0.	WX	1507.41	249.41	0.19
7	485.	WX	1507.41	249.41	0.19
7	970.	WX	1507.41	249.41	0.19
7	0.	WY	0.	0.	0.
7	485.	WY	0.	0.	0.
7	970.	WY	0.	0.	0.
7	0.	TEMP	0.	0.	0.
7	485.	TEMP	0.	0.	0.
7	970.	TEMP	0.	0.	0.
9	0.	DEAD	-178.91	-23.97	3.26
9	485.	DEAD	-176.	-23.97	3.26
9	970.	DEAD	-173.1	-23.97	3.26
9	0.	LIVE	0.	0.	0.
9	485.	LIVE	0.	0.	0.
9	970.	LIVE	0.	0.	0.
9	0.	WX	558.03	89.08	-0.56
9	485.	WX	558.03	89.08	-0.56

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
9	970.	WX	558.03	89.08	-0.56
9	0.	WY	0.	0.	0.
9	485.	WY	0.	0.	0.
9	970.	WY	0.	0.	0.
9	0.	TEMP	0.	0.	0.
9	485.	TEMP	0.	0.	0.
9	970.	TEMP	0.	0.	0.
12	0.	DEAD	-453.65	-68.14	5.136E-02
12	485.	DEAD	-450.75	-68.14	5.136E-02
12	970.	DEAD	-447.84	-68.14	5.136E-02
12	0.	LIVE	0.	0.	0.
12	485.	LIVE	0.	0.	0.
12	970.	LIVE	0.	0.	0.
12	0.	WX	1511.22	248.36	-0.18
12	485.	WX	1511.22	248.36	-0.18
12	970.	WX	1511.22	248.36	-0.18
12	0.	WY	0.	0.	0.
12	485.	WY	0.	0.	0.
12	970.	WY	0.	0.	0.
12	0.	TEMP	0.	0.	0.
12	485.	TEMP	0.	0.	0.
12	970.	TEMP	0.	0.	0.
14	0.	DEAD	-174.11	-25.2	-3.26
14	485.	DEAD	-171.2	-25.2	-3.26
14	970.	DEAD	-168.29	-25.2	-3.26
14	0.	LIVE	0.	0.	0.
14	485.	LIVE	0.	0.	0.
14	970.	LIVE	0.	0.	0.
14	0.	WX	541.24	93.39	0.56
14	485.	WX	541.24	93.39	0.56
14	970.	WX	541.24	93.39	0.56
14	0.	WY	0.	0.	0.
14	485.	WY	0.	0.	0.
14	970.	WY	0.	0.	0.
14	0.	TEMP	0.	0.	0.
14	485.	TEMP	0.	0.	0.
14	970.	TEMP	0.	0.	0.
20	0.	DEAD	-446.5	47.98	-3.219E-02
20	635.	DEAD	-442.69	47.98	-3.219E-02
20	670.	DEAD	-442.48	47.98	-3.219E-02
20	670.	DEAD	-442.48	47.98	-3.219E-02
20	1270.	DEAD	-438.89	47.98	-3.219E-02
20	0.	LIVE	0.	0.	0.
20	635.	LIVE	0.	0.	0.
20	670.	LIVE	0.	0.	0.
20	670.	LIVE	0.	0.	0.
20	1270.	LIVE	0.	0.	0.
20	0.	WX	1482.55	-174.86	0.11
20	635.	WX	1482.55	-174.86	0.11
20	670.	WX	1482.55	-174.86	0.11
20	670.	WX	1482.55	-174.86	0.11
20	1270.	WX	1482.55	-174.86	0.11
20	0.	WY	0.	0.	0.
20	635.	WY	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
20	670.	WY	0.	0.	0.
20	670.	WY	0.	0.	0.
20	1270.	WY	0.	0.	0.
20	0.	TEMP	0.	0.	0.
20	635.	TEMP	0.	0.	0.
20	670.	TEMP	0.	0.	0.
20	670.	TEMP	0.	0.	0.
20	1270.	TEMP	0.	0.	0.
22	0.	DEAD	-173.44	17.65	2.47
22	635.	DEAD	-169.63	17.65	2.47
22	670.	DEAD	-169.42	17.65	2.47
22	670.	DEAD	-169.42	17.65	2.47
22	1270.	DEAD	-165.83	17.65	2.47
22	0.	LIVE	0.	0.	0.
22	635.	LIVE	0.	0.	0.
22	670.	LIVE	0.	0.	0.
22	670.	LIVE	0.	0.	0.
22	1270.	LIVE	0.	0.	0.
22	0.	WX	534.2	-65.54	-0.36
22	635.	WX	534.2	-65.54	-0.36
22	670.	WX	534.2	-65.54	-0.36
22	670.	WX	534.2	-65.54	-0.36
22	1270.	WX	534.2	-65.54	-0.36
22	0.	WY	0.	0.	0.
22	635.	WY	0.	0.	0.
22	670.	WY	0.	0.	0.
22	670.	WY	0.	0.	0.
22	1270.	WY	0.	0.	0.
22	0.	TEMP	0.	0.	0.
22	635.	TEMP	0.	0.	0.
22	670.	TEMP	0.	0.	0.
22	670.	TEMP	0.	0.	0.
22	1270.	TEMP	0.	0.	0.
25	0.	DEAD	-445.52	48.19	3.526E-02
25	635.	DEAD	-441.72	48.19	3.526E-02
25	670.	DEAD	-441.51	48.19	3.526E-02
25	670.	DEAD	-441.51	48.19	3.526E-02
25	1270.	DEAD	-437.91	48.19	3.526E-02
25	0.	LIVE	0.	0.	0.
25	635.	LIVE	0.	0.	0.
25	670.	LIVE	0.	0.	0.
25	670.	LIVE	0.	0.	0.
25	1270.	LIVE	0.	0.	0.
25	0.	WX	1479.14	-175.59	-0.12
25	635.	WX	1479.14	-175.59	-0.12
25	670.	WX	1479.14	-175.59	-0.12
25	670.	WX	1479.14	-175.59	-0.12
25	1270.	WX	1479.14	-175.59	-0.12
25	0.	WY	0.	0.	0.
25	635.	WY	0.	0.	0.
25	670.	WY	0.	0.	0.
25	670.	WY	0.	0.	0.
25	1270.	WY	0.	0.	0.
25	0.	TEMP	0.	0.	0.

Engr. Khurram Shahzad
BSc. Civil Engineering
PEC # Civil/54490
Structural Design Engineer
Riaz-ud-Din Engineering (Pvt.) Limited

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
25	635.	TEMP	0.	0.	0.
25	670.	TEMP	0.	0.	0.
25	670.	TEMP	0.	0.	0.
25	1270.	TEMP	0.	0.	0.
27	0.	DEAD	-177.71	16.75	-2.47
27	635.	DEAD	-173.9	16.75	-2.47
27	670.	DEAD	-173.69	16.75	-2.47
27	670.	DEAD	-173.69	16.75	-2.47
27	1270.	DEAD	-170.09	16.75	-2.47
27	0.	LIVE	0.	0.	0.
27	635.	LIVE	0.	0.	0.
27	670.	LIVE	0.	0.	0.
27	670.	LIVE	0.	0.	0.
27	1270.	LIVE	0.	0.	0.
27	0.	WX	549.13	-62.4	0.36
27	635.	WX	549.13	-62.4	0.36
27	670.	WX	549.13	-62.4	0.36
27	670.	WX	549.13	-62.4	0.36
27	1270.	WX	549.13	-62.4	0.36
27	0.	WY	0.	0.	0.
27	635.	WY	0.	0.	0.
27	670.	WY	0.	0.	0.
27	670.	WY	0.	0.	0.
27	1270.	WY	0.	0.	0.
27	0.	TEMP	0.	0.	0.
27	635.	TEMP	0.	0.	0.
27	670.	TEMP	0.	0.	0.
27	670.	TEMP	0.	0.	0.
27	1270.	TEMP	0.	0.	0.
31	0.	DEAD	-114.39	-7.389E-02	2.53
31	937.53	DEAD	-113.02	1.58	2.53
31	1875.06	DEAD	-111.66	3.23	2.53
31	0.	LIVE	0.	0.	0.
31	937.53	LIVE	0.	0.	0.
31	1875.06	LIVE	0.	0.	0.
31	0.	WX	341.09	-5.54	-8.87
31	937.53	WX	341.09	-5.54	-8.87
31	1875.06	WX	341.09	-5.54	-8.87
31	0.	WY	0.	0.	0.
31	937.53	WY	0.	0.	0.
31	1875.06	WY	0.	0.	0.
31	0.	TEMP	0.	0.	0.
31	937.53	TEMP	0.	0.	0.
31	1875.06	TEMP	0.	0.	0.
32	0.	DEAD	-125.84	-2.96	-2.59
32	851.52	DEAD	-124.65	-1.42	-2.59
32	1703.04	DEAD	-123.46	0.11	-2.59
32	0.	LIVE	0.	0.	0.
32	851.52	LIVE	0.	0.	0.
32	1703.04	LIVE	0.	0.	0.
32	0.	WX	384.78	4.94	9.05
32	851.52	WX	384.78	4.94	9.05
32	1703.04	WX	384.78	4.94	9.05
32	0.	WY	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
32	851.52	WY	0.	0.	0.
32	1703.04	WY	0.	0.	0.
32	0.	TEMP	0.	0.	0.
32	851.52	TEMP	0.	0.	0.
32	1703.04	TEMP	0.	0.	0.
33	0.	DEAD	-290.86	-1.83	-0.78
33	937.53	DEAD	-289.5	-0.18	-0.78
33	1875.06	DEAD	-288.14	1.47	-0.78
33	0.	LIVE	0.	0.	0.
33	937.53	LIVE	0.	0.	0.
33	1875.06	LIVE	0.	0.	0.
33	0.	WX	952.72	0.58	2.71
33	937.53	WX	952.72	0.58	2.71
33	1875.06	WX	952.72	0.58	2.71
33	0.	WY	0.	0.	0.
33	937.53	WY	0.	0.	0.
33	1875.06	WY	0.	0.	0.
33	0.	TEMP	0.	0.	0.
33	937.53	TEMP	0.	0.	0.
33	1875.06	TEMP	0.	0.	0.
34	0.	DEAD	-308.39	-0.8	0.87
34	851.52	DEAD	-307.2	0.74	0.87
34	1703.04	DEAD	-306.01	2.28	0.87
34	0.	LIVE	0.	0.	0.
34	851.52	LIVE	0.	0.	0.
34	1703.04	LIVE	0.	0.	0.
34	0.	WX	1019.88	-2.68	-3.07
34	851.52	WX	1019.88	-2.68	-3.07
34	1703.04	WX	1019.88	-2.68	-3.07
34	0.	WY	0.	0.	0.
34	851.52	WY	0.	0.	0.
34	1703.04	WY	0.	0.	0.
34	0.	TEMP	0.	0.	0.
34	851.52	TEMP	0.	0.	0.
34	1703.04	TEMP	0.	0.	0.
35	0.	DEAD	-291.76	-0.88	0.85
35	937.53	DEAD	-290.4	0.78	0.85
35	1875.06	DEAD	-289.04	2.43	0.85
35	0.	LIVE	0.	0.	0.
35	937.53	LIVE	0.	0.	0.
35	1875.06	LIVE	0.	0.	0.
35	0.	WX	955.87	-2.77	-2.97
35	937.53	WX	955.87	-2.77	-2.97
35	1875.06	WX	955.87	-2.77	-2.97
35	0.	WY	0.	0.	0.
35	937.53	WY	0.	0.	0.
35	1875.06	WY	0.	0.	0.
35	0.	TEMP	0.	0.	0.
35	937.53	TEMP	0.	0.	0.
35	1875.06	TEMP	0.	0.	0.
36	0.	DEAD	-307.3	-1.78	-0.8
36	851.52	DEAD	-306.11	-0.24	-0.8
36	1703.04	DEAD	-304.91	1.29	-0.8
36	0.	LIVE	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
36	851.52	LIVE	0.	0.	0.
36	1703.04	LIVE	0.	0.	0.
36	0.	WX	1016.04	0.76	2.79
36	851.52	WX	1016.04	0.76	2.79
36	1703.04	WX	1016.04	0.76	2.79
36	0.	WY	0.	0.	0.
36	851.52	WY	0.	0.	0.
36	1703.04	WY	0.	0.	0.
36	0.	TEMP	0.	0.	0.
36	851.52	TEMP	0.	0.	0.
36	1703.04	TEMP	0.	0.	0.
37	0.	DEAD	-117.06	-3.02	-2.51
37	937.53	DEAD	-115.7	-1.37	-2.51
37	1875.06	DEAD	-114.34	0.28	-2.51
37	0.	LIVE	0.	0.	0.
37	937.53	LIVE	0.	0.	0.
37	1875.06	LIVE	0.	0.	0.
37	0.	WX	350.44	4.77	8.78
37	937.53	WX	350.44	4.77	8.78
37	1875.06	WX	350.44	4.77	8.78
37	0.	WY	0.	0.	0.
37	937.53	WY	0.	0.	0.
37	1875.06	WY	0.	0.	0.
37	0.	TEMP	0.	0.	0.
37	937.53	TEMP	0.	0.	0.
37	1875.06	TEMP	0.	0.	0.
38	0.	DEAD	-122.47	6.724E-02	2.61
38	851.52	DEAD	-121.28	1.61	2.61
38	1703.04	DEAD	-120.09	3.14	2.61
38	0.	LIVE	0.	0.	0.
38	851.52	LIVE	0.	0.	0.
38	1703.04	LIVE	0.	0.	0.
38	0.	WX	373.03	-5.66	-9.13
38	851.52	WX	373.03	-5.66	-9.13
38	1703.04	WX	373.03	-5.66	-9.13
38	0.	WY	0.	0.	0.
38	851.52	WY	0.	0.	0.
38	1703.04	WY	0.	0.	0.
38	0.	TEMP	0.	0.	0.
38	851.52	TEMP	0.	0.	0.
38	1703.04	TEMP	0.	0.	0.
42	0.	DEAD	-0.96	73.39	-0.12
42	573.5	DEAD	-0.96	55.13	-0.12
42	1147.	DEAD	-0.96	36.87	-0.12
42	1720.5	DEAD	-0.96	18.61	-0.12
42	2294.	DEAD	-0.96	0.34	-0.12
42	2867.5	DEAD	-0.96	-17.92	-0.12
42	2867.5	DEAD	-0.96	-18.07	-0.18
42	3441.	DEAD	-0.96	-36.33	-0.18
42	4014.5	DEAD	-0.96	-54.59	-0.18
42	4588.	DEAD	-0.96	-72.86	-0.18
42	5161.5	DEAD	-0.96	-91.12	-0.18
42	5735.	DEAD	-0.96	-109.38	-0.18
42	0.	LIVE	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
42	573.5	LIVE	0.	0.	0.
42	1147.	LIVE	0.	0.	0.
42	1720.5	LIVE	0.	0.	0.
42	2294.	LIVE	0.	0.	0.
42	2867.5	LIVE	0.	0.	0.
42	2867.5	LIVE	0.	0.	0.
42	3441.	LIVE	0.	0.	0.
42	4014.5	LIVE	0.	0.	0.
42	4588.	LIVE	0.	0.	0.
42	5161.5	LIVE	0.	0.	0.
42	5735.	LIVE	0.	0.	0.
42	0.	WX	2.08	-257.06	0.35
42	573.5	WX	2.08	-193.05	0.35
42	1147.	WX	2.08	-129.04	0.35
42	1720.5	WX	2.08	-65.03	0.35
42	2294.	WX	2.08	-1.02	0.35
42	2867.5	WX	2.08	62.99	0.35
42	2867.5	WX	2.08	62.97	0.64
42	3441.	WX	2.08	126.98	0.64
42	4014.5	WX	2.08	190.99	0.64
42	4588.	WX	2.08	255.	0.64
42	5161.5	WX	2.08	319.01	0.64
42	5735.	WX	2.08	383.02	0.64
42	0.	WY	0.	0.	0.
42	573.5	WY	0.	0.	0.
42	1147.	WY	0.	0.	0.
42	1720.5	WY	0.	0.	0.
42	2294.	WY	0.	0.	0.
42	2867.5	WY	0.	0.	0.
42	2867.5	WY	0.	0.	0.
42	3441.	WY	0.	0.	0.
42	4014.5	WY	0.	0.	0.
42	4588.	WY	0.	0.	0.
42	5161.5	WY	0.	0.	0.
42	5735.	WY	0.	0.	0.
42	0.	TEMP	0.	0.	0.
42	573.5	TEMP	0.	0.	0.
42	1147.	TEMP	0.	0.	0.
42	1720.5	TEMP	0.	0.	0.
42	2294.	TEMP	0.	0.	0.
42	2867.5	TEMP	0.	0.	0.
42	2867.5	TEMP	0.	0.	0.
42	3441.	TEMP	0.	0.	0.
42	4014.5	TEMP	0.	0.	0.
42	4588.	TEMP	0.	0.	0.
42	5161.5	TEMP	0.	0.	0.
42	5735.	TEMP	0.	0.	0.
43	0.	DEAD	-4.51	73.19	-0.22
43	573.5	DEAD	-4.51	54.93	-0.22
43	1147.	DEAD	-4.51	36.66	-0.22
43	1720.5	DEAD	-4.51	18.4	-0.22
43	2294.	DEAD	-4.51	0.14	-0.22
43	2867.5	DEAD	-4.51	-18.12	-0.22
43	2867.5	DEAD	-4.51	-18.41	-0.13

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
43	3441.	DEAD	-4.51	-36.67	-0.13
43	4014.5	DEAD	-4.51	-54.94	-0.13
43	4588.	DEAD	-4.51	-73.2	-0.13
43	5161.5	DEAD	-4.51	-91.46	-0.13
43	5735.	DEAD	-4.51	-109.72	-0.13
43	0.	LIVE	0.	0.	0.
43	573.5	LIVE	0.	0.	0.
43	1147.	LIVE	0.	0.	0.
43	1720.5	LIVE	0.	0.	0.
43	2294.	LIVE	0.	0.	0.
43	2867.5	LIVE	0.	0.	0.
43	2867.5	LIVE	0.	0.	0.
43	3441.	LIVE	0.	0.	0.
43	4014.5	LIVE	0.	0.	0.
43	4588.	LIVE	0.	0.	0.
43	5161.5	LIVE	0.	0.	0.
43	5735.	LIVE	0.	0.	0.
43	0.	WX	11.99	-256.19	0.83
43	573.5	WX	11.99	-192.18	0.83
43	1147.	WX	11.99	-128.17	0.83
43	1720.5	WX	11.99	-64.16	0.83
43	2294.	WX	11.99	-0.15	0.83
43	2867.5	WX	11.99	63.86	0.83
43	2867.5	WX	11.99	63.88	0.43
43	3441.	WX	11.99	127.89	0.43
43	4014.5	WX	11.99	191.9	0.43
43	4588.	WX	11.99	255.91	0.43
43	5161.5	WX	11.99	319.92	0.43
43	5735.	WX	11.99	383.93	0.43
43	0.	WY	0.	0.	0.
43	573.5	WY	0.	0.	0.
43	1147.	WY	0.	0.	0.
43	1720.5	WY	0.	0.	0.
43	2294.	WY	0.	0.	0.
43	2867.5	WY	0.	0.	0.
43	2867.5	WY	0.	0.	0.
43	3441.	WY	0.	0.	0.
43	4014.5	WY	0.	0.	0.
43	4588.	WY	0.	0.	0.
43	5161.5	WY	0.	0.	0.
43	5735.	WY	0.	0.	0.
43	0.	TEMP	0.	0.	0.
43	573.5	TEMP	0.	0.	0.
43	1147.	TEMP	0.	0.	0.
43	1720.5	TEMP	0.	0.	0.
43	2294.	TEMP	0.	0.	0.
43	2867.5	TEMP	0.	0.	0.
43	2867.5	TEMP	0.	0.	0.
43	3441.	TEMP	0.	0.	0.
43	4014.5	TEMP	0.	0.	0.
43	4588.	TEMP	0.	0.	0.
43	5161.5	TEMP	0.	0.	0.
43	5735.	TEMP	0.	0.	0.
44	0.	DEAD	0.91	73.73	0.1

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
44	573.5	DEAD	0.91	55.47	0.1
44	1147.	DEAD	0.91	37.21	0.1
44	1720.5	DEAD	0.91	18.95	0.1
44	2294.	DEAD	0.91	0.68	0.1
44	2867.5	DEAD	0.91	-17.58	0.1
44	2867.5	DEAD	0.91	-17.8	-0.3
44	3441.	DEAD	0.91	-36.07	-0.3
44	4014.5	DEAD	0.91	-54.33	-0.3
44	4588.	DEAD	0.91	-72.59	-0.3
44	5161.5	DEAD	0.91	-90.85	-0.3
44	5735.	DEAD	0.91	-109.11	-0.3
44	0.	LIVE	0.	0.	0.
44	573.5	LIVE	0.	0.	0.
44	1147.	LIVE	0.	0.	0.
44	1720.5	LIVE	0.	0.	0.
44	2294.	LIVE	0.	0.	0.
44	2867.5	LIVE	0.	0.	0.
44	2867.5	LIVE	0.	0.	0.
44	3441.	LIVE	0.	0.	0.
44	4014.5	LIVE	0.	0.	0.
44	4588.	LIVE	0.	0.	0.
44	5161.5	LIVE	0.	0.	0.
44	5735.	LIVE	0.	0.	0.
44	0.	WX	-2.53	-258.13	-0.36
44	573.5	WX	-2.53	-194.12	-0.36
44	1147.	WX	-2.53	-130.11	-0.36
44	1720.5	WX	-2.53	-66.1	-0.36
44	2294.	WX	-2.53	-2.09	-0.36
44	2867.5	WX	-2.53	61.92	-0.36
44	2867.5	WX	-2.53	61.85	1.04
44	3441.	WX	-2.53	125.86	1.04
44	4014.5	WX	-2.53	189.87	1.04
44	4588.	WX	-2.53	253.87	1.04
44	5161.5	WX	-2.53	317.88	1.04
44	5735.	WX	-2.53	381.89	1.04
44	0.	WY	0.	0.	0.
44	573.5	WY	0.	0.	0.
44	1147.	WY	0.	0.	0.
44	1720.5	WY	0.	0.	0.
44	2294.	WY	0.	0.	0.
44	2867.5	WY	0.	0.	0.
44	2867.5	WY	0.	0.	0.
44	3441.	WY	0.	0.	0.
44	4014.5	WY	0.	0.	0.
44	4588.	WY	0.	0.	0.
44	5161.5	WY	0.	0.	0.
44	5735.	WY	0.	0.	0.
44	0.	TEMP	0.	0.	0.
44	573.5	TEMP	0.	0.	0.
44	1147.	TEMP	0.	0.	0.
44	1720.5	TEMP	0.	0.	0.
44	2294.	TEMP	0.	0.	0.
44	2867.5	TEMP	0.	0.	0.
44	2867.5	TEMP	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
44	3441.	TEMP	0.	0.	0.
44	4014.5	TEMP	0.	0.	0.
44	4588.	TEMP	0.	0.	0.
44	5161.5	TEMP	0.	0.	0.
44	5735.	TEMP	0.	0.	0.
45	0.	DEAD	0.15	73.64	-0.43
45	573.5	DEAD	0.15	55.38	-0.43
45	1147.	DEAD	0.15	37.12	-0.43
45	1720.5	DEAD	0.15	18.86	-0.43
45	2294.	DEAD	0.15	0.6	-0.43
45	2867.5	DEAD	0.15	-17.67	-0.43
45	2867.5	DEAD	0.15	-17.94	4.196E-03
45	3441.	DEAD	0.15	-36.2	4.196E-03
45	4014.5	DEAD	0.15	-54.46	4.196E-03
45	4588.	DEAD	0.15	-72.73	4.196E-03
45	5161.5	DEAD	0.15	-90.99	4.196E-03
45	5735.	DEAD	0.15	-109.25	4.196E-03
45	0.	LIVE	0.	0.	0.
45	573.5	LIVE	0.	0.	0.
45	1147.	LIVE	0.	0.	0.
45	1720.5	LIVE	0.	0.	0.
45	2294.	LIVE	0.	0.	0.
45	2867.5	LIVE	0.	0.	0.
45	2867.5	LIVE	0.	0.	0.
45	3441.	LIVE	0.	0.	0.
45	4014.5	LIVE	0.	0.	0.
45	4588.	LIVE	0.	0.	0.
45	5161.5	LIVE	0.	0.	0.
45	5735.	LIVE	0.	0.	0.
45	0.	WX	0.36	-257.81	1.51
45	573.5	WX	0.36	-193.8	1.51
45	1147.	WX	0.36	-129.79	1.51
45	1720.5	WX	0.36	-65.78	1.51
45	2294.	WX	0.36	-1.77	1.51
45	2867.5	WX	0.36	62.24	1.51
45	2867.5	WX	0.36	62.31	-1.363E-02
45	3441.	WX	0.36	126.32	-1.363E-02
45	4014.5	WX	0.36	190.33	-1.363E-02
45	4588.	WX	0.36	254.34	-1.363E-02
45	5161.5	WX	0.36	318.35	-1.363E-02
45	5735.	WX	0.36	382.36	-1.363E-02
45	0.	WY	0.	0.	0.
45	573.5	WY	0.	0.	0.
45	1147.	WY	0.	0.	0.
45	1720.5	WY	0.	0.	0.
45	2294.	WY	0.	0.	0.
45	2867.5	WY	0.	0.	0.
45	2867.5	WY	0.	0.	0.
45	3441.	WY	0.	0.	0.
45	4014.5	WY	0.	0.	0.
45	4588.	WY	0.	0.	0.
45	5161.5	WY	0.	0.	0.
45	5735.	WY	0.	0.	0.
45	0.	TEMP	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
45	573.5	TEMP	0.	0.	0.
45	1147.	TEMP	0.	0.	0.
45	1720.5	TEMP	0.	0.	0.
45	2294.	TEMP	0.	0.	0.
45	2867.5	TEMP	0.	0.	0.
45	2867.5	TEMP	0.	0.	0.
45	3441.	TEMP	0.	0.	0.
45	4014.5	TEMP	0.	0.	0.
45	4588.	TEMP	0.	0.	0.
45	5161.5	TEMP	0.	0.	0.
45	5735.	TEMP	0.	0.	0.
46	0.	DEAD	-4.85	73.19	-0.17
46	573.5	DEAD	-4.85	54.93	-0.17
46	1147.	DEAD	-4.85	36.67	-0.17
46	1720.5	DEAD	-4.85	18.4	-0.17
46	2294.	DEAD	-4.85	0.14	-0.17
46	2867.5	DEAD	-4.85	-18.12	-0.17
46	2867.5	DEAD	-4.85	-18.39	-0.15
46	3441.	DEAD	-4.85	-36.65	-0.15
46	4014.5	DEAD	-4.85	-54.91	-0.15
46	4588.	DEAD	-4.85	-73.18	-0.15
46	5161.5	DEAD	-4.85	-91.44	-0.15
46	5735.	DEAD	-4.85	-109.7	-0.15
46	0.	LIVE	0.	0.	0.
46	573.5	LIVE	0.	0.	0.
46	1147.	LIVE	0.	0.	0.
46	1720.5	LIVE	0.	0.	0.
46	2294.	LIVE	0.	0.	0.
46	2867.5	LIVE	0.	0.	0.
46	2867.5	LIVE	0.	0.	0.
46	3441.	LIVE	0.	0.	0.
46	4014.5	LIVE	0.	0.	0.
46	4588.	LIVE	0.	0.	0.
46	5161.5	LIVE	0.	0.	0.
46	5735.	LIVE	0.	0.	0.
46	0.	WX	10.88	-256.21	0.47
46	573.5	WX	10.88	-192.2	0.47
46	1147.	WX	10.88	-128.19	0.47
46	1720.5	WX	10.88	-64.18	0.47
46	2294.	WX	10.88	-0.17	0.47
46	2867.5	WX	10.88	63.84	0.47
46	2867.5	WX	10.88	63.84	0.55
46	3441.	WX	10.88	127.85	0.55
46	4014.5	WX	10.88	191.86	0.55
46	4588.	WX	10.88	255.87	0.55
46	5161.5	WX	10.88	319.88	0.55
46	5735.	WX	10.88	383.89	0.55
46	0.	WY	0.	0.	0.
46	573.5	WY	0.	0.	0.
46	1147.	WY	0.	0.	0.
46	1720.5	WY	0.	0.	0.
46	2294.	WY	0.	0.	0.
46	2867.5	WY	0.	0.	0.
46	2867.5	WY	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
46	3441.	WY	0.	0.	0.
46	4014.5	WY	0.	0.	0.
46	4588.	WY	0.	0.	0.
46	5161.5	WY	0.	0.	0.
46	5735.	WY	0.	0.	0.
46	0.	TEMP	0.	0.	0.
46	573.5	TEMP	0.	0.	0.
46	1147.	TEMP	0.	0.	0.
46	1720.5	TEMP	0.	0.	0.
46	2294.	TEMP	0.	0.	0.
46	2867.5	TEMP	0.	0.	0.
46	2867.5	TEMP	0.	0.	0.
46	3441.	TEMP	0.	0.	0.
46	4014.5	TEMP	0.	0.	0.
46	4588.	TEMP	0.	0.	0.
46	5161.5	TEMP	0.	0.	0.
46	5735.	TEMP	0.	0.	0.
47	0.	DEAD	0.5	73.36	-9.562E-02
47	573.5	DEAD	0.5	55.1	-9.562E-02
47	1147.	DEAD	0.5	36.84	-9.562E-02
47	1720.5	DEAD	0.5	18.58	-9.562E-02
47	2294.	DEAD	0.5	0.31	-9.562E-02
47	2867.5	DEAD	0.5	-17.95	-9.562E-02
47	2867.5	DEAD	0.5	-18.09	-0.18
47	3441.	DEAD	0.5	-36.35	-0.18
47	4014.5	DEAD	0.5	-54.61	-0.18
47	4588.	DEAD	0.5	-72.87	-0.18
47	5161.5	DEAD	0.5	-91.13	-0.18
47	5735.	DEAD	0.5	-109.4	-0.18
47	0.	LIVE	0.	0.	0.
47	573.5	LIVE	0.	0.	0.
47	1147.	LIVE	0.	0.	0.
47	1720.5	LIVE	0.	0.	0.
47	2294.	LIVE	0.	0.	0.
47	2867.5	LIVE	0.	0.	0.
47	2867.5	LIVE	0.	0.	0.
47	3441.	LIVE	0.	0.	0.
47	4014.5	LIVE	0.	0.	0.
47	4588.	LIVE	0.	0.	0.
47	5161.5	LIVE	0.	0.	0.
47	5735.	LIVE	0.	0.	0.
47	0.	WX	-3.45	-256.98	0.44
47	573.5	WX	-3.45	-192.97	0.44
47	1147.	WX	-3.45	-128.96	0.44
47	1720.5	WX	-3.45	-64.95	0.44
47	2294.	WX	-3.45	-0.94	0.44
47	2867.5	WX	-3.45	63.07	0.44
47	2867.5	WX	-3.45	63.06	0.61
47	3441.	WX	-3.45	127.07	0.61
47	4014.5	WX	-3.45	191.08	0.61
47	4588.	WX	-3.45	255.09	0.61
47	5161.5	WX	-3.45	319.1	0.61
47	5735.	WX	-3.45	383.11	0.61
47	0.	WY	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
47	573.5	WY	0.	0.	0.
47	1147.	WY	0.	0.	0.
47	1720.5	WY	0.	0.	0.
47	2294.	WY	0.	0.	0.
47	2867.5	WY	0.	0.	0.
47	2867.5	WY	0.	0.	0.
47	3441.	WY	0.	0.	0.
47	4014.5	WY	0.	0.	0.
47	4588.	WY	0.	0.	0.
47	5161.5	WY	0.	0.	0.
47	5735.	WY	0.	0.	0.
47	0.	TEMP	0.	0.	0.
47	573.5	TEMP	0.	0.	0.
47	1147.	TEMP	0.	0.	0.
47	1720.5	TEMP	0.	0.	0.
47	2294.	TEMP	0.	0.	0.
47	2867.5	TEMP	0.	0.	0.
47	2867.5	TEMP	0.	0.	0.
47	3441.	TEMP	0.	0.	0.
47	4014.5	TEMP	0.	0.	0.
47	4588.	TEMP	0.	0.	0.
47	5161.5	TEMP	0.	0.	0.
47	5735.	TEMP	0.	0.	0.
48	0.	DEAD	7.274E-02	-0.14	3.607E-05
48	700.	DEAD	8.109E-02	1.158E-02	3.607E-05
48	1400.	DEAD	8.944E-02	0.17	3.607E-05
48	0.	LIVE	0.	0.	0.
48	700.	LIVE	0.	0.	0.
48	1400.	LIVE	0.	0.	0.
48	0.	WX	-0.16	-2.035E-03	-1.050E-04
48	700.	WX	-0.16	-2.035E-03	-1.050E-04
48	1400.	WX	-0.16	-2.035E-03	-1.050E-04
48	0.	WY	0.	0.	0.
48	700.	WY	0.	0.	0.
48	1400.	WY	0.	0.	0.
48	0.	TEMP	0.	0.	0.
48	700.	TEMP	0.	0.	0.
48	1400.	TEMP	0.	0.	0.
49	0.	DEAD	-1.17	91.38	-1.030E-02
49	573.5	DEAD	-1.17	73.11	-1.030E-02
49	1147.	DEAD	-1.17	54.85	-1.030E-02
49	1720.5	DEAD	-1.17	36.59	-1.030E-02
49	2294.	DEAD	-1.17	18.33	-1.030E-02
49	2867.5	DEAD	-1.17	6.582E-02	-1.030E-02
49	2867.5	DEAD	-1.17	-8.881E-02	-3.289E-03
49	3441.	DEAD	-1.17	-18.35	-3.289E-03
49	4014.5	DEAD	-1.17	-36.61	-3.289E-03
49	4588.	DEAD	-1.17	-54.87	-3.289E-03
49	5161.5	DEAD	-1.17	-73.14	-3.289E-03
49	5735.	DEAD	-1.17	-91.4	-3.289E-03
49	0.	LIVE	0.	0.	0.
49	573.5	LIVE	0.	0.	0.
49	1147.	LIVE	0.	0.	0.
49	1720.5	LIVE	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
49	2294.	LIVE	0.	0.	0.
49	2867.5	LIVE	0.	0.	0.
49	2867.5	LIVE	0.	0.	0.
49	3441.	LIVE	0.	0.	0.
49	4014.5	LIVE	0.	0.	0.
49	4588.	LIVE	0.	0.	0.
49	5161.5	LIVE	0.	0.	0.
49	5735.	LIVE	0.	0.	0.
49	0.	WX	2.49	-320.01	1.324E-02
49	573.5	WX	2.49	-256.	1.324E-02
49	1147.	WX	2.49	-191.99	1.324E-02
49	1720.5	WX	2.49	-127.98	1.324E-02
49	2294.	WX	2.49	-63.97	1.324E-02
49	2867.5	WX	2.49	4.256E-02	1.324E-02
49	2867.5	WX	2.49	3.781E-02	3.477E-02
49	3441.	WX	2.49	64.05	3.477E-02
49	4014.5	WX	2.49	128.06	3.477E-02
49	4588.	WX	2.49	192.07	3.477E-02
49	5161.5	WX	2.49	256.08	3.477E-02
49	5735.	WX	2.49	320.09	3.477E-02
49	0.	WY	0.	0.	0.
49	573.5	WY	0.	0.	0.
49	1147.	WY	0.	0.	0.
49	1720.5	WY	0.	0.	0.
49	2294.	WY	0.	0.	0.
49	2867.5	WY	0.	0.	0.
49	2867.5	WY	0.	0.	0.
49	3441.	WY	0.	0.	0.
49	4014.5	WY	0.	0.	0.
49	4588.	WY	0.	0.	0.
49	5161.5	WY	0.	0.	0.
49	5735.	WY	0.	0.	0.
49	0.	TEMP	0.	0.	0.
49	573.5	TEMP	0.	0.	0.
49	1147.	TEMP	0.	0.	0.
49	1720.5	TEMP	0.	0.	0.
49	2294.	TEMP	0.	0.	0.
49	2867.5	TEMP	0.	0.	0.
49	2867.5	TEMP	0.	0.	0.
49	3441.	TEMP	0.	0.	0.
49	4014.5	TEMP	0.	0.	0.
49	4588.	TEMP	0.	0.	0.
49	5161.5	TEMP	0.	0.	0.
49	5735.	TEMP	0.	0.	0.
50	0.	DEAD	-3.96	91.46	3.833E-02
50	573.5	DEAD	-3.96	73.2	3.833E-02
50	1147.	DEAD	-3.96	54.94	3.833E-02
50	1720.5	DEAD	-3.96	36.68	3.833E-02
50	2294.	DEAD	-3.96	18.41	3.833E-02
50	2867.5	DEAD	-3.96	0.15	3.833E-02
50	2867.5	DEAD	-3.96	-0.13	-4.110E-02
50	3441.	DEAD	-3.96	-18.4	-4.110E-02
50	4014.5	DEAD	-3.96	-36.66	-4.110E-02
50	4588.	DEAD	-3.96	-54.92	-4.110E-02

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
50	5161.5	DEAD	-3.96	-73.18	-4.110E-02
50	5735.	DEAD	-3.96	-91.44	-4.110E-02
50	0.	LIVE	0.	0.	0.
50	573.5	LIVE	0.	0.	0.
50	1147.	LIVE	0.	0.	0.
50	1720.5	LIVE	0.	0.	0.
50	2294.	LIVE	0.	0.	0.
50	2867.5	LIVE	0.	0.	0.
50	2867.5	LIVE	0.	0.	0.
50	3441.	LIVE	0.	0.	0.
50	4014.5	LIVE	0.	0.	0.
50	4588.	LIVE	0.	0.	0.
50	5161.5	LIVE	0.	0.	0.
50	5735.	LIVE	0.	0.	0.
50	0.	WX	9.11	-320.08	-9.829E-02
50	573.5	WX	9.11	-256.07	-9.829E-02
50	1147.	WX	9.11	-192.06	-9.829E-02
50	1720.5	WX	9.11	-128.05	-9.829E-02
50	2294.	WX	9.11	-64.04	-9.829E-02
50	2867.5	WX	9.11	-3.173E-02	-9.829E-02
50	2867.5	WX	9.11	-2.954E-02	0.11
50	3441.	WX	9.11	63.98	0.11
50	4014.5	WX	9.11	127.99	0.11
50	4588.	WX	9.11	192.	0.11
50	5161.5	WX	9.11	256.01	0.11
50	5735.	WX	9.11	320.02	0.11
50	0.	WY	0.	0.	0.
50	573.5	WY	0.	0.	0.
50	1147.	WY	0.	0.	0.
50	1720.5	WY	0.	0.	0.
50	2294.	WY	0.	0.	0.
50	2867.5	WY	0.	0.	0.
50	2867.5	WY	0.	0.	0.
50	3441.	WY	0.	0.	0.
50	4014.5	WY	0.	0.	0.
50	4588.	WY	0.	0.	0.
50	5161.5	WY	0.	0.	0.
50	5735.	WY	0.	0.	0.
50	0.	TEMP	0.	0.	0.
50	573.5	TEMP	0.	0.	0.
50	1147.	TEMP	0.	0.	0.
50	1720.5	TEMP	0.	0.	0.
50	2294.	TEMP	0.	0.	0.
50	2867.5	TEMP	0.	0.	0.
50	2867.5	TEMP	0.	0.	0.
50	3441.	TEMP	0.	0.	0.
50	4014.5	TEMP	0.	0.	0.
50	4588.	TEMP	0.	0.	0.
50	5161.5	TEMP	0.	0.	0.
50	5735.	TEMP	0.	0.	0.
51	0.	DEAD	0.9	91.45	-5.165E-02
51	573.5	DEAD	0.9	73.19	-5.165E-02
51	1147.	DEAD	0.9	54.93	-5.165E-02
51	1720.5	DEAD	0.9	36.67	-5.165E-02

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
51	2294.	DEAD	0.9	18.4	-5.165E-02
51	2867.5	DEAD	0.9	0.14	-5.165E-02
51	2867.5	DEAD	0.9	-0.11	4.872E-02
51	3441.	DEAD	0.9	-18.37	4.872E-02
51	4014.5	DEAD	0.9	-36.63	4.872E-02
51	4588.	DEAD	0.9	-54.89	4.872E-02
51	5161.5	DEAD	0.9	-73.15	4.872E-02
51	5735.	DEAD	0.9	-91.42	4.872E-02
51	0.	LIVE	0.	0.	0.
51	573.5	LIVE	0.	0.	0.
51	1147.	LIVE	0.	0.	0.
51	1720.5	LIVE	0.	0.	0.
51	2294.	LIVE	0.	0.	0.
51	2867.5	LIVE	0.	0.	0.
51	2867.5	LIVE	0.	0.	0.
51	3441.	LIVE	0.	0.	0.
51	4014.5	LIVE	0.	0.	0.
51	4588.	LIVE	0.	0.	0.
51	5161.5	LIVE	0.	0.	0.
51	5735.	LIVE	0.	0.	0.
51	0.	WX	-2.34	-320.12	0.19
51	573.5	WX	-2.34	-256.11	0.19
51	1147.	WX	-2.34	-192.1	0.19
51	1720.5	WX	-2.34	-128.09	0.19
51	2294.	WX	-2.34	-64.08	0.19
51	2867.5	WX	-2.34	-6.785E-02	0.19
51	2867.5	WX	-2.34	-5.797E-02	-0.18
51	3441.	WX	-2.34	63.95	-0.18
51	4014.5	WX	-2.34	127.96	-0.18
51	4588.	WX	-2.34	191.97	-0.18
51	5161.5	WX	-2.34	255.98	-0.18
51	5735.	WX	-2.34	319.99	-0.18
51	0.	WY	0.	0.	0.
51	573.5	WY	0.	0.	0.
51	1147.	WY	0.	0.	0.
51	1720.5	WY	0.	0.	0.
51	2294.	WY	0.	0.	0.
51	2867.5	WY	0.	0.	0.
51	2867.5	WY	0.	0.	0.
51	3441.	WY	0.	0.	0.
51	4014.5	WY	0.	0.	0.
51	4588.	WY	0.	0.	0.
51	5161.5	WY	0.	0.	0.
51	5735.	WY	0.	0.	0.
51	0.	TEMP	0.	0.	0.
51	573.5	TEMP	0.	0.	0.
51	1147.	TEMP	0.	0.	0.
51	1720.5	TEMP	0.	0.	0.
51	2294.	TEMP	0.	0.	0.
51	2867.5	TEMP	0.	0.	0.
51	2867.5	TEMP	0.	0.	0.
51	3441.	TEMP	0.	0.	0.
51	4014.5	TEMP	0.	0.	0.
51	4588.	TEMP	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
51	5161.5	TEMP	0.	0.	0.
51	5735.	TEMP	0.	0.	0.
52	0.	DEAD	-2.962E-02	91.41	4.262E-02
52	573.5	DEAD	-2.962E-02	73.15	4.262E-02
52	1147.	DEAD	-2.962E-02	54.89	4.262E-02
52	1720.5	DEAD	-2.962E-02	36.63	4.262E-02
52	2294.	DEAD	-2.962E-02	18.37	4.262E-02
52	2867.5	DEAD	-2.962E-02	0.1	4.262E-02
52	2867.5	DEAD	-2.964E-02	-0.14	-4.630E-02
52	3441.	DEAD	-2.964E-02	-18.4	-4.630E-02
52	4014.5	DEAD	-2.964E-02	-36.66	-4.630E-02
52	4588.	DEAD	-2.964E-02	-54.93	-4.630E-02
52	5161.5	DEAD	-2.964E-02	-73.19	-4.630E-02
52	5735.	DEAD	-2.964E-02	-91.45	-4.630E-02
52	0.	LIVE	0.	0.	0.
52	573.5	LIVE	0.	0.	0.
52	1147.	LIVE	0.	0.	0.
52	1720.5	LIVE	0.	0.	0.
52	2294.	LIVE	0.	0.	0.
52	2867.5	LIVE	0.	0.	0.
52	2867.5	LIVE	0.	0.	0.
52	3441.	LIVE	0.	0.	0.
52	4014.5	LIVE	0.	0.	0.
52	4588.	LIVE	0.	0.	0.
52	5161.5	LIVE	0.	0.	0.
52	5735.	LIVE	0.	0.	0.
52	0.	WX	1.04	-319.97	-0.16
52	573.5	WX	1.04	-255.96	-0.16
52	1147.	WX	1.04	-191.95	-0.16
52	1720.5	WX	1.04	-127.94	-0.16
52	2294.	WX	1.04	-63.93	-0.16
52	2867.5	WX	1.04	7.928E-02	-0.16
52	2867.5	WX	1.04	5.180E-02	0.17
52	3441.	WX	1.04	64.06	0.17
52	4014.5	WX	1.04	128.07	0.17
52	4588.	WX	1.04	192.08	0.17
52	5161.5	WX	1.04	256.09	0.17
52	5735.	WX	1.04	320.1	0.17
52	0.	WY	0.	0.	0.
52	573.5	WY	0.	0.	0.
52	1147.	WY	0.	0.	0.
52	1720.5	WY	0.	0.	0.
52	2294.	WY	0.	0.	0.
52	2867.5	WY	0.	0.	0.
52	2867.5	WY	0.	0.	0.
52	3441.	WY	0.	0.	0.
52	4014.5	WY	0.	0.	0.
52	4588.	WY	0.	0.	0.
52	5161.5	WY	0.	0.	0.
52	5735.	WY	0.	0.	0.
52	0.	TEMP	0.	0.	0.
52	573.5	TEMP	0.	0.	0.
52	1147.	TEMP	0.	0.	0.
52	1720.5	TEMP	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
52	2294.	TEMP	0.	0.	0.
52	2867.5	TEMP	0.	0.	0.
52	2867.5	TEMP	0.	0.	0.
52	3441.	TEMP	0.	0.	0.
52	4014.5	TEMP	0.	0.	0.
52	4588.	TEMP	0.	0.	0.
52	5161.5	TEMP	0.	0.	0.
52	5735.	TEMP	0.	0.	0.
53	0.	DEAD	-2.92	91.44	-2.353E-02
53	573.5	DEAD	-2.92	73.18	-2.353E-02
53	1147.	DEAD	-2.92	54.92	-2.353E-02
53	1720.5	DEAD	-2.92	36.65	-2.353E-02
53	2294.	DEAD	-2.92	18.39	-2.353E-02
53	2867.5	DEAD	-2.92	0.13	-2.353E-02
53	2867.5	DEAD	-2.92	-0.15	2.096E-02
53	3441.	DEAD	-2.92	-18.41	2.096E-02
53	4014.5	DEAD	-2.92	-36.67	2.096E-02
53	4588.	DEAD	-2.92	-54.93	2.096E-02
53	5161.5	DEAD	-2.92	-73.19	2.096E-02
53	5735.	DEAD	-2.92	-91.46	2.096E-02
53	0.	LIVE	0.	0.	0.
53	573.5	LIVE	0.	0.	0.
53	1147.	LIVE	0.	0.	0.
53	1720.5	LIVE	0.	0.	0.
53	2294.	LIVE	0.	0.	0.
53	2867.5	LIVE	0.	0.	0.
53	2867.5	LIVE	0.	0.	0.
53	3441.	LIVE	0.	0.	0.
53	4014.5	LIVE	0.	0.	0.
53	4588.	LIVE	0.	0.	0.
53	5161.5	LIVE	0.	0.	0.
53	5735.	LIVE	0.	0.	0.
53	0.	WX	3.25	-320.03	5.149E-02
53	573.5	WX	3.25	-256.02	5.149E-02
53	1147.	WX	3.25	-192.01	5.149E-02
53	1720.5	WX	3.25	-128.	5.149E-02
53	2294.	WX	3.25	-63.99	5.149E-02
53	2867.5	WX	3.25	1.709E-02	5.149E-02
53	2867.5	WX	3.25	3.674E-02	-4.151E-02
53	3441.	WX	3.25	64.05	-4.151E-02
53	4014.5	WX	3.25	128.06	-4.151E-02
53	4588.	WX	3.25	192.07	-4.151E-02
53	5161.5	WX	3.25	256.08	-4.151E-02
53	5735.	WX	3.25	320.09	-4.151E-02
53	0.	WY	0.	0.	0.
53	573.5	WY	0.	0.	0.
53	1147.	WY	0.	0.	0.
53	1720.5	WY	0.	0.	0.
53	2294.	WY	0.	0.	0.
53	2867.5	WY	0.	0.	0.
53	2867.5	WY	0.	0.	0.
53	3441.	WY	0.	0.	0.
53	4014.5	WY	0.	0.	0.
53	4588.	WY	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
53	5161.5	WY	0.	0.	0.
53	5735.	WY	0.	0.	0.
53	0.	TEMP	0.	0.	0.
53	573.5	TEMP	0.	0.	0.
53	1147.	TEMP	0.	0.	0.
53	1720.5	TEMP	0.	0.	0.
53	2294.	TEMP	0.	0.	0.
53	2867.5	TEMP	0.	0.	0.
53	2867.5	TEMP	0.	0.	0.
53	3441.	TEMP	0.	0.	0.
53	4014.5	TEMP	0.	0.	0.
53	4588.	TEMP	0.	0.	0.
53	5161.5	TEMP	0.	0.	0.
53	5735.	TEMP	0.	0.	0.
54	0.	DEAD	0.67	91.39	-1.457E-02
54	573.5	DEAD	0.67	73.13	-1.457E-02
54	1147.	DEAD	0.67	54.87	-1.457E-02
54	1720.5	DEAD	0.67	36.61	-1.457E-02
54	2294.	DEAD	0.67	18.35	-1.457E-02
54	2867.5	DEAD	0.67	8.498E-02	-1.457E-02
54	2867.5	DEAD	0.67	-5.892E-02	1.902E-03
54	3441.	DEAD	0.67	-18.32	1.902E-03
54	4014.5	DEAD	0.67	-36.58	1.902E-03
54	4588.	DEAD	0.67	-54.84	1.902E-03
54	5161.5	DEAD	0.67	-73.11	1.902E-03
54	5735.	DEAD	0.67	-91.37	1.902E-03
54	0.	LIVE	0.	0.	0.
54	573.5	LIVE	0.	0.	0.
54	1147.	LIVE	0.	0.	0.
54	1720.5	LIVE	0.	0.	0.
54	2294.	LIVE	0.	0.	0.
54	2867.5	LIVE	0.	0.	0.
54	2867.5	LIVE	0.	0.	0.
54	3441.	LIVE	0.	0.	0.
54	4014.5	LIVE	0.	0.	0.
54	4588.	LIVE	0.	0.	0.
54	5161.5	LIVE	0.	0.	0.
54	5735.	LIVE	0.	0.	0.
54	0.	WX	-4.35	-320.09	6.974E-02
54	573.5	WX	-4.35	-256.08	6.974E-02
54	1147.	WX	-4.35	-192.07	6.974E-02
54	1720.5	WX	-4.35	-128.07	6.974E-02
54	2294.	WX	-4.35	-64.06	6.974E-02
54	2867.5	WX	-4.35	-4.586E-02	6.974E-02
54	2867.5	WX	-4.35	-4.535E-02	-2.502E-02
54	3441.	WX	-4.35	63.96	-2.502E-02
54	4014.5	WX	-4.35	127.97	-2.502E-02
54	4588.	WX	-4.35	191.98	-2.502E-02
54	5161.5	WX	-4.35	255.99	-2.502E-02
54	5735.	WX	-4.35	320.	-2.502E-02
54	0.	WY	0.	0.	0.
54	573.5	WY	0.	0.	0.
54	1147.	WY	0.	0.	0.
54	1720.5	WY	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
54	2294.	WY	0.	0.	0.
54	2867.5	WY	0.	0.	0.
54	2867.5	WY	0.	0.	0.
54	3441.	WY	0.	0.	0.
54	4014.5	WY	0.	0.	0.
54	4588.	WY	0.	0.	0.
54	5161.5	WY	0.	0.	0.
54	5735.	WY	0.	0.	0.
54	0.	TEMP	0.	0.	0.
54	573.5	TEMP	0.	0.	0.
54	1147.	TEMP	0.	0.	0.
54	1720.5	TEMP	0.	0.	0.
54	2294.	TEMP	0.	0.	0.
54	2867.5	TEMP	0.	0.	0.
54	2867.5	TEMP	0.	0.	0.
54	3441.	TEMP	0.	0.	0.
54	4014.5	TEMP	0.	0.	0.
54	4588.	TEMP	0.	0.	0.
54	5161.5	TEMP	0.	0.	0.
54	5735.	TEMP	0.	0.	0.
57	0.	DEAD	4.06	73.26	0.7
57	951.38	DEAD	4.35	78.8	0.7
57	951.38	DEAD	20.55	-92.19	2.04
57	1400.	DEAD	20.69	-89.58	2.04
57	1400.	DEAD	24.78	-16.51	-2.09
57	2300.	DEAD	25.06	-11.27	-2.09
57	2300.	DEAD	-71.11	-3.48	0.55
57	3050.41	DEAD	-70.87	0.89	0.55
57	3700.	DEAD	-70.67	4.67	0.55
57	3700.	DEAD	17.61	1.17	4.09
57	4600.	DEAD	17.89	6.41	4.09
57	4600.	DEAD	22.03	79.49	-1.02
57	5149.45	DEAD	22.2	82.69	-1.02
57	5149.45	DEAD	-4.38	-78.8	1.15
57	6100.82	DEAD	-4.08	-73.27	1.15
57	0.	LIVE	0.	0.	0.
57	951.38	LIVE	0.	0.	0.
57	951.38	LIVE	0.	0.	0.
57	1400.	LIVE	0.	0.	0.
57	1400.	LIVE	0.	0.	0.
57	2300.	LIVE	0.	0.	0.
57	2300.	LIVE	0.	0.	0.
57	3050.41	LIVE	0.	0.	0.
57	3700.	LIVE	0.	0.	0.
57	3700.	LIVE	0.	0.	0.
57	4600.	LIVE	0.	0.	0.
57	4600.	LIVE	0.	0.	0.
57	5149.45	LIVE	0.	0.	0.
57	5149.45	LIVE	0.	0.	0.
57	6100.82	LIVE	0.	0.	0.
57	0.	WX	-14.32	-256.63	-4.13
57	951.38	WX	-14.32	-256.63	-4.13
57	951.38	WX	-75.31	305.39	-1.9
57	1400.	WX	-75.31	305.39	-1.9

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
57	1400.	WX	-89.5	49.61	6.42
57	2300.	WX	-89.5	49.61	6.42
57	2300.	WX	205.15	-0.25	-1.93
57	3050.41	WX	205.15	-0.25	-1.93
57	3700.	WX	205.15	-0.25	-1.93
57	3700.	WX	-63.29	-17.48	-13.65
57	4600.	WX	-63.29	-17.48	-13.65
57	4600.	WX	-77.85	-273.28	0.44
57	5149.45	WX	-77.85	-273.28	0.44
57	5149.45	WX	14.22	256.63	-2.77
57	6100.82	WX	14.22	256.63	-2.77
57	0.	WY	0.	0.	0.
57	951.38	WY	0.	0.	0.
57	951.38	WY	0.	0.	0.
57	1400.	WY	0.	0.	0.
57	1400.	WY	0.	0.	0.
57	2300.	WY	0.	0.	0.
57	2300.	WY	0.	0.	0.
57	3050.41	WY	0.	0.	0.
57	3700.	WY	0.	0.	0.
57	3700.	WY	0.	0.	0.
57	4600.	WY	0.	0.	0.
57	4600.	WY	0.	0.	0.
57	5149.45	WY	0.	0.	0.
57	5149.45	WY	0.	0.	0.
57	6100.82	WY	0.	0.	0.
57	0.	TEMP	0.	0.	0.
57	951.38	TEMP	0.	0.	0.
57	951.38	TEMP	0.	0.	0.
57	1400.	TEMP	0.	0.	0.
57	1400.	TEMP	0.	0.	0.
57	2300.	TEMP	0.	0.	0.
57	2300.	TEMP	0.	0.	0.
57	3050.41	TEMP	0.	0.	0.
57	3700.	TEMP	0.	0.	0.
57	3700.	TEMP	0.	0.	0.
57	4600.	TEMP	0.	0.	0.
57	4600.	TEMP	0.	0.	0.
57	5149.45	TEMP	0.	0.	0.
57	5149.45	TEMP	0.	0.	0.
57	6100.82	TEMP	0.	0.	0.
58	0.	DEAD	-1.15	109.39	0.17
58	573.5	DEAD	-1.15	91.13	0.17
58	1147.	DEAD	-1.15	72.87	0.17
58	1720.5	DEAD	-1.15	54.61	0.17
58	2294.	DEAD	-1.15	36.34	0.17
58	2867.5	DEAD	-1.15	18.08	0.17
58	2867.5	DEAD	-1.15	17.93	0.14
58	3441.	DEAD	-1.15	-0.33	0.14
58	4014.5	DEAD	-1.15	-18.6	0.14
58	4588.	DEAD	-1.15	-36.86	0.14
58	5161.5	DEAD	-1.15	-55.12	0.14
58	5735.	DEAD	-1.15	-73.38	0.14
58	0.	LIVE	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
58	573.5	LIVE	0.	0.	0.
58	1147.	LIVE	0.	0.	0.
58	1720.5	LIVE	0.	0.	0.
58	2294.	LIVE	0.	0.	0.
58	2867.5	LIVE	0.	0.	0.
58	2867.5	LIVE	0.	0.	0.
58	3441.	LIVE	0.	0.	0.
58	4014.5	LIVE	0.	0.	0.
58	4588.	LIVE	0.	0.	0.
58	5161.5	LIVE	0.	0.	0.
58	5735.	LIVE	0.	0.	0.
58	0.	WX	2.77	-383.06	-0.6
58	573.5	WX	2.77	-319.05	-0.6
58	1147.	WX	2.77	-255.05	-0.6
58	1720.5	WX	2.77	-191.04	-0.6
58	2294.	WX	2.77	-127.03	-0.6
58	2867.5	WX	2.77	-63.02	-0.6
58	2867.5	WX	2.77	-63.03	-0.4
58	3441.	WX	2.77	0.98	-0.4
58	4014.5	WX	2.77	64.99	-0.4
58	4588.	WX	2.77	129.	-0.4
58	5161.5	WX	2.77	193.01	-0.4
58	5735.	WX	2.77	257.02	-0.4
58	0.	WY	0.	0.	0.
58	573.5	WY	0.	0.	0.
58	1147.	WY	0.	0.	0.
58	1720.5	WY	0.	0.	0.
58	2294.	WY	0.	0.	0.
58	2867.5	WY	0.	0.	0.
58	2867.5	WY	0.	0.	0.
58	3441.	WY	0.	0.	0.
58	4014.5	WY	0.	0.	0.
58	4588.	WY	0.	0.	0.
58	5161.5	WY	0.	0.	0.
58	5735.	WY	0.	0.	0.
58	0.	TEMP	0.	0.	0.
58	573.5	TEMP	0.	0.	0.
58	1147.	TEMP	0.	0.	0.
58	1720.5	TEMP	0.	0.	0.
58	2294.	TEMP	0.	0.	0.
58	2867.5	TEMP	0.	0.	0.
58	2867.5	TEMP	0.	0.	0.
58	3441.	TEMP	0.	0.	0.
58	4014.5	TEMP	0.	0.	0.
58	4588.	TEMP	0.	0.	0.
58	5161.5	TEMP	0.	0.	0.
58	5735.	TEMP	0.	0.	0.
59	0.	DEAD	-5.12	109.71	0.14
59	573.5	DEAD	-5.12	91.45	0.14
59	1147.	DEAD	-5.12	73.19	0.14
59	1720.5	DEAD	-5.12	54.93	0.14
59	2294.	DEAD	-5.12	36.67	0.14
59	2867.5	DEAD	-5.12	18.4	0.14
59	2867.5	DEAD	-5.12	18.11	0.2

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
59	3441.	DEAD	-5.12	-0.15	0.2
59	4014.5	DEAD	-5.12	-18.41	0.2
59	4588.	DEAD	-5.12	-36.67	0.2
59	5161.5	DEAD	-5.12	-54.93	0.2
59	5735.	DEAD	-5.12	-73.2	0.2
59	0.	LIVE	0.	0.	0.
59	573.5	LIVE	0.	0.	0.
59	1147.	LIVE	0.	0.	0.
59	1720.5	LIVE	0.	0.	0.
59	2294.	LIVE	0.	0.	0.
59	2867.5	LIVE	0.	0.	0.
59	2867.5	LIVE	0.	0.	0.
59	3441.	LIVE	0.	0.	0.
59	4014.5	LIVE	0.	0.	0.
59	4588.	LIVE	0.	0.	0.
59	5161.5	LIVE	0.	0.	0.
59	5735.	LIVE	0.	0.	0.
59	0.	WX	14.1	-383.9	-0.47
59	573.5	WX	14.1	-319.89	-0.47
59	1147.	WX	14.1	-255.88	-0.47
59	1720.5	WX	14.1	-191.87	-0.47
59	2294.	WX	14.1	-127.86	-0.47
59	2867.5	WX	14.1	-63.85	-0.47
59	2867.5	WX	14.1	-63.83	-0.78
59	3441.	WX	14.1	0.18	-0.78
59	4014.5	WX	14.1	64.19	-0.78
59	4588.	WX	14.1	128.19	-0.78
59	5161.5	WX	14.1	192.2	-0.78
59	5735.	WX	14.1	256.21	-0.78
59	0.	WY	0.	0.	0.
59	573.5	WY	0.	0.	0.
59	1147.	WY	0.	0.	0.
59	1720.5	WY	0.	0.	0.
59	2294.	WY	0.	0.	0.
59	2867.5	WY	0.	0.	0.
59	2867.5	WY	0.	0.	0.
59	3441.	WY	0.	0.	0.
59	4014.5	WY	0.	0.	0.
59	4588.	WY	0.	0.	0.
59	5161.5	WY	0.	0.	0.
59	5735.	WY	0.	0.	0.
59	0.	TEMP	0.	0.	0.
59	573.5	TEMP	0.	0.	0.
59	1147.	TEMP	0.	0.	0.
59	1720.5	TEMP	0.	0.	0.
59	2294.	TEMP	0.	0.	0.
59	2867.5	TEMP	0.	0.	0.
59	2867.5	TEMP	0.	0.	0.
59	3441.	TEMP	0.	0.	0.
59	4014.5	TEMP	0.	0.	0.
59	4588.	TEMP	0.	0.	0.
59	5161.5	TEMP	0.	0.	0.
59	5735.	TEMP	0.	0.	0.
60	0.	DEAD	1.03	109.12	0.3

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
60	573.5	DEAD	1.03	90.85	0.3
60	1147.	DEAD	1.03	72.59	0.3
60	1720.5	DEAD	1.03	54.33	0.3
60	2294.	DEAD	1.03	36.07	0.3
60	2867.5	DEAD	1.03	17.81	0.3
60	2867.5	DEAD	1.03	17.58	-9.700E-02
60	3441.	DEAD	1.03	-0.68	-9.700E-02
60	4014.5	DEAD	1.03	-18.94	-9.700E-02
60	4588.	DEAD	1.03	-37.21	-9.700E-02
60	5161.5	DEAD	1.03	-55.47	-9.700E-02
60	5735.	DEAD	1.03	-73.73	-9.700E-02
60	0.	LIVE	0.	0.	0.
60	573.5	LIVE	0.	0.	0.
60	1147.	LIVE	0.	0.	0.
60	1720.5	LIVE	0.	0.	0.
60	2294.	LIVE	0.	0.	0.
60	2867.5	LIVE	0.	0.	0.
60	2867.5	LIVE	0.	0.	0.
60	3441.	LIVE	0.	0.	0.
60	4014.5	LIVE	0.	0.	0.
60	4588.	LIVE	0.	0.	0.
60	5161.5	LIVE	0.	0.	0.
60	5735.	LIVE	0.	0.	0.
60	0.	WX	-2.94	-381.9	-1.06
60	573.5	WX	-2.94	-317.89	-1.06
60	1147.	WX	-2.94	-253.88	-1.06
60	1720.5	WX	-2.94	-189.88	-1.06
60	2294.	WX	-2.94	-125.87	-1.06
60	2867.5	WX	-2.94	-61.86	-1.06
60	2867.5	WX	-2.94	-61.93	0.34
60	3441.	WX	-2.94	2.08	0.34
60	4014.5	WX	-2.94	66.09	0.34
60	4588.	WX	-2.94	130.1	0.34
60	5161.5	WX	-2.94	194.11	0.34
60	5735.	WX	-2.94	258.12	0.34
60	0.	WY	0.	0.	0.
60	573.5	WY	0.	0.	0.
60	1147.	WY	0.	0.	0.
60	1720.5	WY	0.	0.	0.
60	2294.	WY	0.	0.	0.
60	2867.5	WY	0.	0.	0.
60	2867.5	WY	0.	0.	0.
60	3441.	WY	0.	0.	0.
60	4014.5	WY	0.	0.	0.
60	4588.	WY	0.	0.	0.
60	5161.5	WY	0.	0.	0.
60	5735.	WY	0.	0.	0.
60	0.	TEMP	0.	0.	0.
60	573.5	TEMP	0.	0.	0.
60	1147.	TEMP	0.	0.	0.
60	1720.5	TEMP	0.	0.	0.
60	2294.	TEMP	0.	0.	0.
60	2867.5	TEMP	0.	0.	0.
60	2867.5	TEMP	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
60	3441.	TEMP	0.	0.	0.
60	4014.5	TEMP	0.	0.	0.
60	4588.	TEMP	0.	0.	0.
60	5161.5	TEMP	0.	0.	0.
60	5735.	TEMP	0.	0.	0.
61	0.	DEAD	3.149E-02	109.25	1.524E-03
61	573.5	DEAD	3.149E-02	90.99	1.524E-03
61	1147.	DEAD	3.149E-02	72.73	1.524E-03
61	1720.5	DEAD	3.149E-02	54.47	1.524E-03
61	2294.	DEAD	3.149E-02	36.2	1.524E-03
61	2867.5	DEAD	3.149E-02	17.94	1.524E-03
61	2867.5	DEAD	3.158E-02	17.67	0.44
61	3441.	DEAD	3.158E-02	-0.59	0.44
61	4014.5	DEAD	3.158E-02	-18.86	0.44
61	4588.	DEAD	3.158E-02	-37.12	0.44
61	5161.5	DEAD	3.158E-02	-55.38	0.44
61	5735.	DEAD	3.158E-02	-73.64	0.44
61	0.	LIVE	0.	0.	0.
61	573.5	LIVE	0.	0.	0.
61	1147.	LIVE	0.	0.	0.
61	1720.5	LIVE	0.	0.	0.
61	2294.	LIVE	0.	0.	0.
61	2867.5	LIVE	0.	0.	0.
61	2867.5	LIVE	0.	0.	0.
61	3441.	LIVE	0.	0.	0.
61	4014.5	LIVE	0.	0.	0.
61	4588.	LIVE	0.	0.	0.
61	5161.5	LIVE	0.	0.	0.
61	5735.	LIVE	0.	0.	0.
61	0.	WX	0.78	-382.37	-7.958E-03
61	573.5	WX	0.78	-318.36	-7.958E-03
61	1147.	WX	0.78	-254.35	-7.958E-03
61	1720.5	WX	0.78	-190.34	-7.958E-03
61	2294.	WX	0.78	-126.33	-7.958E-03
61	2867.5	WX	0.78	-62.32	-7.958E-03
61	2867.5	WX	0.78	-62.24	-1.53
61	3441.	WX	0.78	1.77	-1.53
61	4014.5	WX	0.78	65.78	-1.53
61	4588.	WX	0.78	129.79	-1.53
61	5161.5	WX	0.78	193.8	-1.53
61	5735.	WX	0.78	257.81	-1.53
61	0.	WY	0.	0.	0.
61	573.5	WY	0.	0.	0.
61	1147.	WY	0.	0.	0.
61	1720.5	WY	0.	0.	0.
61	2294.	WY	0.	0.	0.
61	2867.5	WY	0.	0.	0.
61	2867.5	WY	0.	0.	0.
61	3441.	WY	0.	0.	0.
61	4014.5	WY	0.	0.	0.
61	4588.	WY	0.	0.	0.
61	5161.5	WY	0.	0.	0.
61	5735.	WY	0.	0.	0.
61	0.	TEMP	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
61	573.5	TEMP	0.	0.	0.
61	1147.	TEMP	0.	0.	0.
61	1720.5	TEMP	0.	0.	0.
61	2294.	TEMP	0.	0.	0.
61	2867.5	TEMP	0.	0.	0.
61	2867.5	TEMP	0.	0.	0.
61	3441.	TEMP	0.	0.	0.
61	4014.5	TEMP	0.	0.	0.
61	4588.	TEMP	0.	0.	0.
61	5161.5	TEMP	0.	0.	0.
61	5735.	TEMP	0.	0.	0.
62	0.	DEAD	-4.13	109.71	0.16
62	573.5	DEAD	-4.13	91.45	0.16
62	1147.	DEAD	-4.13	73.18	0.16
62	1720.5	DEAD	-4.13	54.92	0.16
62	2294.	DEAD	-4.13	36.66	0.16
62	2867.5	DEAD	-4.13	18.4	0.16
62	2867.5	DEAD	-4.13	18.13	0.15
62	3441.	DEAD	-4.13	-0.13	0.15
62	4014.5	DEAD	-4.13	-18.4	0.15
62	4588.	DEAD	-4.13	-36.66	0.15
62	5161.5	DEAD	-4.13	-54.92	0.15
62	5735.	DEAD	-4.13	-73.18	0.15
62	0.	LIVE	0.	0.	0.
62	573.5	LIVE	0.	0.	0.
62	1147.	LIVE	0.	0.	0.
62	1720.5	LIVE	0.	0.	0.
62	2294.	LIVE	0.	0.	0.
62	2867.5	LIVE	0.	0.	0.
62	2867.5	LIVE	0.	0.	0.
62	3441.	LIVE	0.	0.	0.
62	4014.5	LIVE	0.	0.	0.
62	4588.	LIVE	0.	0.	0.
62	5161.5	LIVE	0.	0.	0.
62	5735.	LIVE	0.	0.	0.
62	0.	WX	8.32	-383.92	-0.59
62	573.5	WX	8.32	-319.91	-0.59
62	1147.	WX	8.32	-255.9	-0.59
62	1720.5	WX	8.32	-191.89	-0.59
62	2294.	WX	8.32	-127.88	-0.59
62	2867.5	WX	8.32	-63.87	-0.59
62	2867.5	WX	8.32	-63.87	-0.42
62	3441.	WX	8.32	0.14	-0.42
62	4014.5	WX	8.32	64.15	-0.42
62	4588.	WX	8.32	128.16	-0.42
62	5161.5	WX	8.32	192.17	-0.42
62	5735.	WX	8.32	256.17	-0.42
62	0.	WY	0.	0.	0.
62	573.5	WY	0.	0.	0.
62	1147.	WY	0.	0.	0.
62	1720.5	WY	0.	0.	0.
62	2294.	WY	0.	0.	0.
62	2867.5	WY	0.	0.	0.
62	2867.5	WY	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
62	3441.	WY	0.	0.	0.
62	4014.5	WY	0.	0.	0.
62	4588.	WY	0.	0.	0.
62	5161.5	WY	0.	0.	0.
62	5735.	WY	0.	0.	0.
62	0.	TEMP	0.	0.	0.
62	573.5	TEMP	0.	0.	0.
62	1147.	TEMP	0.	0.	0.
62	1720.5	TEMP	0.	0.	0.
62	2294.	TEMP	0.	0.	0.
62	2867.5	TEMP	0.	0.	0.
62	2867.5	TEMP	0.	0.	0.
62	3441.	TEMP	0.	0.	0.
62	4014.5	TEMP	0.	0.	0.
62	4588.	TEMP	0.	0.	0.
62	5161.5	TEMP	0.	0.	0.
62	5735.	TEMP	0.	0.	0.
63	0.	DEAD	0.7	109.38	0.17
63	573.5	DEAD	0.7	91.12	0.17
63	1147.	DEAD	0.7	72.86	0.17
63	1720.5	DEAD	0.7	54.6	0.17
63	2294.	DEAD	0.7	36.34	0.17
63	2867.5	DEAD	0.7	18.07	0.17
63	2867.5	DEAD	0.7	17.93	0.11
63	3441.	DEAD	0.7	-0.33	0.11
63	4014.5	DEAD	0.7	-18.59	0.11
63	4588.	DEAD	0.7	-36.85	0.11
63	5161.5	DEAD	0.7	-55.11	0.11
63	5735.	DEAD	0.7	-73.38	0.11
63	0.	LIVE	0.	0.	0.
63	573.5	LIVE	0.	0.	0.
63	1147.	LIVE	0.	0.	0.
63	1720.5	LIVE	0.	0.	0.
63	2294.	LIVE	0.	0.	0.
63	2867.5	LIVE	0.	0.	0.
63	2867.5	LIVE	0.	0.	0.
63	3441.	LIVE	0.	0.	0.
63	4014.5	LIVE	0.	0.	0.
63	4588.	LIVE	0.	0.	0.
63	5161.5	LIVE	0.	0.	0.
63	5735.	LIVE	0.	0.	0.
63	0.	WX	-4.13	-383.06	-0.57
63	573.5	WX	-4.13	-319.05	-0.57
63	1147.	WX	-4.13	-255.04	-0.57
63	1720.5	WX	-4.13	-191.04	-0.57
63	2294.	WX	-4.13	-127.03	-0.57
63	2867.5	WX	-4.13	-63.02	-0.57
63	2867.5	WX	-4.13	-63.02	-0.5
63	3441.	WX	-4.13	0.99	-0.5
63	4014.5	WX	-4.13	65.	-0.5
63	4588.	WX	-4.13	129.01	-0.5
63	5161.5	WX	-4.13	193.02	-0.5
63	5735.	WX	-4.13	257.03	-0.5
63	0.	WY	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
63	573.5	WY	0.	0.	0.
63	1147.	WY	0.	0.	0.
63	1720.5	WY	0.	0.	0.
63	2294.	WY	0.	0.	0.
63	2867.5	WY	0.	0.	0.
63	2867.5	WY	0.	0.	0.
63	3441.	WY	0.	0.	0.
63	4014.5	WY	0.	0.	0.
63	4588.	WY	0.	0.	0.
63	5161.5	WY	0.	0.	0.
63	5735.	WY	0.	0.	0.
63	0.	TEMP	0.	0.	0.
63	573.5	TEMP	0.	0.	0.
63	1147.	TEMP	0.	0.	0.
63	1720.5	TEMP	0.	0.	0.
63	2294.	TEMP	0.	0.	0.
63	2867.5	TEMP	0.	0.	0.
63	2867.5	TEMP	0.	0.	0.
63	3441.	TEMP	0.	0.	0.
63	4014.5	TEMP	0.	0.	0.
63	4588.	TEMP	0.	0.	0.
63	5161.5	TEMP	0.	0.	0.
63	5735.	TEMP	0.	0.	0.
64	0.	DEAD	5.950E-02	-0.1	-9.023E-05
64	450.	DEAD	6.487E-02	-4.094E-03	-9.023E-05
64	900.	DEAD	7.024E-02	9.563E-02	-9.023E-05
64	0.	LIVE	0.	0.	0.
64	450.	LIVE	0.	0.	0.
64	900.	LIVE	0.	0.	0.
64	0.	WX	-0.24	2.487E-03	1.936E-04
64	450.	WX	-0.24	2.487E-03	1.936E-04
64	900.	WX	-0.24	2.487E-03	1.936E-04
64	0.	WY	0.	0.	0.
64	450.	WY	0.	0.	0.
64	900.	WY	0.	0.	0.
64	0.	TEMP	0.	0.	0.
64	450.	TEMP	0.	0.	0.
64	900.	TEMP	0.	0.	0.
65	0.	DEAD	-0.38	-0.16	1.198E-05
65	700.	DEAD	-0.37	-2.695E-04	1.198E-05
65	1400.	DEAD	-0.36	0.15	1.198E-05
65	0.	LIVE	0.	0.	0.
65	700.	LIVE	0.	0.	0.
65	1400.	LIVE	0.	0.	0.
65	0.	WX	1.29	-6.487E-04	-4.086E-05
65	700.	WX	1.29	-6.487E-04	-4.086E-05
65	1400.	WX	1.29	-6.487E-04	-4.086E-05
65	0.	WY	0.	0.	0.
65	700.	WY	0.	0.	0.
65	1400.	WY	0.	0.	0.
65	0.	TEMP	0.	0.	0.
65	700.	TEMP	0.	0.	0.
65	1400.	TEMP	0.	0.	0.
66	0.	DEAD	2.483E-02	-9.159E-02	1.345E-04

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
66	450.	DEAD	3.020E-02	8.133E-03	1.345E-04
66	900.	DEAD	3.557E-02	0.11	1.345E-04
66	0.	LIVE	0.	0.	0.
66	450.	LIVE	0.	0.	0.
66	900.	LIVE	0.	0.	0.
66	0.	WX	-0.11	-3.371E-04	-3.718E-04
66	450.	WX	-0.11	-3.371E-04	-3.718E-04
66	900.	WX	-0.11	-3.371E-04	-3.718E-04
66	0.	WY	0.	0.	0.
66	450.	WY	0.	0.	0.
66	900.	WY	0.	0.	0.
66	0.	TEMP	0.	0.	0.
66	450.	TEMP	0.	0.	0.
66	900.	TEMP	0.	0.	0.
67	0.	DEAD	-6.887E-02	-0.18	-5.575E-06
67	750.41	DEAD	-5.991E-02	-1.158E-02	-5.575E-06
67	1500.82	DEAD	-5.096E-02	0.15	-5.575E-06
67	0.	LIVE	0.	0.	0.
67	750.41	LIVE	0.	0.	0.
67	1500.82	LIVE	0.	0.	0.
67	0.	WX	0.29	1.168E-03	1.251E-05
67	750.41	WX	0.29	1.168E-03	1.251E-05
67	1500.82	WX	0.29	1.168E-03	1.251E-05
67	0.	WY	0.	0.	0.
67	750.41	WY	0.	0.	0.
67	1500.82	WY	0.	0.	0.
67	0.	TEMP	0.	0.	0.
67	750.41	TEMP	0.	0.	0.
67	1500.82	TEMP	0.	0.	0.
68	0.	DEAD	-1.14	-3.15	4.806E-05
68	3553.66	DEAD	-1.24	9.234E-04	4.806E-05
68	7107.32	DEAD	-1.34	3.15	4.806E-05
68	0.	LIVE	0.	0.	0.
68	3553.66	LIVE	0.	0.	0.
68	7107.32	LIVE	0.	0.	0.
68	0.	WX	-0.46	-1.322E-03	-1.097E-04
68	3553.66	WX	-0.46	-1.322E-03	-1.097E-04
68	7107.32	WX	-0.46	-1.322E-03	-1.097E-04
68	0.	WY	0.	0.	0.
68	3553.66	WY	0.	0.	0.
68	7107.32	WY	0.	0.	0.
68	0.	TEMP	0.	0.	0.
68	3553.66	TEMP	0.	0.	0.
68	7107.32	TEMP	0.	0.	0.
69	0.	DEAD	-1.45	-3.15	6.414E-05
69	3553.66	DEAD	-1.35	8.961E-04	6.414E-05
69	7107.32	DEAD	-1.25	3.15	6.414E-05
69	0.	LIVE	0.	0.	0.
69	3553.66	LIVE	0.	0.	0.
69	7107.32	LIVE	0.	0.	0.
69	0.	WX	-0.14	-1.635E-03	-1.225E-04
69	3553.66	WX	-0.14	-1.635E-03	-1.225E-04
69	7107.32	WX	-0.14	-1.635E-03	-1.225E-04
69	0.	WY	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
69	3553.66	WY	0.	0.	0.
69	7107.32	WY	0.	0.	0.
69	0.	TEMP	0.	0.	0.
69	3553.66	TEMP	0.	0.	0.
69	7107.32	TEMP	0.	0.	0.
72	0.	DEAD	4.04	73.25	-0.5
72	951.38	DEAD	4.34	78.79	-0.5
72	951.38	DEAD	21.42	-87.47	-2.67
72	1400.	DEAD	21.57	-84.86	-2.67
72	1400.	DEAD	25.67	-11.78	2.19
72	2300.	DEAD	25.95	-6.55	2.19
72	2300.	DEAD	-71.27	-3.16	-0.56
72	3050.41	DEAD	-71.04	1.21	-0.56
72	3700.	DEAD	-70.83	4.99	-0.56
72	3700.	DEAD	17.46	5.48	-4.
72	4600.	DEAD	17.75	10.72	-4.
72	4600.	DEAD	21.9	83.79	0.51
72	5149.45	DEAD	22.07	86.98	0.51
72	5149.45	DEAD	-4.37	-78.81	-0.96
72	6100.82	DEAD	-4.07	-73.28	-0.96
72	0.	LIVE	0.	0.	0.
72	951.38	LIVE	0.	0.	0.
72	951.38	LIVE	0.	0.	0.
72	1400.	LIVE	0.	0.	0.
72	1400.	LIVE	0.	0.	0.
72	2300.	LIVE	0.	0.	0.
72	2300.	LIVE	0.	0.	0.
72	3050.41	LIVE	0.	0.	0.
72	3700.	LIVE	0.	0.	0.
72	3700.	LIVE	0.	0.	0.
72	4600.	LIVE	0.	0.	0.
72	4600.	LIVE	0.	0.	0.
72	5149.45	LIVE	0.	0.	0.
72	5149.45	LIVE	0.	0.	0.
72	6100.82	LIVE	0.	0.	0.
72	0.	WX	-14.26	-256.58	3.45
72	951.38	WX	-14.26	-256.58	3.45
72	951.38	WX	-78.34	288.9	4.12
72	1400.	WX	-78.34	288.9	4.12
72	1400.	WX	-92.58	33.09	-6.75
72	2300.	WX	-92.58	33.09	-6.75
72	2300.	WX	205.72	-1.37	1.94
72	3050.41	WX	205.72	-1.37	1.94
72	3700.	WX	205.72	-1.37	1.94
72	3700.	WX	-62.79	-32.54	13.34
72	4600.	WX	-62.79	-32.54	13.34
72	4600.	WX	-77.39	-288.31	1.35
72	5149.45	WX	-77.39	-288.31	1.35
72	5149.45	WX	14.17	256.67	2.08
72	6100.82	WX	14.17	256.67	2.08
72	0.	WY	0.	0.	0.
72	951.38	WY	0.	0.	0.
72	951.38	WY	0.	0.	0.
72	1400.	WY	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
72	1400.	WY	0.	0.	0.
72	2300.	WY	0.	0.	0.
72	2300.	WY	0.	0.	0.
72	3050.41	WY	0.	0.	0.
72	3700.	WY	0.	0.	0.
72	3700.	WY	0.	0.	0.
72	4600.	WY	0.	0.	0.
72	4600.	WY	0.	0.	0.
72	5149.45	WY	0.	0.	0.
72	5149.45	WY	0.	0.	0.
72	6100.82	WY	0.	0.	0.
72	0.	TEMP	0.	0.	0.
72	951.38	TEMP	0.	0.	0.
72	951.38	TEMP	0.	0.	0.
72	1400.	TEMP	0.	0.	0.
72	1400.	TEMP	0.	0.	0.
72	2300.	TEMP	0.	0.	0.
72	2300.	TEMP	0.	0.	0.
72	3050.41	TEMP	0.	0.	0.
72	3700.	TEMP	0.	0.	0.
72	3700.	TEMP	0.	0.	0.
72	4600.	TEMP	0.	0.	0.
72	4600.	TEMP	0.	0.	0.
72	5149.45	TEMP	0.	0.	0.
72	5149.45	TEMP	0.	0.	0.
72	6100.82	TEMP	0.	0.	0.
76	0.	DEAD	10.63	200.51	-0.17
76	951.38	DEAD	10.93	206.04	-0.17
76	951.38	DEAD	57.44	-238.51	0.9
76	1400.	DEAD	57.58	-235.9	0.9
76	1400.	DEAD	68.27	-35.04	-1.03
76	2300.	DEAD	68.55	-29.81	-1.03
76	2300.	DEAD	-173.7	-1.6	2.368E-02
76	3050.41	DEAD	-173.46	2.76	2.368E-02
76	3700.	DEAD	-173.26	6.54	2.368E-02
76	3700.	DEAD	50.52	13.04	0.81
76	4600.	DEAD	50.8	18.28	0.81
76	4600.	DEAD	61.45	219.18	0.26
76	5149.45	DEAD	61.62	222.38	0.26
76	5149.45	DEAD	-10.92	-206.01	-0.22
76	6100.82	DEAD	-10.62	-200.47	-0.22
76	0.	LIVE	0.	0.	0.
76	951.38	LIVE	0.	0.	0.
76	951.38	LIVE	0.	0.	0.
76	1400.	LIVE	0.	0.	0.
76	1400.	LIVE	0.	0.	0.
76	2300.	LIVE	0.	0.	0.
76	2300.	LIVE	0.	0.	0.
76	3050.41	LIVE	0.	0.	0.
76	3700.	LIVE	0.	0.	0.
76	3700.	LIVE	0.	0.	0.
76	4600.	LIVE	0.	0.	0.
76	4600.	LIVE	0.	0.	0.
76	5149.45	LIVE	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
76	5149.45	LIVE	0.	0.	0.
76	6100.82	LIVE	0.	0.	0.
76	0.	WX	-37.27	-702.21	0.9
76	951.38	WX	-37.27	-702.21	0.9
76	951.38	WX	-206.89	820.18	-3.94
76	1400.	WX	-206.89	820.18	-3.94
76	1400.	WX	-244.24	117.24	3.69
76	2300.	WX	-244.24	117.24	3.69
76	2300.	WX	558.53	-6.23	-6.505E-02
76	3050.41	WX	558.53	-6.23	-6.505E-02
76	3700.	WX	558.53	-6.23	-6.505E-02
76	3700.	WX	-179.75	-62.49	-2.97
76	4600.	WX	-179.75	-62.49	-2.97
76	4600.	WX	-217.07	-765.51	-9.121E-02
76	5149.45	WX	-217.07	-765.51	-9.121E-02
76	5149.45	WX	37.17	702.04	0.41
76	6100.82	WX	37.17	702.04	0.41
76	0.	WY	0.	0.	0.
76	951.38	WY	0.	0.	0.
76	951.38	WY	0.	0.	0.
76	1400.	WY	0.	0.	0.
76	1400.	WY	0.	0.	0.
76	2300.	WY	0.	0.	0.
76	2300.	WY	0.	0.	0.
76	3050.41	WY	0.	0.	0.
76	3700.	WY	0.	0.	0.
76	3700.	WY	0.	0.	0.
76	4600.	WY	0.	0.	0.
76	4600.	WY	0.	0.	0.
76	5149.45	WY	0.	0.	0.
76	5149.45	WY	0.	0.	0.
76	6100.82	WY	0.	0.	0.
76	0.	TEMP	0.	0.	0.
76	951.38	TEMP	0.	0.	0.
76	951.38	TEMP	0.	0.	0.
76	1400.	TEMP	0.	0.	0.
76	1400.	TEMP	0.	0.	0.
76	2300.	TEMP	0.	0.	0.
76	2300.	TEMP	0.	0.	0.
76	3050.41	TEMP	0.	0.	0.
76	3700.	TEMP	0.	0.	0.
76	3700.	TEMP	0.	0.	0.
76	4600.	TEMP	0.	0.	0.
76	4600.	TEMP	0.	0.	0.
76	5149.45	TEMP	0.	0.	0.
76	5149.45	TEMP	0.	0.	0.
76	6100.82	TEMP	0.	0.	0.
88	0.	DEAD	10.63	200.47	-2.855E-02
88	951.38	DEAD	10.93	206.01	-2.855E-02
88	951.38	DEAD	56.22	-237.48	-0.37
88	1400.	DEAD	56.36	-234.87	-0.37
88	1400.	DEAD	67.03	-33.99	0.84
88	2300.	DEAD	67.32	-28.75	0.84
88	2300.	DEAD	-173.47	-0.69	-2.751E-02

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
88	3050.41	DEAD	-173.24	3.68	-2.751E-02
88	3700.	DEAD	-173.03	7.46	-2.751E-02
88	3700.	DEAD	52.04	14.02	-1.01
88	4600.	DEAD	52.32	19.25	-1.01
88	4600.	DEAD	62.96	220.13	0.15
88	5149.45	DEAD	63.13	223.33	0.15
88	5149.45	DEAD	-10.92	-206.04	2.063E-02
88	6100.82	DEAD	-10.62	-200.51	2.063E-02
88	0.	LIVE	0.	0.	0.
88	951.38	LIVE	0.	0.	0.
88	951.38	LIVE	0.	0.	0.
88	1400.	LIVE	0.	0.	0.
88	1400.	LIVE	0.	0.	0.
88	2300.	LIVE	0.	0.	0.
88	2300.	LIVE	0.	0.	0.
88	3050.41	LIVE	0.	0.	0.
88	3700.	LIVE	0.	0.	0.
88	3700.	LIVE	0.	0.	0.
88	4600.	LIVE	0.	0.	0.
88	4600.	LIVE	0.	0.	0.
88	5149.45	LIVE	0.	0.	0.
88	5149.45	LIVE	0.	0.	0.
88	6100.82	LIVE	0.	0.	0.
88	0.	WX	-37.26	-702.08	-0.21
88	951.38	WX	-37.26	-702.08	-0.21
88	951.38	WX	-202.63	816.56	2.1
88	1400.	WX	-202.63	816.56	2.1
88	1400.	WX	-239.93	113.55	-2.97
88	2300.	WX	-239.93	113.55	-2.97
88	2300.	WX	557.76	-9.42	8.325E-02
88	3050.41	WX	557.76	-9.42	8.325E-02
88	3700.	WX	557.76	-9.42	8.325E-02
88	3700.	WX	-185.07	-65.9	3.66
88	4600.	WX	-185.07	-65.9	3.66
88	4600.	WX	-222.34	-768.83	-1.33
88	5149.45	WX	-222.34	-768.83	-1.33
88	5149.45	WX	37.17	702.17	0.29
88	6100.82	WX	37.17	702.17	0.29
88	0.	WY	0.	0.	0.
88	951.38	WY	0.	0.	0.
88	951.38	WY	0.	0.	0.
88	1400.	WY	0.	0.	0.
88	1400.	WY	0.	0.	0.
88	2300.	WY	0.	0.	0.
88	2300.	WY	0.	0.	0.
88	3050.41	WY	0.	0.	0.
88	3700.	WY	0.	0.	0.
88	3700.	WY	0.	0.	0.
88	4600.	WY	0.	0.	0.
88	4600.	WY	0.	0.	0.
88	5149.45	WY	0.	0.	0.
88	5149.45	WY	0.	0.	0.
88	6100.82	WY	0.	0.	0.
88	0.	TEMP	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
88	951.38	TEMP	0.	0.	0.
88	951.38	TEMP	0.	0.	0.
88	1400.	TEMP	0.	0.	0.
88	1400.	TEMP	0.	0.	0.
88	2300.	TEMP	0.	0.	0.
88	2300.	TEMP	0.	0.	0.
88	3050.41	TEMP	0.	0.	0.
88	3700.	TEMP	0.	0.	0.
88	3700.	TEMP	0.	0.	0.
88	4600.	TEMP	0.	0.	0.
88	4600.	TEMP	0.	0.	0.
88	5149.45	TEMP	0.	0.	0.
88	5149.45	TEMP	0.	0.	0.
88	6100.82	TEMP	0.	0.	0.
106	0.	DEAD	-2.418E-02	-0.14	-1.598E-05
106	700.	DEAD	-1.583E-02	1.231E-02	-1.598E-05
106	1400.	DEAD	-7.479E-03	0.17	-1.598E-05
106	0.	LIVE	0.	0.	0.
106	700.	LIVE	0.	0.	0.
106	1400.	LIVE	0.	0.	0.
106	0.	WX	9.465E-02	-4.587E-03	5.754E-05
106	700.	WX	9.465E-02	-4.587E-03	5.754E-05
106	1400.	WX	9.465E-02	-4.587E-03	5.754E-05
106	0.	WY	0.	0.	0.
106	700.	WY	0.	0.	0.
106	1400.	WY	0.	0.	0.
106	0.	TEMP	0.	0.	0.
106	700.	TEMP	0.	0.	0.
106	1400.	TEMP	0.	0.	0.
107	0.	DEAD	-6.676E-02	-0.11	-2.539E-05
107	450.	DEAD	-6.139E-02	-6.256E-03	-2.539E-05
107	900.	DEAD	-5.602E-02	9.347E-02	-2.539E-05
107	0.	LIVE	0.	0.	0.
107	450.	LIVE	0.	0.	0.
107	900.	LIVE	0.	0.	0.
107	0.	WX	0.19	1.003E-02	8.907E-05
107	450.	WX	0.19	1.003E-02	8.907E-05
107	900.	WX	0.19	1.003E-02	8.907E-05
107	0.	WY	0.	0.	0.
107	450.	WY	0.	0.	0.
107	900.	WY	0.	0.	0.
107	0.	TEMP	0.	0.	0.
107	450.	TEMP	0.	0.	0.
107	900.	TEMP	0.	0.	0.
108	0.	DEAD	1.962E-02	-0.16	-6.686E-06
108	700.	DEAD	2.797E-02	-5.033E-04	-6.686E-06
108	1400.	DEAD	3.633E-02	0.15	-6.686E-06
108	0.	LIVE	0.	0.	0.
108	700.	LIVE	0.	0.	0.
108	1400.	LIVE	0.	0.	0.
108	0.	WX	-0.14	1.688E-04	2.090E-05
108	700.	WX	-0.14	1.688E-04	2.090E-05
108	1400.	WX	-0.14	1.688E-04	2.090E-05
108	0.	WY	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
108	700.	WY	0.	0.	0.
108	1400.	WY	0.	0.	0.
108	0.	TEMP	0.	0.	0.
108	700.	TEMP	0.	0.	0.
108	1400.	TEMP	0.	0.	0.
109	0.	DEAD	-7.730E-02	-8.889E-02	-2.606E-05
109	450.	DEAD	-7.193E-02	1.083E-02	-2.606E-05
109	900.	DEAD	-6.656E-02	0.11	-2.606E-05
109	0.	LIVE	0.	0.	0.
109	450.	LIVE	0.	0.	0.
109	900.	LIVE	0.	0.	0.
109	0.	WX	0.23	-9.743E-03	9.146E-05
109	450.	WX	0.23	-9.743E-03	9.146E-05
109	900.	WX	0.23	-9.743E-03	9.146E-05
109	0.	WY	0.	0.	0.
109	450.	WY	0.	0.	0.
109	900.	WY	0.	0.	0.
109	0.	TEMP	0.	0.	0.
109	450.	TEMP	0.	0.	0.
109	900.	TEMP	0.	0.	0.
110	0.	DEAD	-2.591E-03	-0.18	-1.439E-05
110	750.41	DEAD	6.363E-03	-1.227E-02	-1.439E-05
110	1500.82	DEAD	1.532E-02	0.15	-1.439E-05
110	0.	LIVE	0.	0.	0.
110	750.41	LIVE	0.	0.	0.
110	1500.82	LIVE	0.	0.	0.
110	0.	WX	2.176E-02	3.581E-03	5.187E-05
110	750.41	WX	2.176E-02	3.581E-03	5.187E-05
110	1500.82	WX	2.176E-02	3.581E-03	5.187E-05
110	0.	WY	0.	0.	0.
110	750.41	WY	0.	0.	0.
110	1500.82	WY	0.	0.	0.
110	0.	TEMP	0.	0.	0.
110	750.41	TEMP	0.	0.	0.
110	1500.82	TEMP	0.	0.	0.
111	0.	DEAD	4.630E-02	-0.14	-3.362E-05
111	700.	DEAD	5.465E-02	1.159E-02	-3.362E-05
111	1400.	DEAD	6.300E-02	0.17	-3.362E-05
111	0.	LIVE	0.	0.	0.
111	700.	LIVE	0.	0.	0.
111	1400.	LIVE	0.	0.	0.
111	0.	WX	-7.050E-02	-2.065E-03	9.982E-05
111	700.	WX	-7.050E-02	-2.065E-03	9.982E-05
111	1400.	WX	-7.050E-02	-2.065E-03	9.982E-05
111	0.	WY	0.	0.	0.
111	700.	WY	0.	0.	0.
111	1400.	WY	0.	0.	0.
111	0.	TEMP	0.	0.	0.
111	700.	TEMP	0.	0.	0.
111	1400.	TEMP	0.	0.	0.
112	0.	DEAD	6.062E-02	-0.1	1.070E-04
112	450.	DEAD	6.599E-02	-4.117E-03	1.070E-04
112	900.	DEAD	7.136E-02	9.561E-02	1.070E-04
112	0.	LIVE	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
112	450.	LIVE	0.	0.	0.
112	900.	LIVE	0.	0.	0.
112	0.	WX	-0.24	2.567E-03	-2.512E-04
112	450.	WX	-0.24	2.567E-03	-2.512E-04
112	900.	WX	-0.24	2.567E-03	-2.512E-04
112	0.	WY	0.	0.	0.
112	450.	WY	0.	0.	0.
112	900.	WY	0.	0.	0.
112	0.	TEMP	0.	0.	0.
112	450.	TEMP	0.	0.	0.
112	900.	TEMP	0.	0.	0.
113	0.	DEAD	-0.38	-0.16	9.100E-06
113	700.	DEAD	-0.37	-2.550E-04	9.100E-06
113	1400.	DEAD	-0.36	0.15	9.100E-06
113	0.	LIVE	0.	0.	0.
113	700.	LIVE	0.	0.	0.
113	1400.	LIVE	0.	0.	0.
113	0.	WX	1.28	-6.997E-04	-3.755E-05
113	700.	WX	1.28	-6.997E-04	-3.755E-05
113	1400.	WX	1.28	-6.997E-04	-3.755E-05
113	0.	WY	0.	0.	0.
113	700.	WY	0.	0.	0.
113	1400.	WY	0.	0.	0.
113	0.	TEMP	0.	0.	0.
113	700.	TEMP	0.	0.	0.
113	1400.	TEMP	0.	0.	0.
114	0.	DEAD	2.679E-02	-9.161E-02	-1.183E-04
114	450.	DEAD	3.216E-02	8.109E-03	-1.183E-04
114	900.	DEAD	3.753E-02	0.11	-1.183E-04
114	0.	LIVE	0.	0.	0.
114	450.	LIVE	0.	0.	0.
114	900.	LIVE	0.	0.	0.
114	0.	WX	-0.12	-2.547E-04	3.159E-04
114	450.	WX	-0.12	-2.547E-04	3.159E-04
114	900.	WX	-0.12	-2.547E-04	3.159E-04
114	0.	WY	0.	0.	0.
114	450.	WY	0.	0.	0.
114	900.	WY	0.	0.	0.
114	0.	TEMP	0.	0.	0.
114	450.	TEMP	0.	0.	0.
114	900.	TEMP	0.	0.	0.
115	0.	DEAD	-4.064E-02	-0.18	6.774E-06
115	750.41	DEAD	-3.169E-02	-1.157E-02	6.774E-06
115	1500.82	DEAD	-2.274E-02	0.15	6.774E-06
115	0.	LIVE	0.	0.	0.
115	750.41	LIVE	0.	0.	0.
115	1500.82	LIVE	0.	0.	0.
115	0.	WX	0.2	1.146E-03	-1.355E-05
115	750.41	WX	0.2	1.146E-03	-1.355E-05
115	1500.82	WX	0.2	1.146E-03	-1.355E-05
115	0.	WY	0.	0.	0.
115	750.41	WY	0.	0.	0.
115	1500.82	WY	0.	0.	0.
115	0.	TEMP	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
115	750.41	TEMP	0.	0.	0.
115	1500.82	TEMP	0.	0.	0.
133	0.	DEAD	-0.61	-3.15	1.357E-06
133	3553.66	DEAD	-0.71	-1.086E-04	1.357E-06
133	7107.32	DEAD	-0.81	3.15	1.357E-06
133	0.	LIVE	0.	0.	0.
133	3553.66	LIVE	0.	0.	0.
133	7107.32	LIVE	0.	0.	0.
133	0.	WX	-0.91	3.972E-04	-1.821E-05
133	3553.66	WX	-0.91	3.972E-04	-1.821E-05
133	7107.32	WX	-0.91	3.972E-04	-1.821E-05
133	0.	WY	0.	0.	0.
133	3553.66	WY	0.	0.	0.
133	7107.32	WY	0.	0.	0.
133	0.	TEMP	0.	0.	0.
133	3553.66	TEMP	0.	0.	0.
133	7107.32	TEMP	0.	0.	0.
134	0.	DEAD	-2.6	-3.15	2.123E-06
134	3553.66	DEAD	-2.5	6.679E-05	2.123E-06
134	7107.32	DEAD	-2.4	3.15	2.123E-06
134	0.	LIVE	0.	0.	0.
134	3553.66	LIVE	0.	0.	0.
134	7107.32	LIVE	0.	0.	0.
134	0.	WX	5.33	-1.947E-04	6.123E-06
134	3553.66	WX	5.33	-1.947E-04	6.123E-06
134	7107.32	WX	5.33	-1.947E-04	6.123E-06
134	0.	WY	0.	0.	0.
134	3553.66	WY	0.	0.	0.
134	7107.32	WY	0.	0.	0.
134	0.	TEMP	0.	0.	0.
134	3553.66	TEMP	0.	0.	0.
134	7107.32	TEMP	0.	0.	0.
135	0.	DEAD	-2.28	-3.15	-6.340E-05
135	3553.66	DEAD	-2.38	-9.607E-04	-6.340E-05
135	7107.32	DEAD	-2.48	3.15	-6.340E-05
135	0.	LIVE	0.	0.	0.
135	3553.66	LIVE	0.	0.	0.
135	7107.32	LIVE	0.	0.	0.
135	0.	WX	3.46	1.917E-03	1.200E-04
135	3553.66	WX	3.46	1.917E-03	1.200E-04
135	7107.32	WX	3.46	1.917E-03	1.200E-04
135	0.	WY	0.	0.	0.
135	3553.66	WY	0.	0.	0.
135	7107.32	WY	0.	0.	0.
135	0.	TEMP	0.	0.	0.
135	3553.66	TEMP	0.	0.	0.
135	7107.32	TEMP	0.	0.	0.
136	0.	DEAD	-0.46	-3.15	-4.759E-05
136	3553.66	DEAD	-0.36	-9.454E-04	-4.759E-05
136	7107.32	DEAD	-0.26	3.15	-4.759E-05
136	0.	LIVE	0.	0.	0.
136	3553.66	LIVE	0.	0.	0.
136	7107.32	LIVE	0.	0.	0.
136	0.	WX	-3.54	1.456E-03	1.081E-04

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		Kgf	Kgf	Kgf
136	3553.66	WX	-3.54	1.456E-03	1.081E-04
136	7107.32	WX	-3.54	1.456E-03	1.081E-04
136	0.	WY	0.	0.	0.
136	3553.66	WY	0.	0.	0.
136	7107.32	WY	0.	0.	0.
136	0.	TEMP	0.	0.	0.
136	3553.66	TEMP	0.	0.	0.
136	7107.32	TEMP	0.	0.	0.

Table 27: Element Forces - Frames, Part 2 of 2

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
7	0.	DEAD	-6.39	0.86	223.89
7	485.	DEAD	-6.39	27.52	33416.55
7	970.	DEAD	-6.39	54.18	66609.22
7	0.	LIVE	0.	0.	0.
7	485.	LIVE	0.	0.	0.
7	970.	LIVE	0.	0.	0.
7	0.	WX	21.86	-2.52	816.72
7	485.	WX	21.86	-94.85	-120146.09
7	970.	WX	21.86	-187.17	-241108.9
7	0.	WY	0.	0.	0.
7	485.	WY	0.	0.	0.
7	970.	WY	0.	0.	0.
7	0.	TEMP	0.	0.	0.
7	485.	TEMP	0.	0.	0.
7	970.	TEMP	0.	0.	0.
9	0.	DEAD	23.83	-6.01	370.06
9	485.	DEAD	23.83	-1586.47	11994.24
9	970.	DEAD	23.83	-3166.92	23618.42
9	0.	LIVE	0.	0.	0.
9	485.	LIVE	0.	0.	0.
9	970.	LIVE	0.	0.	0.
9	0.	WX	-89.6	28.04	276.47
9	485.	WX	-89.6	298.07	-42929.72
9	970.	WX	-89.6	568.11	-86135.91
9	0.	WY	0.	0.	0.
9	485.	WY	0.	0.	0.
9	970.	WY	0.	0.	0.
9	0.	TEMP	0.	0.	0.
9	485.	TEMP	0.	0.	0.
9	970.	TEMP	0.	0.	0.
12	0.	DEAD	9.65	-3.96	225.89
12	485.	DEAD	9.65	-28.86	33272.58
12	970.	DEAD	9.65	-53.77	66319.26
12	0.	LIVE	0.	0.	0.
12	485.	LIVE	0.	0.	0.
12	970.	LIVE	0.	0.	0.
12	0.	WX	-34.31	14.4	809.74
12	485.	WX	-34.31	99.6	-119642.49
12	970.	WX	-34.31	184.81	-240094.73

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
12	0.	WY	0.	0.	0.
12	485.	WY	0.	0.	0.
12	970.	WY	0.	0.	0.
12	0.	TEMP	0.	0.	0.
12	485.	TEMP	0.	0.	0.
12	970.	TEMP	0.	0.	0.
14	0.	DEAD	-22.71	4.93	350.03
14	485.	DEAD	-22.71	1586.11	12573.57
14	970.	DEAD	-22.71	3167.3	24797.11
14	0.	LIVE	0.	0.	0.
14	485.	LIVE	0.	0.	0.
14	970.	LIVE	0.	0.	0.
14	0.	WX	85.17	-23.71	336.07
14	485.	WX	85.17	-296.97	-44960.32
14	970.	WX	85.17	-570.23	-90256.71
14	0.	WY	0.	0.	0.
14	485.	WY	0.	0.	0.
14	970.	WY	0.	0.	0.
14	0.	TEMP	0.	0.	0.
14	485.	TEMP	0.	0.	0.
14	970.	TEMP	0.	0.	0.
20	0.	DEAD	9.57	5.59	-206.65
20	635.	DEAD	9.57	26.04	-30674.76
20	670.	DEAD	9.57	27.16	-32354.1
20	670.	DEAD	9.57	27.16	-32354.1
20	1270.	DEAD	9.57	46.48	-61142.87
20	0.	LIVE	0.	0.	0.
20	635.	LIVE	0.	0.	0.
20	670.	LIVE	0.	0.	0.
20	670.	LIVE	0.	0.	0.
20	1270.	LIVE	0.	0.	0.
20	0.	WX	-33.85	-19.96	-1133.01
20	635.	WX	-33.85	-90.35	109906.07
20	670.	WX	-33.85	-94.23	116026.33
20	670.	WX	-33.85	-94.23	116026.33
20	1270.	WX	-33.85	-160.75	220945.15
20	0.	WY	0.	0.	0.
20	635.	WY	0.	0.	0.
20	670.	WY	0.	0.	0.
20	670.	WY	0.	0.	0.
20	1270.	WY	0.	0.	0.
20	0.	TEMP	0.	0.	0.
20	635.	TEMP	0.	0.	0.
20	670.	TEMP	0.	0.	0.
20	670.	TEMP	0.	0.	0.
20	1270.	TEMP	0.	0.	0.
22	0.	DEAD	-21.06	-7.85	-395.26
22	635.	DEAD	-21.06	-1575.57	-11605.06
22	670.	DEAD	-21.06	-1661.98	-12222.92
22	670.	DEAD	-21.06	-1661.98	-12222.92
22	1270.	DEAD	-21.06	-3143.29	-22814.85
22	0.	LIVE	0.	0.	0.
22	635.	LIVE	0.	0.	0.
22	670.	LIVE	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
22	670.	LIVE	0.	0.	0.
22	1270.	LIVE	0.	0.	0.
22	0.	WX	78.35	34.06	-435.93
22	635.	WX	78.35	262.3	41181.81
22	670.	WX	78.35	274.88	43475.7
22	670.	WX	78.35	274.88	43475.7
22	1270.	WX	78.35	490.54	82799.55
22	0.	WY	0.	0.	0.
22	635.	WY	0.	0.	0.
22	670.	WY	0.	0.	0.
22	670.	WY	0.	0.	0.
22	1270.	WY	0.	0.	0.
22	0.	TEMP	0.	0.	0.
22	635.	TEMP	0.	0.	0.
22	670.	TEMP	0.	0.	0.
22	670.	TEMP	0.	0.	0.
22	1270.	TEMP	0.	0.	0.
25	0.	DEAD	-5.26	-1.2	-205.05
25	635.	DEAD	-5.26	-23.59	-30805.33
25	670.	DEAD	-5.26	-24.83	-32491.96
25	670.	DEAD	-5.26	-24.83	-32491.96
25	1270.	DEAD	-5.26	-45.98	-61405.62
25	0.	LIVE	0.	0.	0.
25	635.	LIVE	0.	0.	0.
25	670.	LIVE	0.	0.	0.
25	670.	LIVE	0.	0.	0.
25	1270.	LIVE	0.	0.	0.
25	0.	WX	18.05	3.89	-1138.59
25	635.	WX	18.05	81.1	110362.85
25	670.	WX	18.05	85.36	116508.6
25	670.	WX	18.05	85.36	116508.6
25	1270.	WX	18.05	158.32	221864.28
25	0.	WY	0.	0.	0.
25	635.	WY	0.	0.	0.
25	670.	WY	0.	0.	0.
25	670.	WY	0.	0.	0.
25	1270.	WY	0.	0.	0.
25	0.	TEMP	0.	0.	0.
25	635.	TEMP	0.	0.	0.
25	670.	TEMP	0.	0.	0.
25	670.	TEMP	0.	0.	0.
25	1270.	TEMP	0.	0.	0.
27	0.	DEAD	22.64	9.42	-414.34
27	635.	DEAD	22.64	1576.61	-11052.16
27	670.	DEAD	22.64	1662.99	-11638.49
27	670.	DEAD	22.64	1662.99	-11638.49
27	1270.	DEAD	22.64	3143.79	-21689.97
27	0.	LIVE	0.	0.	0.
27	635.	LIVE	0.	0.	0.
27	670.	LIVE	0.	0.	0.
27	670.	LIVE	0.	0.	0.
27	1270.	LIVE	0.	0.	0.
27	0.	WX	-84.15	-39.81	-378.61
27	635.	WX	-84.15	-266.34	39244.12

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
27	670.	WX	-84.15	-278.83	41428.05
27	670.	WX	-84.15	-278.83	41428.05
27	1270.	WX	-84.15	-492.87	78866.84
27	0.	WY	0.	0.	0.
27	635.	WY	0.	0.	0.
27	670.	WY	0.	0.	0.
27	670.	WY	0.	0.	0.
27	1270.	WY	0.	0.	0.
27	0.	TEMP	0.	0.	0.
27	635.	TEMP	0.	0.	0.
27	670.	TEMP	0.	0.	0.
27	670.	TEMP	0.	0.	0.
27	1270.	TEMP	0.	0.	0.
31	0.	DEAD	-7.12	23.46	-414.34
31	937.53	DEAD	-7.12	-2352.28	-1119.9
31	1875.06	DEAD	-7.12	-4728.03	-3375.13
31	0.	LIVE	0.	0.	0.
31	937.53	LIVE	0.	0.	0.
31	1875.06	LIVE	0.	0.	0.
31	0.	WX	22.77	-90.27	-378.61
31	937.53	WX	22.77	8229.14	4819.14
31	1875.06	WX	22.77	16548.54	10016.89
31	0.	WY	0.	0.	0.
31	937.53	WY	0.	0.	0.
31	1875.06	WY	0.	0.	0.
31	0.	TEMP	0.	0.	0.
31	937.53	TEMP	0.	0.	0.
31	1875.06	TEMP	0.	0.	0.
32	0.	DEAD	10.	-20.97	-350.03
32	851.52	DEAD	10.	2182.48	1517.93
32	1703.04	DEAD	10.	4385.92	2076.28
32	0.	LIVE	0.	0.	0.
32	851.52	LIVE	0.	0.	0.
32	1703.04	LIVE	0.	0.	0.
32	0.	WX	-33.39	81.86	-336.07
32	851.52	WX	-33.39	-7624.67	-4540.65
32	1703.04	WX	-33.39	-15331.21	-8745.24
32	0.	WY	0.	0.	0.
32	851.52	WY	0.	0.	0.
32	1703.04	WY	0.	0.	0.
32	0.	TEMP	0.	0.	0.
32	851.52	TEMP	0.	0.	0.
32	1703.04	TEMP	0.	0.	0.
33	0.	DEAD	2.42	-4.83	-205.05
33	937.53	DEAD	2.42	724.38	737.61
33	1875.06	DEAD	2.42	1453.59	130.59
33	0.	LIVE	0.	0.	0.
33	937.53	LIVE	0.	0.	0.
33	1875.06	LIVE	0.	0.	0.
33	0.	WX	-8.47	16.4	-1138.59
33	937.53	WX	-8.47	-2525.23	-1677.78
33	1875.06	WX	-8.47	-5066.86	-2216.97
33	0.	WY	0.	0.	0.
33	937.53	WY	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
33	1875.06	WY	0.	0.	0.
33	0.	TEMP	0.	0.	0.
33	937.53	TEMP	0.	0.	0.
33	1875.06	TEMP	0.	0.	0.
34	0.	DEAD	-2.78	10.06	-225.89
34	851.52	DEAD	-2.78	-733.58	-200.83
34	1703.04	DEAD	-2.78	-1477.21	-1485.37
34	0.	LIVE	0.	0.	0.
34	851.52	LIVE	0.	0.	0.
34	1703.04	LIVE	0.	0.	0.
34	0.	WX	9.62	-35.94	-809.74
34	851.52	WX	9.62	2576.34	1470.98
34	1703.04	WX	9.62	5188.62	3751.71
34	0.	WY	0.	0.	0.
34	851.52	WY	0.	0.	0.
34	1703.04	WY	0.	0.	0.
34	0.	TEMP	0.	0.	0.
34	851.52	TEMP	0.	0.	0.
34	1703.04	TEMP	0.	0.	0.
35	0.	DEAD	-1.76	10.94	-206.65
35	937.53	DEAD	-1.76	-782.64	-159.53
35	1875.06	DEAD	-1.76	-1576.21	-1662.08
35	0.	LIVE	0.	0.	0.
35	937.53	LIVE	0.	0.	0.
35	1875.06	LIVE	0.	0.	0.
35	0.	WX	6.11	-38.82	-1133.01
35	937.53	WX	6.11	2746.8	1460.7
35	1875.06	WX	6.11	5532.43	4054.41
35	0.	WY	0.	0.	0.
35	937.53	WY	0.	0.	0.
35	1875.06	WY	0.	0.	0.
35	0.	TEMP	0.	0.	0.
35	937.53	TEMP	0.	0.	0.
35	1875.06	TEMP	0.	0.	0.
36	0.	DEAD	3.24	-5.58	-223.89
36	851.52	DEAD	3.24	677.	638.73
36	1703.04	DEAD	3.24	1359.57	191.74
36	0.	LIVE	0.	0.	0.
36	851.52	LIVE	0.	0.	0.
36	1703.04	LIVE	0.	0.	0.
36	0.	WX	-11.39	18.83	-816.72
36	851.52	WX	-11.39	-2357.82	-1465.78
36	1703.04	WX	-11.39	-4734.46	-2114.84
36	0.	WY	0.	0.	0.
36	851.52	WY	0.	0.	0.
36	1703.04	WY	0.	0.	0.
36	0.	TEMP	0.	0.	0.
36	851.52	TEMP	0.	0.	0.
36	1703.04	TEMP	0.	0.	0.
37	0.	DEAD	7.33	-21.25	-395.26
37	937.53	DEAD	7.33	2332.84	1662.76
37	1875.06	DEAD	7.33	4686.92	2171.11
37	0.	LIVE	0.	0.	0.
37	937.53	LIVE	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
37	1875.06	LIVE	0.	0.	0.
37	0.	WX	-23.52	82.13	-435.93
37	937.53	WX	-23.52	-8150.75	-4909.48
37	1875.06	WX	-23.52	-16383.63	-9383.03
37	0.	WY	0.	0.	0.
37	937.53	WY	0.	0.	0.
37	1875.06	WY	0.	0.	0.
37	0.	TEMP	0.	0.	0.
37	937.53	TEMP	0.	0.	0.
37	1875.06	TEMP	0.	0.	0.
38	0.	DEAD	-9.83	22.52	-370.06
38	851.52	DEAD	-9.83	-2199.03	-1082.12
38	1703.04	DEAD	-9.83	-4420.59	-3103.77
38	0.	LIVE	0.	0.	0.
38	851.52	LIVE	0.	0.	0.
38	1703.04	LIVE	0.	0.	0.
38	0.	WX	32.67	-88.01	-276.47
38	851.52	WX	32.67	7689.8	4547.16
38	1703.04	WX	32.67	15467.61	9370.79
38	0.	WY	0.	0.	0.
38	851.52	WY	0.	0.	0.
38	1703.04	WY	0.	0.	0.
38	0.	TEMP	0.	0.	0.
38	851.52	TEMP	0.	0.	0.
38	1703.04	TEMP	0.	0.	0.
42	0.	DEAD	11.27	-701.72	88.35
42	573.5	DEAD	11.27	-631.2	-36765.23
42	1147.	DEAD	11.27	-560.67	-63145.62
42	1720.5	DEAD	11.27	-490.14	-79052.82
42	2294.	DEAD	11.27	-419.61	-84486.82
42	2867.5	DEAD	11.27	-349.08	-79447.63
42	2867.5	DEAD	-13.18	-349.08	-79447.5
42	3441.	DEAD	-13.18	-244.59	-63848.08
42	4014.5	DEAD	-13.18	-140.11	-37775.47
42	4588.	DEAD	-13.18	-35.63	-1229.66
42	5161.5	DEAD	-13.18	68.85	45789.33
42	5735.	DEAD	-13.18	173.34	103281.53
42	0.	LIVE	0.	0.	0.
42	573.5	LIVE	0.	0.	0.
42	1147.	LIVE	0.	0.	0.
42	1720.5	LIVE	0.	0.	0.
42	2294.	LIVE	0.	0.	0.
42	2867.5	LIVE	0.	0.	0.
42	2867.5	LIVE	0.	0.	0.
42	3441.	LIVE	0.	0.	0.
42	4014.5	LIVE	0.	0.	0.
42	4588.	LIVE	0.	0.	0.
42	5161.5	LIVE	0.	0.	0.
42	5735.	LIVE	0.	0.	0.
42	0.	WX	2.45	2253.91	-311.34
42	573.5	WX	2.45	2055.15	128757.31
42	1147.	WX	2.45	1856.39	221116.42
42	1720.5	WX	2.45	1657.62	276766.
42	2294.	WX	2.45	1458.86	295706.04

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
42	2867.5	WX	2.45	1260.1	277936.54
42	2867.5	WX	4.31	1260.07	277936.08
42	3441.	WX	4.31	892.57	223466.8
42	4014.5	WX	4.31	525.07	132287.98
42	4588.	WX	4.31	157.58	4399.62
42	5161.5	WX	4.31	-209.92	-160198.27
42	5735.	WX	4.31	-577.41	-361505.7
42	0.	WY	0.	0.	0.
42	573.5	WY	0.	0.	0.
42	1147.	WY	0.	0.	0.
42	1720.5	WY	0.	0.	0.
42	2294.	WY	0.	0.	0.
42	2867.5	WY	0.	0.	0.
42	2867.5	WY	0.	0.	0.
42	3441.	WY	0.	0.	0.
42	4014.5	WY	0.	0.	0.
42	4588.	WY	0.	0.	0.
42	5161.5	WY	0.	0.	0.
42	5735.	WY	0.	0.	0.
42	0.	TEMP	0.	0.	0.
42	573.5	TEMP	0.	0.	0.
42	1147.	TEMP	0.	0.	0.
42	1720.5	TEMP	0.	0.	0.
42	2294.	TEMP	0.	0.	0.
42	2867.5	TEMP	0.	0.	0.
42	2867.5	TEMP	0.	0.	0.
42	3441.	TEMP	0.	0.	0.
42	4014.5	TEMP	0.	0.	0.
42	4588.	TEMP	0.	0.	0.
42	5161.5	TEMP	0.	0.	0.
42	5735.	TEMP	0.	0.	0.
43	0.	DEAD	-6.69	-892.21	132.65
43	573.5	DEAD	-6.69	-768.57	-36604.06
43	1147.	DEAD	-6.69	-644.93	-62867.58
43	1720.5	DEAD	-6.69	-521.29	-78657.91
43	2294.	DEAD	-6.69	-397.65	-83975.05
43	2867.5	DEAD	-6.69	-274.01	-78818.99
43	2867.5	DEAD	6.8	-273.98	-78819.16
43	3441.	DEAD	6.8	-201.34	-63023.06
43	4014.5	DEAD	6.8	-128.7	-36753.77
43	4588.	DEAD	6.8	-56.06	-11.28
43	5161.5	DEAD	6.8	16.59	47204.4
43	5735.	DEAD	6.8	89.23	104893.27
43	0.	LIVE	0.	0.	0.
43	573.5	LIVE	0.	0.	0.
43	1147.	LIVE	0.	0.	0.
43	1720.5	LIVE	0.	0.	0.
43	2294.	LIVE	0.	0.	0.
43	2867.5	LIVE	0.	0.	0.
43	2867.5	LIVE	0.	0.	0.
43	3441.	LIVE	0.	0.	0.
43	4014.5	LIVE	0.	0.	0.
43	4588.	LIVE	0.	0.	0.
43	5161.5	LIVE	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
43	5735.	LIVE	0.	0.	0.
43	0.	WX	1.13	3301.81	-495.88
43	573.5	WX	1.13	2823.29	128072.55
43	1147.	WX	1.13	2344.76	219931.44
43	1720.5	WX	1.13	1866.24	275080.79
43	2294.	WX	1.13	1387.71	293520.61
43	2867.5	WX	1.13	909.19	275250.89
43	2867.5	WX	-1.51	909.15	275251.49
43	3441.	WX	-1.51	662.9	220258.86
43	4014.5	WX	-1.51	416.66	128556.69
43	4588.	WX	-1.51	170.41	144.98
43	5161.5	WX	-1.51	-75.83	-164976.26
43	5735.	WX	-1.51	-322.08	-366807.05
43	0.	WY	0.	0.	0.
43	573.5	WY	0.	0.	0.
43	1147.	WY	0.	0.	0.
43	1720.5	WY	0.	0.	0.
43	2294.	WY	0.	0.	0.
43	2867.5	WY	0.	0.	0.
43	2867.5	WY	0.	0.	0.
43	3441.	WY	0.	0.	0.
43	4014.5	WY	0.	0.	0.
43	4588.	WY	0.	0.	0.
43	5161.5	WY	0.	0.	0.
43	5735.	WY	0.	0.	0.
43	0.	TEMP	0.	0.	0.
43	573.5	TEMP	0.	0.	0.
43	1147.	TEMP	0.	0.	0.
43	1720.5	TEMP	0.	0.	0.
43	2294.	TEMP	0.	0.	0.
43	2867.5	TEMP	0.	0.	0.
43	2867.5	TEMP	0.	0.	0.
43	3441.	TEMP	0.	0.	0.
43	4014.5	TEMP	0.	0.	0.
43	4588.	TEMP	0.	0.	0.
43	5161.5	TEMP	0.	0.	0.
43	5735.	TEMP	0.	0.	0.
44	0.	DEAD	4.92	-202.25	3216.13
44	573.5	DEAD	4.92	-260.97	-33831.84
44	1147.	DEAD	4.92	-319.69	-60406.62
44	1720.5	DEAD	4.92	-378.41	-76508.21
44	2294.	DEAD	4.92	-437.13	-82136.6
44	2867.5	DEAD	4.92	-495.85	-77291.79
44	2867.5	DEAD	-4.79	-495.75	-77291.76
44	3441.	DEAD	-4.79	-325.32	-61844.56
44	4014.5	DEAD	-4.79	-154.89	-35924.17
44	4588.	DEAD	-4.79	15.54	469.42
44	5161.5	DEAD	-4.79	185.97	47336.2
44	5735.	DEAD	-4.79	356.4	104676.17
44	0.	LIVE	0.	0.	0.
44	573.5	LIVE	0.	0.	0.
44	1147.	LIVE	0.	0.	0.
44	1720.5	LIVE	0.	0.	0.
44	2294.	LIVE	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
44	2867.5	LIVE	0.	0.	0.
44	2867.5	LIVE	0.	0.	0.
44	3441.	LIVE	0.	0.	0.
44	4014.5	LIVE	0.	0.	0.
44	4588.	LIVE	0.	0.	0.
44	5161.5	LIVE	0.	0.	0.
44	5735.	LIVE	0.	0.	0.
44	0.	WX	-2.056E-02	696.77	-11254.66
44	573.5	WX	-2.056E-02	903.4	118426.83
44	1147.	WX	-2.056E-02	1110.02	211398.79
44	1720.5	WX	-2.056E-02	1316.65	267661.2
44	2294.	WX	-2.056E-02	1523.27	287214.08
44	2867.5	WX	-2.056E-02	1729.9	270057.42
44	2867.5	WX	-0.47	1729.57	270057.29
44	3441.	WX	-0.47	1135.87	216234.01
44	4014.5	WX	-0.47	542.18	125701.19
44	4588.	WX	-0.47	-51.52	-1541.17
44	5161.5	WX	-0.47	-645.22	-165493.07
44	5735.	WX	-0.47	-1238.92	-366154.51
44	0.	WY	0.	0.	0.
44	573.5	WY	0.	0.	0.
44	1147.	WY	0.	0.	0.
44	1720.5	WY	0.	0.	0.
44	2294.	WY	0.	0.	0.
44	2867.5	WY	0.	0.	0.
44	2867.5	WY	0.	0.	0.
44	3441.	WY	0.	0.	0.
44	4014.5	WY	0.	0.	0.
44	4588.	WY	0.	0.	0.
44	5161.5	WY	0.	0.	0.
44	5735.	WY	0.	0.	0.
44	0.	TEMP	0.	0.	0.
44	573.5	TEMP	0.	0.	0.
44	1147.	TEMP	0.	0.	0.
44	1720.5	TEMP	0.	0.	0.
44	2294.	TEMP	0.	0.	0.
44	2867.5	TEMP	0.	0.	0.
44	2867.5	TEMP	0.	0.	0.
44	3441.	TEMP	0.	0.	0.
44	4014.5	TEMP	0.	0.	0.
44	4588.	TEMP	0.	0.	0.
44	5161.5	TEMP	0.	0.	0.
44	5735.	TEMP	0.	0.	0.
45	0.	DEAD	-4.7	-1320.52	2576.52
45	573.5	DEAD	-4.7	-1073.54	-34421.73
45	1147.	DEAD	-4.7	-826.56	-60946.78
45	1720.5	DEAD	-4.7	-579.58	-76998.64
45	2294.	DEAD	-4.7	-332.61	-82577.3
45	2867.5	DEAD	-4.7	-85.63	-77682.77
45	2867.5	DEAD	4.6	-85.69	-77682.73
45	3441.	DEAD	4.6	-88.09	-62157.41
45	4014.5	DEAD	4.6	-90.5	-36158.9
45	4588.	DEAD	4.6	-92.91	312.81
45	5161.5	DEAD	4.6	-95.31	47257.71

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
45	5735.	DEAD	4.6	-97.72	104675.8
45	0.	LIVE	0.	0.	0.
45	573.5	LIVE	0.	0.	0.
45	1147.	LIVE	0.	0.	0.
45	1720.5	LIVE	0.	0.	0.
45	2294.	LIVE	0.	0.	0.
45	2867.5	LIVE	0.	0.	0.
45	2867.5	LIVE	0.	0.	0.
45	3441.	LIVE	0.	0.	0.
45	4014.5	LIVE	0.	0.	0.
45	4588.	LIVE	0.	0.	0.
45	5161.5	LIVE	0.	0.	0.
45	5735.	LIVE	0.	0.	0.
45	0.	WX	-6.463E-02	4636.19	-9006.19
45	573.5	WX	-6.463E-02	3769.02	120494.72
45	1147.	WX	-6.463E-02	2901.85	213286.1
45	1720.5	WX	-6.463E-02	2034.68	269367.93
45	2294.	WX	-6.463E-02	1167.51	288740.23
45	2867.5	WX	-6.463E-02	300.33	271402.99
45	2867.5	WX	0.42	300.5	271402.85
45	3441.	WX	0.42	308.32	217310.76
45	4014.5	WX	0.42	316.13	126509.14
45	4588.	WX	0.42	323.95	-1002.02
45	5161.5	WX	0.42	331.76	-165222.72
45	5735.	WX	0.42	339.58	-366152.96
45	0.	WY	0.	0.	0.
45	573.5	WY	0.	0.	0.
45	1147.	WY	0.	0.	0.
45	1720.5	WY	0.	0.	0.
45	2294.	WY	0.	0.	0.
45	2867.5	WY	0.	0.	0.
45	2867.5	WY	0.	0.	0.
45	3441.	WY	0.	0.	0.
45	4014.5	WY	0.	0.	0.
45	4588.	WY	0.	0.	0.
45	5161.5	WY	0.	0.	0.
45	5735.	WY	0.	0.	0.
45	0.	TEMP	0.	0.	0.
45	573.5	TEMP	0.	0.	0.
45	1147.	TEMP	0.	0.	0.
45	1720.5	TEMP	0.	0.	0.
45	2294.	TEMP	0.	0.	0.
45	2867.5	TEMP	0.	0.	0.
45	2867.5	TEMP	0.	0.	0.
45	3441.	TEMP	0.	0.	0.
45	4014.5	TEMP	0.	0.	0.
45	4588.	TEMP	0.	0.	0.
45	5161.5	TEMP	0.	0.	0.
45	5735.	TEMP	0.	0.	0.
46	0.	DEAD	5.6	-774.21	145.93
46	573.5	DEAD	5.6	-679.43	-36592.25
46	1147.	DEAD	5.6	-584.65	-62857.24
46	1720.5	DEAD	5.6	-489.87	-78649.03
46	2294.	DEAD	5.6	-395.08	-83967.64

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
46	2867.5	DEAD	5.6	-300.3	-78813.04
46	2867.5	DEAD	-5.72	-300.32	-78813.21
46	3441.	DEAD	-5.72	-214.34	-63029.58
46	4014.5	DEAD	-5.72	-128.36	-36772.76
46	4588.	DEAD	-5.72	-42.38	-42.75
46	5161.5	DEAD	-5.72	43.59	47160.46
46	5735.	DEAD	-5.72	129.57	104836.86
46	0.	LIVE	0.	0.	0.
46	573.5	LIVE	0.	0.	0.
46	1147.	LIVE	0.	0.	0.
46	1720.5	LIVE	0.	0.	0.
46	2294.	LIVE	0.	0.	0.
46	2867.5	LIVE	0.	0.	0.
46	2867.5	LIVE	0.	0.	0.
46	3441.	LIVE	0.	0.	0.
46	4014.5	LIVE	0.	0.	0.
46	4588.	LIVE	0.	0.	0.
46	5161.5	LIVE	0.	0.	0.
46	5735.	LIVE	0.	0.	0.
46	0.	WX	-0.95	2466.47	-518.64
46	573.5	WX	-0.95	2196.44	128060.29
46	1147.	WX	-0.95	1926.4	219929.68
46	1720.5	WX	-0.95	1656.37	275089.53
46	2294.	WX	-0.95	1386.34	293539.84
46	2867.5	WX	-0.95	1116.31	275280.62
46	2867.5	WX	1.36	1116.29	275281.2
46	3441.	WX	1.36	801.26	220312.26
46	4014.5	WX	1.36	486.23	128633.79
46	4588.	WX	1.36	171.21	245.78
46	5161.5	WX	1.36	-143.82	-164851.77
46	5735.	WX	1.36	-458.85	-366658.85
46	0.	WY	0.	0.	0.
46	573.5	WY	0.	0.	0.
46	1147.	WY	0.	0.	0.
46	1720.5	WY	0.	0.	0.
46	2294.	WY	0.	0.	0.
46	2867.5	WY	0.	0.	0.
46	2867.5	WY	0.	0.	0.
46	3441.	WY	0.	0.	0.
46	4014.5	WY	0.	0.	0.
46	4588.	WY	0.	0.	0.
46	5161.5	WY	0.	0.	0.
46	5735.	WY	0.	0.	0.
46	0.	TEMP	0.	0.	0.
46	573.5	TEMP	0.	0.	0.
46	1147.	TEMP	0.	0.	0.
46	1720.5	TEMP	0.	0.	0.
46	2294.	TEMP	0.	0.	0.
46	2867.5	TEMP	0.	0.	0.
46	2867.5	TEMP	0.	0.	0.
46	3441.	TEMP	0.	0.	0.
46	4014.5	TEMP	0.	0.	0.
46	4588.	TEMP	0.	0.	0.
46	5161.5	TEMP	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
46	5735.	TEMP	0.	0.	0.
47	0.	DEAD	-9.39	-628.08	84.94
47	573.5	DEAD	-9.39	-573.24	-36751.77
47	1147.	DEAD	-9.39	-518.4	-63115.29
47	1720.5	DEAD	-9.39	-463.56	-79005.61
47	2294.	DEAD	-9.39	-408.72	-84422.75
47	2867.5	DEAD	-9.39	-353.88	-79366.68
47	2867.5	DEAD	11.21	-353.85	-79366.56
47	3441.	DEAD	11.21	-252.93	-63757.34
47	4014.5	DEAD	11.21	-152.01	-37674.93
47	4588.	DEAD	11.21	-51.09	-1119.32
47	5161.5	DEAD	11.21	49.83	45909.47
47	5735.	DEAD	11.21	150.76	103411.47
47	0.	LIVE	0.	0.	0.
47	573.5	LIVE	0.	0.	0.
47	1147.	LIVE	0.	0.	0.
47	1720.5	LIVE	0.	0.	0.
47	2294.	LIVE	0.	0.	0.
47	2867.5	LIVE	0.	0.	0.
47	2867.5	LIVE	0.	0.	0.
47	3441.	LIVE	0.	0.	0.
47	4014.5	LIVE	0.	0.	0.
47	4588.	LIVE	0.	0.	0.
47	5161.5	LIVE	0.	0.	0.
47	5735.	LIVE	0.	0.	0.
47	0.	WX	-2.45	2461.45	-321.73
47	573.5	WX	-2.45	2206.67	128701.19
47	1147.	WX	-2.45	1951.89	221014.57
47	1720.5	WX	-2.45	1697.1	276618.41
47	2294.	WX	-2.45	1442.32	295512.71
47	2867.5	WX	-2.45	1187.53	277697.48
47	2867.5	WX	-3.96	1187.44	277697.03
47	3441.	WX	-3.96	839.44	223178.45
47	4014.5	WX	-3.96	491.44	131950.33
47	4588.	WX	-3.96	143.45	4012.67
47	5161.5	WX	-3.96	-204.55	-160634.53
47	5735.	WX	-3.96	-552.55	-361991.27
47	0.	WY	0.	0.	0.
47	573.5	WY	0.	0.	0.
47	1147.	WY	0.	0.	0.
47	1720.5	WY	0.	0.	0.
47	2294.	WY	0.	0.	0.
47	2867.5	WY	0.	0.	0.
47	2867.5	WY	0.	0.	0.
47	3441.	WY	0.	0.	0.
47	4014.5	WY	0.	0.	0.
47	4588.	WY	0.	0.	0.
47	5161.5	WY	0.	0.	0.
47	5735.	WY	0.	0.	0.
47	0.	TEMP	0.	0.	0.
47	573.5	TEMP	0.	0.	0.
47	1147.	TEMP	0.	0.	0.
47	1720.5	TEMP	0.	0.	0.
47	2294.	TEMP	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
47	2867.5	TEMP	0.	0.	0.
47	2867.5	TEMP	0.	0.	0.
47	3441.	TEMP	0.	0.	0.
47	4014.5	TEMP	0.	0.	0.
47	4588.	TEMP	0.	0.	0.
47	5161.5	TEMP	0.	0.	0.
47	5735.	TEMP	0.	0.	0.
48	0.	DEAD	-0.13	2.805E-02	-20.6
48	700.	DEAD	-0.13	2.799E-03	25.58
48	1400.	DEAD	-0.13	-2.245E-02	-36.81
48	0.	LIVE	0.	0.	0.
48	700.	LIVE	0.	0.	0.
48	1400.	LIVE	0.	0.	0.
48	0.	WX	0.44	-6.937E-02	1.51
48	700.	WX	0.44	4.132E-03	2.93
48	1400.	WX	0.44	7.764E-02	4.36
48	0.	WY	0.	0.	0.
48	700.	WY	0.	0.	0.
48	1400.	WY	0.	0.	0.
48	0.	TEMP	0.	0.	0.
48	700.	TEMP	0.	0.	0.
48	1400.	TEMP	0.	0.	0.
49	0.	DEAD	12.25	117.63	103269.06
49	573.5	DEAD	12.25	123.54	56101.95
49	1147.	DEAD	12.25	129.45	19408.02
49	1720.5	DEAD	12.25	135.35	-6812.71
49	2294.	DEAD	12.25	141.26	-22560.24
49	2867.5	DEAD	12.25	147.17	-27834.58
49	2867.5	DEAD	-12.25	147.16	-27834.59
49	3441.	DEAD	-12.25	149.04	-22547.06
49	4014.5	DEAD	-12.25	150.93	-6786.34
49	4588.	DEAD	-12.25	152.82	19447.58
49	5161.5	DEAD	-12.25	154.7	56154.69
49	5735.	DEAD	-12.25	156.59	103334.99
49	0.	LIVE	0.	0.	0.
49	573.5	LIVE	0.	0.	0.
49	1147.	LIVE	0.	0.	0.
49	1720.5	LIVE	0.	0.	0.
49	2294.	LIVE	0.	0.	0.
49	2867.5	LIVE	0.	0.	0.
49	2867.5	LIVE	0.	0.	0.
49	3441.	LIVE	0.	0.	0.
49	4014.5	LIVE	0.	0.	0.
49	4588.	LIVE	0.	0.	0.
49	5161.5	LIVE	0.	0.	0.
49	5735.	LIVE	0.	0.	0.
49	0.	WX	-1.02	-458.79	-361458.13
49	573.5	WX	-1.02	-466.38	-196289.62
49	1147.	WX	-1.02	-473.97	-67830.64
49	1720.5	WX	-1.02	-481.56	23918.79
49	2294.	WX	-1.02	-489.15	78958.69
49	2867.5	WX	-1.02	-496.75	97289.05
49	2867.5	WX	1.01	-496.7	97289.05
49	3441.	WX	1.01	-516.64	78912.6

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
49	4014.5	WX	1.01	-536.58	23826.61
49	4588.	WX	1.01	-556.52	-67968.92
49	5161.5	WX	1.01	-576.46	-196473.99
49	5735.	WX	1.01	-596.4	-361688.6
49	0.	WY	0.	0.	0.
49	573.5	WY	0.	0.	0.
49	1147.	WY	0.	0.	0.
49	1720.5	WY	0.	0.	0.
49	2294.	WY	0.	0.	0.
49	2867.5	WY	0.	0.	0.
49	2867.5	WY	0.	0.	0.
49	3441.	WY	0.	0.	0.
49	4014.5	WY	0.	0.	0.
49	4588.	WY	0.	0.	0.
49	5161.5	WY	0.	0.	0.
49	5735.	WY	0.	0.	0.
49	0.	TEMP	0.	0.	0.
49	573.5	TEMP	0.	0.	0.
49	1147.	TEMP	0.	0.	0.
49	1720.5	TEMP	0.	0.	0.
49	2294.	TEMP	0.	0.	0.
49	2867.5	TEMP	0.	0.	0.
49	2867.5	TEMP	0.	0.	0.
49	3441.	TEMP	0.	0.	0.
49	4014.5	TEMP	0.	0.	0.
49	4588.	TEMP	0.	0.	0.
49	5161.5	TEMP	0.	0.	0.
49	5735.	TEMP	0.	0.	0.
50	0.	DEAD	-6.61	226.55	104855.46
50	573.5	DEAD	-6.61	204.57	57639.27
50	1147.	DEAD	-6.61	182.59	20896.27
50	1720.5	DEAD	-6.61	160.61	-5373.53
50	2294.	DEAD	-6.61	138.63	-21170.13
50	2867.5	DEAD	-6.61	116.65	-26493.55
50	2867.5	DEAD	6.62	116.63	-26493.54
50	3441.	DEAD	6.62	140.2	-21180.16
50	4014.5	DEAD	6.62	163.77	-5393.59
50	4588.	DEAD	6.62	187.34	20866.18
50	5161.5	DEAD	6.62	210.91	57599.14
50	5735.	DEAD	6.62	234.48	104805.3
50	0.	LIVE	0.	0.	0.
50	573.5	LIVE	0.	0.	0.
50	1147.	LIVE	0.	0.	0.
50	1720.5	LIVE	0.	0.	0.
50	2294.	LIVE	0.	0.	0.
50	2867.5	LIVE	0.	0.	0.
50	2867.5	LIVE	0.	0.	0.
50	3441.	LIVE	0.	0.	0.
50	4014.5	LIVE	0.	0.	0.
50	4588.	LIVE	0.	0.	0.
50	5161.5	LIVE	0.	0.	0.
50	5735.	LIVE	0.	0.	0.
50	0.	WX	0.86	-727.99	-366679.04
50	573.5	WX	0.86	-671.62	-201467.92

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
50	1147.	WX	0.86	-615.25	-72966.35
50	1720.5	WX	0.86	-558.88	18825.69
50	2294.	WX	0.86	-502.51	73908.2
50	2867.5	WX	0.86	-446.14	92281.16
50	2867.5	WX	-0.88	-446.07	92281.15
50	3441.	WX	-0.88	-508.55	73943.33
50	4014.5	WX	-0.88	-571.04	18895.96
50	4588.	WX	-0.88	-633.52	-72860.94
50	5161.5	WX	-0.88	-696.01	-201327.38
50	5735.	WX	-0.88	-758.49	-366503.35
50	0.	WY	0.	0.	0.
50	573.5	WY	0.	0.	0.
50	1147.	WY	0.	0.	0.
50	1720.5	WY	0.	0.	0.
50	2294.	WY	0.	0.	0.
50	2867.5	WY	0.	0.	0.
50	2867.5	WY	0.	0.	0.
50	3441.	WY	0.	0.	0.
50	4014.5	WY	0.	0.	0.
50	4588.	WY	0.	0.	0.
50	5161.5	WY	0.	0.	0.
50	5735.	WY	0.	0.	0.
50	0.	TEMP	0.	0.	0.
50	573.5	TEMP	0.	0.	0.
50	1147.	TEMP	0.	0.	0.
50	1720.5	TEMP	0.	0.	0.
50	2294.	TEMP	0.	0.	0.
50	2867.5	TEMP	0.	0.	0.
50	2867.5	TEMP	0.	0.	0.
50	3441.	TEMP	0.	0.	0.
50	4014.5	TEMP	0.	0.	0.
50	4588.	TEMP	0.	0.	0.
50	5161.5	TEMP	0.	0.	0.
50	5735.	TEMP	0.	0.	0.
51	0.	DEAD	5.13	38.46	103708.31
51	573.5	DEAD	5.13	68.08	56497.47
51	1147.	DEAD	5.13	97.7	19759.83
51	1720.5	DEAD	5.13	127.33	-6504.62
51	2294.	DEAD	5.13	156.95	-22295.87
51	2867.5	DEAD	5.13	186.57	-27613.93
51	2867.5	DEAD	-5.14	186.55	-27613.93
51	3441.	DEAD	-5.14	158.61	-22315.84
51	4014.5	DEAD	-5.14	130.67	-6544.56
51	4588.	DEAD	-5.14	102.73	19699.92
51	5161.5	DEAD	-5.14	74.79	56417.59
51	5735.	DEAD	-5.14	46.85	103608.45
51	0.	LIVE	0.	0.	0.
51	573.5	LIVE	0.	0.	0.
51	1147.	LIVE	0.	0.	0.
51	1720.5	LIVE	0.	0.	0.
51	2294.	LIVE	0.	0.	0.
51	2867.5	LIVE	0.	0.	0.
51	2867.5	LIVE	0.	0.	0.
51	3441.	LIVE	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
51	4014.5	LIVE	0.	0.	0.
51	4588.	LIVE	0.	0.	0.
51	5161.5	LIVE	0.	0.	0.
51	5735.	LIVE	0.	0.	0.
51	0.	WX	-0.72	-124.54	-362781.06
51	573.5	WX	-0.72	-232.58	-197549.23
51	1147.	WX	-0.72	-340.62	-69026.94
51	1720.5	WX	-0.72	-448.66	22785.82
51	2294.	WX	-0.72	-556.7	77889.04
51	2867.5	WX	-0.72	-664.74	96282.72
51	2867.5	WX	0.75	-664.68	96282.71
51	3441.	WX	0.75	-561.75	77961.19
51	4014.5	WX	0.75	-458.82	22930.13
51	4588.	WX	0.75	-355.89	-68810.46
51	5161.5	WX	0.75	-252.96	-197260.6
51	5735.	WX	0.75	-150.03	-362420.27
51	0.	WY	0.	0.	0.
51	573.5	WY	0.	0.	0.
51	1147.	WY	0.	0.	0.
51	1720.5	WY	0.	0.	0.
51	2294.	WY	0.	0.	0.
51	2867.5	WY	0.	0.	0.
51	2867.5	WY	0.	0.	0.
51	3441.	WY	0.	0.	0.
51	4014.5	WY	0.	0.	0.
51	4588.	WY	0.	0.	0.
51	5161.5	WY	0.	0.	0.
51	5735.	WY	0.	0.	0.
51	0.	TEMP	0.	0.	0.
51	573.5	TEMP	0.	0.	0.
51	1147.	TEMP	0.	0.	0.
51	1720.5	TEMP	0.	0.	0.
51	2294.	TEMP	0.	0.	0.
51	2867.5	TEMP	0.	0.	0.
51	2867.5	TEMP	0.	0.	0.
51	3441.	TEMP	0.	0.	0.
51	4014.5	TEMP	0.	0.	0.
51	4588.	TEMP	0.	0.	0.
51	5161.5	TEMP	0.	0.	0.
51	5735.	TEMP	0.	0.	0.
52	0.	DEAD	-4.94	246.19	103814.44
52	573.5	DEAD	-4.94	221.74	56625.27
52	1147.	DEAD	-4.94	197.29	19909.3
52	1720.5	DEAD	-4.94	172.85	-6333.48
52	2294.	DEAD	-4.94	148.4	-22103.07
52	2867.5	DEAD	-4.94	123.96	-27399.46
52	2867.5	DEAD	4.93	123.94	-27399.46
52	3441.	DEAD	4.93	150.49	-22082.34
52	4014.5	DEAD	4.93	177.05	-6292.03
52	4588.	DEAD	4.93	203.6	19971.47
52	5161.5	DEAD	4.93	230.15	56708.17
52	5735.	DEAD	4.93	256.7	103918.06
52	0.	LIVE	0.	0.	0.
52	573.5	LIVE	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
52	1147.	LIVE	0.	0.	0.
52	1720.5	LIVE	0.	0.	0.
52	2294.	LIVE	0.	0.	0.
52	2867.5	LIVE	0.	0.	0.
52	2867.5	LIVE	0.	0.	0.
52	3441.	LIVE	0.	0.	0.
52	4014.5	LIVE	0.	0.	0.
52	4588.	LIVE	0.	0.	0.
52	5161.5	LIVE	0.	0.	0.
52	5735.	LIVE	0.	0.	0.
52	0.	WX	0.77	-875.7	-363127.2
52	573.5	WX	0.77	-785.24	-197979.75
52	1147.	WX	0.77	-694.78	-69541.83
52	1720.5	WX	0.77	-604.32	22186.55
52	2294.	WX	0.77	-513.86	77205.39
52	2867.5	WX	0.77	-423.41	95514.69
52	2867.5	WX	-0.74	-423.35	95514.7
52	3441.	WX	-0.74	-520.34	77130.22
52	4014.5	WX	-0.74	-617.33	22036.2
52	4588.	WX	-0.74	-714.32	-69767.35
52	5161.5	WX	-0.74	-811.31	-198280.44
52	5735.	WX	-0.74	-908.3	-363503.07
52	0.	WY	0.	0.	0.
52	573.5	WY	0.	0.	0.
52	1147.	WY	0.	0.	0.
52	1720.5	WY	0.	0.	0.
52	2294.	WY	0.	0.	0.
52	2867.5	WY	0.	0.	0.
52	2867.5	WY	0.	0.	0.
52	3441.	WY	0.	0.	0.
52	4014.5	WY	0.	0.	0.
52	4588.	WY	0.	0.	0.
52	5161.5	WY	0.	0.	0.
52	5735.	WY	0.	0.	0.
52	0.	TEMP	0.	0.	0.
52	573.5	TEMP	0.	0.	0.
52	1147.	TEMP	0.	0.	0.
52	1720.5	TEMP	0.	0.	0.
52	2294.	TEMP	0.	0.	0.
52	2867.5	TEMP	0.	0.	0.
52	2867.5	TEMP	0.	0.	0.
52	3441.	TEMP	0.	0.	0.
52	4014.5	TEMP	0.	0.	0.
52	4588.	TEMP	0.	0.	0.
52	5161.5	TEMP	0.	0.	0.
52	5735.	TEMP	0.	0.	0.
53	0.	DEAD	5.61	122.12	104800.55
53	573.5	DEAD	5.61	135.62	57596.4
53	1147.	DEAD	5.61	149.11	20865.44
53	1720.5	DEAD	5.61	162.6	-5392.32
53	2294.	DEAD	5.61	176.1	-21176.89
53	2867.5	DEAD	5.61	189.59	-26488.27
53	2867.5	DEAD	-5.6	189.57	-26488.27
53	3441.	DEAD	-5.6	177.55	-21168.05

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
53	4014.5	DEAD	-5.6	165.53	-5374.63
53	4588.	DEAD	-5.6	153.5	20891.98
53	5161.5	DEAD	-5.6	141.48	57631.78
53	5735.	DEAD	-5.6	129.46	104844.78
53	0.	LIVE	0.	0.	0.
53	573.5	LIVE	0.	0.	0.
53	1147.	LIVE	0.	0.	0.
53	1720.5	LIVE	0.	0.	0.
53	2294.	LIVE	0.	0.	0.
53	2867.5	LIVE	0.	0.	0.
53	2867.5	LIVE	0.	0.	0.
53	3441.	LIVE	0.	0.	0.
53	4014.5	LIVE	0.	0.	0.
53	4588.	LIVE	0.	0.	0.
53	5161.5	LIVE	0.	0.	0.
53	5735.	LIVE	0.	0.	0.
53	0.	WX	-0.98	-482.71	-366529.51
53	573.5	WX	-0.98	-512.24	-201346.39
53	1147.	WX	-0.98	-541.77	-72872.81
53	1720.5	WX	-0.98	-571.3	18891.23
53	2294.	WX	-0.98	-600.83	73945.73
53	2867.5	WX	-0.98	-630.36	92290.7
53	2867.5	WX	0.96	-630.29	92290.7
53	3441.	WX	0.96	-606.48	73914.86
53	4014.5	WX	0.96	-582.68	18829.48
53	4588.	WX	0.96	-558.87	-72965.43
53	5161.5	WX	0.96	-535.07	-201469.89
53	5735.	WX	0.96	-511.27	-366683.88
53	0.	WY	0.	0.	0.
53	573.5	WY	0.	0.	0.
53	1147.	WY	0.	0.	0.
53	1720.5	WY	0.	0.	0.
53	2294.	WY	0.	0.	0.
53	2867.5	WY	0.	0.	0.
53	2867.5	WY	0.	0.	0.
53	3441.	WY	0.	0.	0.
53	4014.5	WY	0.	0.	0.
53	4588.	WY	0.	0.	0.
53	5161.5	WY	0.	0.	0.
53	5735.	WY	0.	0.	0.
53	0.	TEMP	0.	0.	0.
53	573.5	TEMP	0.	0.	0.
53	1147.	TEMP	0.	0.	0.
53	1720.5	TEMP	0.	0.	0.
53	2294.	TEMP	0.	0.	0.
53	2867.5	TEMP	0.	0.	0.
53	2867.5	TEMP	0.	0.	0.
53	3441.	TEMP	0.	0.	0.
53	4014.5	TEMP	0.	0.	0.
53	4588.	TEMP	0.	0.	0.
53	5161.5	TEMP	0.	0.	0.
53	5735.	TEMP	0.	0.	0.
54	0.	DEAD	-10.31	118.14	103397.7
54	573.5	DEAD	-10.31	126.5	56219.59

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
54	1147.	DEAD	-10.31	134.85	19514.67
54	1720.5	DEAD	-10.31	143.21	-6717.05
54	2294.	DEAD	-10.31	151.56	-22475.58
54	2867.5	DEAD	-10.31	159.92	-27760.92
54	2867.5	DEAD	10.32	159.91	-27760.92
54	3441.	DEAD	10.32	158.82	-22490.53
54	4014.5	DEAD	10.32	157.72	-6746.95
54	4588.	DEAD	10.32	156.63	19469.82
54	5161.5	DEAD	10.32	155.54	56159.79
54	5735.	DEAD	10.32	154.45	103322.95
54	0.	LIVE	0.	0.	0.
54	573.5	LIVE	0.	0.	0.
54	1147.	LIVE	0.	0.	0.
54	1720.5	LIVE	0.	0.	0.
54	2294.	LIVE	0.	0.	0.
54	2867.5	LIVE	0.	0.	0.
54	2867.5	LIVE	0.	0.	0.
54	3441.	LIVE	0.	0.	0.
54	4014.5	LIVE	0.	0.	0.
54	4588.	LIVE	0.	0.	0.
54	5161.5	LIVE	0.	0.	0.
54	5735.	LIVE	0.	0.	0.
54	0.	WX	0.81	-372.73	-361946.81
54	573.5	WX	0.81	-412.73	-196727.58
54	1147.	WX	0.81	-452.73	-68217.9
54	1720.5	WX	0.81	-492.72	23582.24
54	2294.	WX	0.81	-532.72	78672.85
54	2867.5	WX	0.81	-572.72	97053.92
54	2867.5	WX	-0.82	-572.68	97053.92
54	3441.	WX	-0.82	-558.33	78725.16
54	4014.5	WX	-0.82	-543.98	23686.86
54	4588.	WX	-0.82	-529.63	-68060.97
54	5161.5	WX	-0.82	-515.28	-196518.34
54	5735.	WX	-0.82	-500.94	-361685.25
54	0.	WY	0.	0.	0.
54	573.5	WY	0.	0.	0.
54	1147.	WY	0.	0.	0.
54	1720.5	WY	0.	0.	0.
54	2294.	WY	0.	0.	0.
54	2867.5	WY	0.	0.	0.
54	2867.5	WY	0.	0.	0.
54	3441.	WY	0.	0.	0.
54	4014.5	WY	0.	0.	0.
54	4588.	WY	0.	0.	0.
54	5161.5	WY	0.	0.	0.
54	5735.	WY	0.	0.	0.
54	0.	TEMP	0.	0.	0.
54	573.5	TEMP	0.	0.	0.
54	1147.	TEMP	0.	0.	0.
54	1720.5	TEMP	0.	0.	0.
54	2294.	TEMP	0.	0.	0.
54	2867.5	TEMP	0.	0.	0.
54	2867.5	TEMP	0.	0.	0.
54	3441.	TEMP	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
54	4014.5	TEMP	0.	0.	0.
54	4588.	TEMP	0.	0.	0.
54	5161.5	TEMP	0.	0.	0.
54	5735.	TEMP	0.	0.	0.
57	0.	DEAD	51.06	664.32	9.37
57	951.38	DEAD	51.06	1.47	-72325.24
57	951.38	DEAD	-102.51	-30.38	-46502.9
57	1400.	DEAD	-102.51	-944.42	-5731.71
57	1400.	DEAD	1.34	-191.61	-5737.33
57	2300.	DEAD	1.34	1687.51	6762.8
57	2300.	DEAD	0.31	-469.75	3663.75
57	3050.41	DEAD	0.31	-884.43	4634.16
57	3700.	DEAD	0.31	-1243.4	2828.42
57	3700.	DEAD	-1.92	2593.39	652.42
57	4600.	DEAD	-1.92	-1089.11	-2760.66
57	4600.	DEAD	82.31	-218.62	-2754.
57	5149.45	DEAD	82.31	344.39	-47307.75
57	5149.45	DEAD	-50.23	358.57	-72326.5
57	6100.82	DEAD	-50.23	-739.56	11.29
57	0.	LIVE	0.	0.	0.
57	951.38	LIVE	0.	0.	0.
57	951.38	LIVE	0.	0.	0.
57	1400.	LIVE	0.	0.	0.
57	1400.	LIVE	0.	0.	0.
57	2300.	LIVE	0.	0.	0.
57	2300.	LIVE	0.	0.	0.
57	3050.41	LIVE	0.	0.	0.
57	3700.	LIVE	0.	0.	0.
57	3700.	LIVE	0.	0.	0.
57	4600.	LIVE	0.	0.	0.
57	4600.	LIVE	0.	0.	0.
57	5149.45	LIVE	0.	0.	0.
57	5149.45	LIVE	0.	0.	0.
57	6100.82	LIVE	0.	0.	0.
57	0.	WX	-188.74	-2587.4	2.53
57	951.38	WX	-188.74	1346.09	244152.26
57	951.38	WX	379.35	1465.97	158013.43
57	1400.	WX	379.35	2319.11	21009.25
57	1400.	WX	-4.63	-71.08	21010.29
57	2300.	WX	-4.63	-5850.	-23634.86
57	2300.	WX	-1.07	1681.13	-14264.1
57	3050.41	WX	-1.07	3131.26	-14079.91
57	3700.	WX	-1.07	4386.55	-13920.47
57	3700.	WX	6.65	-9019.98	-4537.53
57	4600.	WX	6.65	3267.71	11194.9
57	4600.	WX	-309.8	42.78	11193.85
57	5149.45	WX	-309.8	-201.53	161347.9
57	5149.45	WX	188.62	-253.64	244151.14
57	6100.82	WX	188.62	2384.77	2.38
57	0.	WY	0.	0.	0.
57	951.38	WY	0.	0.	0.
57	951.38	WY	0.	0.	0.
57	1400.	WY	0.	0.	0.
57	1400.	WY	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
57	2300.	WY	0.	0.	0.
57	2300.	WY	0.	0.	0.
57	3050.41	WY	0.	0.	0.
57	3700.	WY	0.	0.	0.
57	3700.	WY	0.	0.	0.
57	4600.	WY	0.	0.	0.
57	4600.	WY	0.	0.	0.
57	5149.45	WY	0.	0.	0.
57	5149.45	WY	0.	0.	0.
57	6100.82	WY	0.	0.	0.
57	0.	TEMP	0.	0.	0.
57	951.38	TEMP	0.	0.	0.
57	951.38	TEMP	0.	0.	0.
57	1400.	TEMP	0.	0.	0.
57	1400.	TEMP	0.	0.	0.
57	2300.	TEMP	0.	0.	0.
57	2300.	TEMP	0.	0.	0.
57	3050.41	TEMP	0.	0.	0.
57	3700.	TEMP	0.	0.	0.
57	3700.	TEMP	0.	0.	0.
57	4600.	TEMP	0.	0.	0.
57	4600.	TEMP	0.	0.	0.
57	5149.45	TEMP	0.	0.	0.
57	5149.45	TEMP	0.	0.	0.
57	6100.82	TEMP	0.	0.	0.
58	0.	DEAD	13.17	153.66	103350.77
58	573.5	DEAD	13.17	55.82	45851.37
58	1147.	DEAD	13.17	-42.02	-1174.83
58	1720.5	DEAD	13.17	-139.86	-37727.84
58	2294.	DEAD	13.17	-237.7	-63807.66
58	2867.5	DEAD	13.17	-335.54	-79414.28
58	2867.5	DEAD	-11.29	-335.55	-79414.4
58	3441.	DEAD	-11.29	-415.59	-84459.93
58	4014.5	DEAD	-11.29	-495.64	-79032.26
58	4588.	DEAD	-11.29	-575.69	-63131.39
58	5161.5	DEAD	-11.29	-655.74	-36757.33
58	5735.	DEAD	-11.29	-735.79	89.92
58	0.	LIVE	0.	0.	0.
58	573.5	LIVE	0.	0.	0.
58	1147.	LIVE	0.	0.	0.
58	1720.5	LIVE	0.	0.	0.
58	2294.	LIVE	0.	0.	0.
58	2867.5	LIVE	0.	0.	0.
58	2867.5	LIVE	0.	0.	0.
58	3441.	LIVE	0.	0.	0.
58	4014.5	LIVE	0.	0.	0.
58	4588.	LIVE	0.	0.	0.
58	5161.5	LIVE	0.	0.	0.
58	5735.	LIVE	0.	0.	0.
58	0.	WX	-4.26	-507.09	-361748.08
58	573.5	WX	-4.26	-163.13	-160415.41
58	1147.	WX	-4.26	180.83	4207.73
58	1720.5	WX	-4.26	524.78	132121.33
58	2294.	WX	-4.26	868.74	223325.4

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
58	2867.5	WX	-4.26	1212.7	277819.92
58	2867.5	WX	-2.38	1212.73	277820.36
58	3441.	WX	-2.38	1444.42	295612.05
58	4014.5	WX	-2.38	1676.11	276694.2
58	4588.	WX	-2.38	1907.8	221066.82
58	5161.5	WX	-2.38	2139.49	128729.9
58	5735.	WX	-2.38	2371.18	-316.56
58	0.	WY	0.	0.	0.
58	573.5	WY	0.	0.	0.
58	1147.	WY	0.	0.	0.
58	1720.5	WY	0.	0.	0.
58	2294.	WY	0.	0.	0.
58	2867.5	WY	0.	0.	0.
58	2867.5	WY	0.	0.	0.
58	3441.	WY	0.	0.	0.
58	4014.5	WY	0.	0.	0.
58	4588.	WY	0.	0.	0.
58	5161.5	WY	0.	0.	0.
58	5735.	WY	0.	0.	0.
58	0.	TEMP	0.	0.	0.
58	573.5	TEMP	0.	0.	0.
58	1147.	TEMP	0.	0.	0.
58	1720.5	TEMP	0.	0.	0.
58	2294.	TEMP	0.	0.	0.
58	2867.5	TEMP	0.	0.	0.
58	2867.5	TEMP	0.	0.	0.
58	3441.	TEMP	0.	0.	0.
58	4014.5	TEMP	0.	0.	0.
58	4588.	TEMP	0.	0.	0.
58	5161.5	TEMP	0.	0.	0.
58	5735.	TEMP	0.	0.	0.
59	0.	DEAD	-6.81	111.26	104842.61
59	573.5	DEAD	-6.81	31.64	47159.05
59	1147.	DEAD	-6.81	-47.97	-51.33
59	1720.5	DEAD	-6.81	-127.58	-36788.51
59	2294.	DEAD	-6.81	-207.2	-63052.5
59	2867.5	DEAD	-6.81	-286.81	-78843.29
59	2867.5	DEAD	6.67	-286.83	-78843.13
59	3441.	DEAD	6.67	-402.41	-83994.7
59	4014.5	DEAD	6.67	-517.98	-78673.09
59	4588.	DEAD	6.67	-633.56	-62878.28
59	5161.5	DEAD	6.67	-749.13	-36610.28
59	5735.	DEAD	6.67	-864.71	130.91
59	0.	LIVE	0.	0.	0.
59	573.5	LIVE	0.	0.	0.
59	1147.	LIVE	0.	0.	0.
59	1720.5	LIVE	0.	0.	0.
59	2294.	LIVE	0.	0.	0.
59	2867.5	LIVE	0.	0.	0.
59	2867.5	LIVE	0.	0.	0.
59	3441.	LIVE	0.	0.	0.
59	4014.5	LIVE	0.	0.	0.
59	4588.	LIVE	0.	0.	0.
59	5161.5	LIVE	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
59	5735.	LIVE	0.	0.	0.
59	0.	WX	1.55	-396.06	-366630.22
59	573.5	WX	1.55	-126.1	-164817.91
59	1147.	WX	1.55	143.86	284.86
59	1720.5	WX	1.55	413.81	128678.09
59	2294.	WX	1.55	683.77	220361.79
59	2867.5	WX	1.55	953.72	275335.94
59	2867.5	WX	-1.06	953.75	275335.36
59	3441.	WX	-1.06	1403.65	293589.49
59	4014.5	WX	-1.06	1853.55	275134.08
59	4588.	WX	-1.06	2303.45	219969.13
59	5161.5	WX	-1.06	2753.35	128094.65
59	5735.	WX	-1.06	3203.25	-489.38
59	0.	WY	0.	0.	0.
59	573.5	WY	0.	0.	0.
59	1147.	WY	0.	0.	0.
59	1720.5	WY	0.	0.	0.
59	2294.	WY	0.	0.	0.
59	2867.5	WY	0.	0.	0.
59	2867.5	WY	0.	0.	0.
59	3441.	WY	0.	0.	0.
59	4014.5	WY	0.	0.	0.
59	4588.	WY	0.	0.	0.
59	5161.5	WY	0.	0.	0.
59	5735.	WY	0.	0.	0.
59	0.	TEMP	0.	0.	0.
59	573.5	TEMP	0.	0.	0.
59	1147.	TEMP	0.	0.	0.
59	1720.5	TEMP	0.	0.	0.
59	2294.	TEMP	0.	0.	0.
59	2867.5	TEMP	0.	0.	0.
59	2867.5	TEMP	0.	0.	0.
59	3441.	TEMP	0.	0.	0.
59	4014.5	TEMP	0.	0.	0.
59	4588.	TEMP	0.	0.	0.
59	5161.5	TEMP	0.	0.	0.
59	5735.	TEMP	0.	0.	0.
60	0.	DEAD	4.8	372.11	104658.45
60	573.5	DEAD	4.8	198.43	47317.57
60	1147.	DEAD	4.8	24.76	449.88
60	1720.5	DEAD	4.8	-148.92	-35944.61
60	2294.	DEAD	4.8	-322.6	-61865.9
60	2867.5	DEAD	4.8	-496.27	-77314.01
60	2867.5	DEAD	-4.89	-496.35	-77314.05
60	3441.	DEAD	-4.89	-440.73	-82159.74
60	4014.5	DEAD	-4.89	-385.1	-76532.24
60	4588.	DEAD	-4.89	-329.47	-60431.55
60	5161.5	DEAD	-4.89	-273.84	-33857.66
60	5735.	DEAD	-4.89	-218.21	3189.42
60	0.	LIVE	0.	0.	0.
60	573.5	LIVE	0.	0.	0.
60	1147.	LIVE	0.	0.	0.
60	1720.5	LIVE	0.	0.	0.
60	2294.	LIVE	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
60	2867.5	LIVE	0.	0.	0.
60	2867.5	LIVE	0.	0.	0.
60	3441.	LIVE	0.	0.	0.
60	4014.5	LIVE	0.	0.	0.
60	4588.	LIVE	0.	0.	0.
60	5161.5	LIVE	0.	0.	0.
60	5735.	LIVE	0.	0.	0.
60	0.	WX	0.4	-1297.57	-366105.35
60	573.5	WX	0.4	-691.78	-165438.05
60	1147.	WX	0.4	-86.	-1480.3
60	1720.5	WX	0.4	519.79	125767.92
60	2294.	WX	0.4	1125.57	216306.6
60	2867.5	WX	0.4	1731.36	270135.75
60	2867.5	WX	-9.683E-02	1731.6	270135.9
60	3441.	WX	-9.683E-02	1536.49	287298.37
60	4014.5	WX	-9.683E-02	1341.39	267751.3
60	4588.	WX	-9.683E-02	1146.28	211494.7
60	5161.5	WX	-9.683E-02	951.18	118528.56
60	5735.	WX	-9.683E-02	756.08	-11147.12
60	0.	WY	0.	0.	0.
60	573.5	WY	0.	0.	0.
60	1147.	WY	0.	0.	0.
60	1720.5	WY	0.	0.	0.
60	2294.	WY	0.	0.	0.
60	2867.5	WY	0.	0.	0.
60	2867.5	WY	0.	0.	0.
60	3441.	WY	0.	0.	0.
60	4014.5	WY	0.	0.	0.
60	4588.	WY	0.	0.	0.
60	5161.5	WY	0.	0.	0.
60	5735.	WY	0.	0.	0.
60	0.	TEMP	0.	0.	0.
60	573.5	TEMP	0.	0.	0.
60	1147.	TEMP	0.	0.	0.
60	1720.5	TEMP	0.	0.	0.
60	2294.	TEMP	0.	0.	0.
60	2867.5	TEMP	0.	0.	0.
60	2867.5	TEMP	0.	0.	0.
60	3441.	TEMP	0.	0.	0.
60	4014.5	TEMP	0.	0.	0.
60	4588.	TEMP	0.	0.	0.
60	5161.5	TEMP	0.	0.	0.
60	5735.	TEMP	0.	0.	0.
61	0.	DEAD	-4.58	-81.53	104712.53
61	573.5	DEAD	-4.58	-82.41	47292.81
61	1147.	DEAD	-4.58	-83.28	346.29
61	1720.5	DEAD	-4.58	-84.16	-36127.05
61	2294.	DEAD	-4.58	-85.03	-62127.19
61	2867.5	DEAD	-4.58	-85.91	-77654.13
61	2867.5	DEAD	4.72	-85.82	-77654.17
61	3441.	DEAD	4.72	-335.75	-82550.36
61	4014.5	DEAD	4.72	-585.68	-76973.36
61	4588.	DEAD	4.72	-835.6	-60923.17
61	5161.5	DEAD	4.72	-1085.53	-34399.78

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
61	5735.	DEAD	4.72	-1335.46	2596.8
61	0.	LIVE	0.	0.	0.
61	573.5	LIVE	0.	0.	0.
61	1147.	LIVE	0.	0.	0.
61	1720.5	LIVE	0.	0.	0.
61	2294.	LIVE	0.	0.	0.
61	2867.5	LIVE	0.	0.	0.
61	2867.5	LIVE	0.	0.	0.
61	3441.	LIVE	0.	0.	0.
61	4014.5	LIVE	0.	0.	0.
61	4588.	LIVE	0.	0.	0.
61	5161.5	LIVE	0.	0.	0.
61	5735.	LIVE	0.	0.	0.
61	0.	WX	-0.48	278.77	-366270.26
61	573.5	WX	-0.48	283.33	-165336.34
61	1147.	WX	-0.48	287.89	-1111.95
61	1720.5	WX	-0.48	292.46	126402.91
61	2294.	WX	-0.48	297.02	217208.22
61	2867.5	WX	-0.48	301.59	271304.
61	2867.5	WX	-3.186E-02	301.33	271304.12
61	3441.	WX	-3.186E-02	1179.25	288645.21
61	4014.5	WX	-3.186E-02	2057.16	269276.77
61	4588.	WX	-3.186E-02	2935.08	213198.79
61	5161.5	WX	-3.186E-02	3812.99	120411.27
61	5735.	WX	-3.186E-02	4690.91	-9085.79
61	0.	WY	0.	0.	0.
61	573.5	WY	0.	0.	0.
61	1147.	WY	0.	0.	0.
61	1720.5	WY	0.	0.	0.
61	2294.	WY	0.	0.	0.
61	2867.5	WY	0.	0.	0.
61	2867.5	WY	0.	0.	0.
61	3441.	WY	0.	0.	0.
61	4014.5	WY	0.	0.	0.
61	4588.	WY	0.	0.	0.
61	5161.5	WY	0.	0.	0.
61	5735.	WY	0.	0.	0.
61	0.	TEMP	0.	0.	0.
61	573.5	TEMP	0.	0.	0.
61	1147.	TEMP	0.	0.	0.
61	1720.5	TEMP	0.	0.	0.
61	2294.	TEMP	0.	0.	0.
61	2867.5	TEMP	0.	0.	0.
61	2867.5	TEMP	0.	0.	0.
61	3441.	TEMP	0.	0.	0.
61	4014.5	TEMP	0.	0.	0.
61	4588.	TEMP	0.	0.	0.
61	5161.5	TEMP	0.	0.	0.
61	5735.	TEMP	0.	0.	0.
62	0.	DEAD	5.7	154.42	104880.42
62	573.5	DEAD	5.7	60.87	47199.9
62	1147.	DEAD	5.7	-32.67	-7.42
62	1720.5	DEAD	5.7	-126.22	-36741.55
62	2294.	DEAD	5.7	-219.77	-63002.49

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
62	2867.5	DEAD	5.7	-313.31	-78790.23
62	2867.5	DEAD	-5.62	-313.29	-78790.06
62	3441.	DEAD	-5.62	-399.86	-83949.6
62	4014.5	DEAD	-5.62	-486.43	-78635.95
62	4588.	DEAD	-5.62	-573.	-62849.1
62	5161.5	DEAD	-5.62	-659.57	-36589.06
62	5735.	DEAD	-5.62	-746.13	144.18
62	0.	LIVE	0.	0.	0.
62	573.5	LIVE	0.	0.	0.
62	1147.	LIVE	0.	0.	0.
62	1720.5	LIVE	0.	0.	0.
62	2294.	LIVE	0.	0.	0.
62	2867.5	LIVE	0.	0.	0.
62	2867.5	LIVE	0.	0.	0.
62	3441.	LIVE	0.	0.	0.
62	4014.5	LIVE	0.	0.	0.
62	4588.	LIVE	0.	0.	0.
62	5161.5	LIVE	0.	0.	0.
62	5735.	LIVE	0.	0.	0.
62	0.	WX	-1.3	-542.53	-366811.65
62	573.5	WX	-1.3	-201.75	-164990.06
62	1147.	WX	-1.3	139.03	122.
62	1720.5	WX	-1.3	479.81	128524.51
62	2294.	WX	-1.3	820.59	220217.49
62	2867.5	WX	-1.3	1161.37	275200.94
62	2867.5	WX	1.04	1161.36	275200.34
62	3441.	WX	1.04	1402.31	293476.96
62	4014.5	WX	1.04	1643.25	275044.05
62	4588.	WX	1.04	1884.2	219901.59
62	5161.5	WX	1.04	2125.14	128049.6
62	5735.	WX	1.04	2366.09	-511.93
62	0.	WY	0.	0.	0.
62	573.5	WY	0.	0.	0.
62	1147.	WY	0.	0.	0.
62	1720.5	WY	0.	0.	0.
62	2294.	WY	0.	0.	0.
62	2867.5	WY	0.	0.	0.
62	2867.5	WY	0.	0.	0.
62	3441.	WY	0.	0.	0.
62	4014.5	WY	0.	0.	0.
62	4588.	WY	0.	0.	0.
62	5161.5	WY	0.	0.	0.
62	5735.	WY	0.	0.	0.
62	0.	TEMP	0.	0.	0.
62	573.5	TEMP	0.	0.	0.
62	1147.	TEMP	0.	0.	0.
62	1720.5	TEMP	0.	0.	0.
62	2294.	TEMP	0.	0.	0.
62	2867.5	TEMP	0.	0.	0.
62	2867.5	TEMP	0.	0.	0.
62	3441.	TEMP	0.	0.	0.
62	4014.5	TEMP	0.	0.	0.
62	4588.	TEMP	0.	0.	0.
62	5161.5	TEMP	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
62	5735.	TEMP	0.	0.	0.
63	0.	DEAD	-11.23	131.7	103339.83
63	573.5	DEAD	-11.23	37.	45844.77
63	1147.	DEAD	-11.23	-57.69	-1177.09
63	1720.5	DEAD	-11.23	-152.39	-37725.76
63	2294.	DEAD	-11.23	-247.09	-63801.24
63	2867.5	DEAD	-11.23	-341.79	-79403.52
63	2867.5	DEAD	9.37	-341.82	-79403.65
63	3441.	DEAD	9.37	-405.58	-84451.97
63	4014.5	DEAD	9.37	-469.34	-79027.09
63	4588.	DEAD	9.37	-533.1	-63129.02
63	5161.5	DEAD	9.37	-596.86	-36757.76
63	5735.	DEAD	9.37	-660.61	86.7
63	0.	LIVE	0.	0.	0.
63	573.5	LIVE	0.	0.	0.
63	1147.	LIVE	0.	0.	0.
63	1720.5	LIVE	0.	0.	0.
63	2294.	LIVE	0.	0.	0.
63	2867.5	LIVE	0.	0.	0.
63	2867.5	LIVE	0.	0.	0.
63	3441.	LIVE	0.	0.	0.
63	4014.5	LIVE	0.	0.	0.
63	4588.	LIVE	0.	0.	0.
63	5161.5	LIVE	0.	0.	0.
63	5735.	LIVE	0.	0.	0.
63	0.	WX	4.01	-484.52	-361740.93
63	573.5	WX	4.01	-158.58	-160408.4
63	1147.	WX	4.01	167.37	4214.6
63	1720.5	WX	4.01	493.32	132128.05
63	2294.	WX	4.01	819.27	223331.97
63	2867.5	WX	4.01	1145.22	277826.35
63	2867.5	WX	2.53	1145.31	277826.81
63	3441.	WX	2.53	1430.95	295615.01
63	4014.5	WX	2.53	1716.59	276693.67
63	4588.	WX	2.53	2002.23	221062.8
63	5161.5	WX	2.53	2287.87	128722.38
63	5735.	WX	2.53	2573.51	-327.57
63	0.	WY	0.	0.	0.
63	573.5	WY	0.	0.	0.
63	1147.	WY	0.	0.	0.
63	1720.5	WY	0.	0.	0.
63	2294.	WY	0.	0.	0.
63	2867.5	WY	0.	0.	0.
63	2867.5	WY	0.	0.	0.
63	3441.	WY	0.	0.	0.
63	4014.5	WY	0.	0.	0.
63	4588.	WY	0.	0.	0.
63	5161.5	WY	0.	0.	0.
63	5735.	WY	0.	0.	0.
63	0.	TEMP	0.	0.	0.
63	573.5	TEMP	0.	0.	0.
63	1147.	TEMP	0.	0.	0.
63	1720.5	TEMP	0.	0.	0.
63	2294.	TEMP	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
63	2867.5	TEMP	0.	0.	0.
63	2867.5	TEMP	0.	0.	0.
63	3441.	TEMP	0.	0.	0.
63	4014.5	TEMP	0.	0.	0.
63	4588.	TEMP	0.	0.	0.
63	5161.5	TEMP	0.	0.	0.
63	5735.	TEMP	0.	0.	0.
64	0.	DEAD	3.751E-02	-2.691E-02	-25.5
64	450.	DEAD	3.751E-02	1.369E-02	-1.22
64	900.	DEAD	3.751E-02	5.430E-02	-21.82
64	0.	LIVE	0.	0.	0.
64	450.	LIVE	0.	0.	0.
64	900.	LIVE	0.	0.	0.
64	0.	WX	-0.13	2.871E-02	2.04
64	450.	WX	-0.13	-5.841E-02	0.92
64	900.	WX	-0.13	-0.15	-0.19
64	0.	WY	0.	0.	0.
64	450.	WY	0.	0.	0.
64	900.	WY	0.	0.	0.
64	0.	TEMP	0.	0.	0.
64	450.	TEMP	0.	0.	0.
64	900.	TEMP	0.	0.	0.
65	0.	DEAD	4.607E-04	-7.916E-03	-31.11
65	700.	DEAD	4.607E-04	-1.631E-02	23.38
65	1400.	DEAD	4.607E-04	-2.469E-02	-30.73
65	0.	LIVE	0.	0.	0.
65	700.	LIVE	0.	0.	0.
65	1400.	LIVE	0.	0.	0.
65	0.	WX	-2.166E-03	2.950E-02	-0.68
65	700.	WX	-2.166E-03	5.811E-02	-0.23
65	1400.	WX	-2.166E-03	8.671E-02	0.22
65	0.	WY	0.	0.	0.
65	700.	WY	0.	0.	0.
65	1400.	WY	0.	0.	0.
65	0.	TEMP	0.	0.	0.
65	700.	TEMP	0.	0.	0.
65	1400.	TEMP	0.	0.	0.
66	0.	DEAD	-4.111E-02	7.639E-02	-21.02
66	450.	DEAD	-4.111E-02	1.584E-02	-2.24
66	900.	DEAD	-4.111E-02	-4.470E-02	-28.34
66	0.	LIVE	0.	0.	0.
66	450.	LIVE	0.	0.	0.
66	900.	LIVE	0.	0.	0.
66	0.	WX	0.14	-0.23	0.67
66	450.	WX	0.14	-6.412E-02	0.82
66	900.	WX	0.14	0.1	0.97
66	0.	WY	0.	0.	0.
66	450.	WY	0.	0.	0.
66	900.	WY	0.	0.	0.
66	0.	TEMP	0.	0.	0.
66	450.	TEMP	0.	0.	0.
66	900.	TEMP	0.	0.	0.
67	0.	DEAD	0.13	-6.587E-03	-41.83
67	750.41	DEAD	0.13	-2.404E-03	29.25

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
67	1500.82	DEAD	0.13	1.780E-03	-24.45
67	0.	LIVE	0.	0.	0.
67	750.41	LIVE	0.	0.	0.
67	1500.82	LIVE	0.	0.	0.
67	0.	WX	-0.45	2.832E-02	3.61
67	750.41	WX	-0.45	1.893E-02	2.74
67	1500.82	WX	-0.45	9.541E-03	1.86
67	0.	WY	0.	0.	0.
67	750.41	WY	0.	0.	0.
67	1500.82	WY	0.	0.	0.
67	0.	TEMP	0.	0.	0.
67	750.41	TEMP	0.	0.	0.
67	1500.82	TEMP	0.	0.	0.
68	0.	DEAD	1.95	0.18	-3732.01
68	3553.66	DEAD	1.95	1.021E-02	1867.08
68	7107.32	DEAD	1.95	-0.16	-3738.57
68	0.	LIVE	0.	0.	0.
68	3553.66	LIVE	0.	0.	0.
68	7107.32	LIVE	0.	0.	0.
68	0.	WX	-5.33	-0.37	-0.99
68	3553.66	WX	-5.33	2.256E-02	3.71
68	7107.32	WX	-5.33	0.41	8.41
68	0.	WY	0.	0.	0.
68	3553.66	WY	0.	0.	0.
68	7107.32	WY	0.	0.	0.
68	0.	TEMP	0.	0.	0.
68	3553.66	TEMP	0.	0.	0.
68	7107.32	TEMP	0.	0.	0.
69	0.	DEAD	-2.02	0.23	-3732.37
69	3553.66	DEAD	-2.02	3.049E-03	1866.82
69	7107.32	DEAD	-2.02	-0.22	-3738.74
69	0.	LIVE	0.	0.	0.
69	3553.66	LIVE	0.	0.	0.
69	7107.32	LIVE	0.	0.	0.
69	0.	WX	5.92	-0.29	-1.67
69	3553.66	WX	5.92	0.14	4.14
69	7107.32	WX	5.92	0.58	9.95
69	0.	WY	0.	0.	0.
69	3553.66	WY	0.	0.	0.
69	7107.32	WY	0.	0.	0.
69	0.	TEMP	0.	0.	0.
69	3553.66	TEMP	0.	0.	0.
69	7107.32	TEMP	0.	0.	0.
72	0.	DEAD	-51.05	-631.74	9.39
72	951.38	DEAD	-51.05	-156.25	-72313.18
72	951.38	DEAD	102.78	-125.52	-45311.93
72	1400.	DEAD	102.78	1071.87	-6656.38
72	1400.	DEAD	-1.32	290.93	-6661.97
72	2300.	DEAD	-1.32	-1676.38	1586.85
72	2300.	DEAD	-0.41	468.29	3667.83
72	3050.41	DEAD	-0.41	885.04	4397.32
72	3700.	DEAD	-0.41	1245.79	2383.04
72	3700.	DEAD	1.94	-2606.92	5753.25
72	4600.	DEAD	1.94	991.86	-1535.54

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
72	4600.	DEAD	-82.55	93.81	-1528.85
72	5149.45	DEAD	-82.55	-188.48	-48444.01
72	5149.45	DEAD	50.49	-204.23	-72337.85
72	6100.82	DEAD	50.49	705.46	11.27
72	0.	LIVE	0.	0.	0.
72	951.38	LIVE	0.	0.	0.
72	951.38	LIVE	0.	0.	0.
72	1400.	LIVE	0.	0.	0.
72	1400.	LIVE	0.	0.	0.
72	2300.	LIVE	0.	0.	0.
72	2300.	LIVE	0.	0.	0.
72	3050.41	LIVE	0.	0.	0.
72	3700.	LIVE	0.	0.	0.
72	3700.	LIVE	0.	0.	0.
72	4600.	LIVE	0.	0.	0.
72	4600.	LIVE	0.	0.	0.
72	5149.45	LIVE	0.	0.	0.
72	5149.45	LIVE	0.	0.	0.
72	6100.82	LIVE	0.	0.	0.
72	0.	WX	188.93	2475.19	2.45
72	951.38	WX	188.93	-803.46	244110.15
72	951.38	WX	-380.75	-918.94	153849.65
72	1400.	WX	-380.75	-2769.29	24243.71
72	1400.	WX	4.53	-278.5	24244.66
72	2300.	WX	4.53	5798.14	-5533.83
72	2300.	WX	1.42	-1679.31	-14279.
72	3050.41	WX	1.42	-3133.74	-13250.83
72	3700.	WX	1.42	-4392.75	-12360.8
72	3700.	WX	-6.71	9082.32	-22377.67
72	4600.	WX	-6.71	-2925.19	6909.
72	4600.	WX	310.93	398.5	6907.87
72	5149.45	WX	310.93	-345.65	165320.36
72	5149.45	WX	-189.71	-287.79	244190.91
72	6100.82	WX	-189.71	-2267.39	2.45
72	0.	WY	0.	0.	0.
72	951.38	WY	0.	0.	0.
72	951.38	WY	0.	0.	0.
72	1400.	WY	0.	0.	0.
72	1400.	WY	0.	0.	0.
72	2300.	WY	0.	0.	0.
72	2300.	WY	0.	0.	0.
72	3050.41	WY	0.	0.	0.
72	3700.	WY	0.	0.	0.
72	3700.	WY	0.	0.	0.
72	4600.	WY	0.	0.	0.
72	4600.	WY	0.	0.	0.
72	5149.45	WY	0.	0.	0.
72	5149.45	WY	0.	0.	0.
72	6100.82	WY	0.	0.	0.
72	0.	TEMP	0.	0.	0.
72	951.38	TEMP	0.	0.	0.
72	951.38	TEMP	0.	0.	0.
72	1400.	TEMP	0.	0.	0.
72	1400.	TEMP	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
72	2300.	TEMP	0.	0.	0.
72	2300.	TEMP	0.	0.	0.
72	3050.41	TEMP	0.	0.	0.
72	3700.	TEMP	0.	0.	0.
72	3700.	TEMP	0.	0.	0.
72	4600.	TEMP	0.	0.	0.
72	4600.	TEMP	0.	0.	0.
72	5149.45	TEMP	0.	0.	0.
72	5149.45	TEMP	0.	0.	0.
72	6100.82	TEMP	0.	0.	0.
76	0.	DEAD	15.5	-31.82	21.52
76	951.38	DEAD	15.5	128.35	-193370.85
76	951.38	DEAD	-35.7	115.83	-122637.19
76	1400.	DEAD	-35.7	-287.89	-16221.4
76	1400.	DEAD	0.96	-293.37	-16232.72
76	2300.	DEAD	0.96	636.08	12950.23
76	2300.	DEAD	0.14	-187.65	11474.39
76	3050.41	DEAD	0.14	-205.42	11038.28
76	3700.	DEAD	0.14	-220.81	8015.
76	3700.	DEAD	-1.19	582.83	7874.5
76	4600.	DEAD	-1.19	-150.59	-6219.98
76	4600.	DEAD	29.19	-11.44	-6206.57
76	5149.45	DEAD	29.19	-155.81	-127512.47
76	5149.45	DEAD	-15.44	-153.11	-193333.03
76	6100.82	DEAD	-15.44	54.96	25.43
76	0.	LIVE	0.	0.	0.
76	951.38	LIVE	0.	0.	0.
76	951.38	LIVE	0.	0.	0.
76	1400.	LIVE	0.	0.	0.
76	1400.	LIVE	0.	0.	0.
76	2300.	LIVE	0.	0.	0.
76	2300.	LIVE	0.	0.	0.
76	3050.41	LIVE	0.	0.	0.
76	3700.	LIVE	0.	0.	0.
76	3700.	LIVE	0.	0.	0.
76	4600.	LIVE	0.	0.	0.
76	4600.	LIVE	0.	0.	0.
76	5149.45	LIVE	0.	0.	0.
76	5149.45	LIVE	0.	0.	0.
76	6100.82	LIVE	0.	0.	0.
76	0.	WX	-54.07	177.16	-4.76
76	951.38	WX	-54.07	-679.03	668063.19
76	951.38	WX	124.52	-634.87	427949.6
76	1400.	WX	124.52	1133.86	59998.95
76	1400.	WX	-3.36	1103.08	60001.29
76	2300.	WX	-3.36	-2214.05	-45518.71
76	2300.	WX	-0.49	672.	-41767.35
76	3050.41	WX	-0.49	720.81	-37093.49
76	3700.	WX	-0.49	763.07	-33047.59
76	3700.	WX	4.14	-2032.03	-30830.37
76	4600.	WX	4.14	641.21	25409.48
76	4600.	WX	-101.85	229.01	25407.11
76	5149.45	WX	-101.85	279.13	446015.74
76	5149.45	WX	53.88	269.87	667901.59

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
76	6100.82	WX	53.88	-115.9	-5.33
76	0.	WY	0.	0.	0.
76	951.38	WY	0.	0.	0.
76	951.38	WY	0.	0.	0.
76	1400.	WY	0.	0.	0.
76	1400.	WY	0.	0.	0.
76	2300.	WY	0.	0.	0.
76	2300.	WY	0.	0.	0.
76	3050.41	WY	0.	0.	0.
76	3700.	WY	0.	0.	0.
76	3700.	WY	0.	0.	0.
76	4600.	WY	0.	0.	0.
76	4600.	WY	0.	0.	0.
76	5149.45	WY	0.	0.	0.
76	5149.45	WY	0.	0.	0.
76	6100.82	WY	0.	0.	0.
76	0.	TEMP	0.	0.	0.
76	951.38	TEMP	0.	0.	0.
76	951.38	TEMP	0.	0.	0.
76	1400.	TEMP	0.	0.	0.
76	1400.	TEMP	0.	0.	0.
76	2300.	TEMP	0.	0.	0.
76	2300.	TEMP	0.	0.	0.
76	3050.41	TEMP	0.	0.	0.
76	3700.	TEMP	0.	0.	0.
76	3700.	TEMP	0.	0.	0.
76	4600.	TEMP	0.	0.	0.
76	4600.	TEMP	0.	0.	0.
76	5149.45	TEMP	0.	0.	0.
76	5149.45	TEMP	0.	0.	0.
76	6100.82	TEMP	0.	0.	0.
88	0.	DEAD	-15.63	-23.63	21.54
88	951.38	DEAD	-15.63	3.54	-193334.67
88	951.38	DEAD	35.99	12.82	-122311.
88	1400.	DEAD	35.99	177.83	-16359.17
88	1400.	DEAD	-0.94	200.84	-16370.47
88	2300.	DEAD	-0.94	-550.85	11860.65
88	2300.	DEAD	-0.17	185.12	12061.9
88	3050.41	DEAD	-0.17	205.77	10941.02
88	3700.	DEAD	-0.17	223.63	7324.98
88	3700.	DEAD	1.21	-667.87	8977.12
88	4600.	DEAD	1.21	237.77	-5995.08
88	4600.	DEAD	-29.43	112.72	-5981.65
88	5149.45	DEAD	-29.43	30.41	-127809.16
88	5149.45	DEAD	15.6	23.4	-193366.92
88	6100.82	DEAD	15.6	3.77	25.42
88	0.	LIVE	0.	0.	0.
88	951.38	LIVE	0.	0.	0.
88	951.38	LIVE	0.	0.	0.
88	1400.	LIVE	0.	0.	0.
88	1400.	LIVE	0.	0.	0.
88	2300.	LIVE	0.	0.	0.
88	2300.	LIVE	0.	0.	0.
88	3050.41	LIVE	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
88	3700.	LIVE	0.	0.	0.
88	3700.	LIVE	0.	0.	0.
88	4600.	LIVE	0.	0.	0.
88	4600.	LIVE	0.	0.	0.
88	5149.45	LIVE	0.	0.	0.
88	5149.45	LIVE	0.	0.	0.
88	6100.82	LIVE	0.	0.	0.
88	0.	WX	54.71	19.38	-4.83
88	951.38	WX	54.71	220.78	667936.7
88	951.38	WX	-125.98	188.98	426808.76
88	1400.	WX	-125.98	-754.93	60480.78
88	1400.	WX	3.29	-779.28	60483.04
88	2300.	WX	3.29	1894.3	-41707.9
88	2300.	WX	0.6	-659.26	-43823.01
88	3050.41	WX	0.6	-721.73	-36753.17
88	3700.	WX	0.6	-775.81	-30633.21
88	3700.	WX	-4.21	2347.48	-34687.26
88	4600.	WX	-4.21	-944.68	24622.82
88	4600.	WX	102.99	-575.95	24620.39
88	5149.45	WX	102.99	155.61	447053.64
88	5149.45	WX	-54.6	180.61	668020.18
88	6100.82	WX	-54.6	-92.39	-5.27
88	0.	WY	0.	0.	0.
88	951.38	WY	0.	0.	0.
88	951.38	WY	0.	0.	0.
88	1400.	WY	0.	0.	0.
88	1400.	WY	0.	0.	0.
88	2300.	WY	0.	0.	0.
88	2300.	WY	0.	0.	0.
88	3050.41	WY	0.	0.	0.
88	3700.	WY	0.	0.	0.
88	3700.	WY	0.	0.	0.
88	4600.	WY	0.	0.	0.
88	4600.	WY	0.	0.	0.
88	5149.45	WY	0.	0.	0.
88	5149.45	WY	0.	0.	0.
88	6100.82	WY	0.	0.	0.
88	0.	TEMP	0.	0.	0.
88	951.38	TEMP	0.	0.	0.
88	951.38	TEMP	0.	0.	0.
88	1400.	TEMP	0.	0.	0.
88	1400.	TEMP	0.	0.	0.
88	2300.	TEMP	0.	0.	0.
88	2300.	TEMP	0.	0.	0.
88	3050.41	TEMP	0.	0.	0.
88	3700.	TEMP	0.	0.	0.
88	3700.	TEMP	0.	0.	0.
88	4600.	TEMP	0.	0.	0.
88	4600.	TEMP	0.	0.	0.
88	5149.45	TEMP	0.	0.	0.
88	5149.45	TEMP	0.	0.	0.
88	6100.82	TEMP	0.	0.	0.
106	0.	DEAD	-1.103E-03	-1.198E-02	-20.63
106	700.	DEAD	-1.103E-03	-7.962E-04	25.04

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
106	1400.	DEAD	-1.103E-03	1.039E-02	-37.87
106	0.	LIVE	0.	0.	0.
106	700.	LIVE	0.	0.	0.
106	1400.	LIVE	0.	0.	0.
106	0.	WX	3.860E-03	4.301E-02	1.63
106	700.	WX	3.860E-03	2.740E-03	4.84
106	1400.	WX	3.860E-03	-3.754E-02	8.05
106	0.	WY	0.	0.	0.
106	700.	WY	0.	0.	0.
106	1400.	WY	0.	0.	0.
106	0.	TEMP	0.	0.	0.
106	700.	TEMP	0.	0.	0.
106	1400.	TEMP	0.	0.	0.
107	0.	DEAD	-5.502E-04	-1.130E-02	-26.67
107	450.	DEAD	-5.502E-04	1.237E-04	-1.41
107	900.	DEAD	-5.502E-04	1.155E-02	-21.04
107	0.	LIVE	0.	0.	0.
107	450.	LIVE	0.	0.	0.
107	900.	LIVE	0.	0.	0.
107	0.	WX	2.003E-03	3.995E-02	6.12
107	450.	WX	2.003E-03	-1.350E-04	1.61
107	900.	WX	2.003E-03	-4.022E-02	-2.91
107	0.	WY	0.	0.	0.
107	450.	WY	0.	0.	0.
107	900.	WY	0.	0.	0.
107	0.	TEMP	0.	0.	0.
107	450.	TEMP	0.	0.	0.
107	900.	TEMP	0.	0.	0.
108	0.	DEAD	1.517E-03	-4.689E-03	-30.9
108	700.	DEAD	1.517E-03	-9.054E-06	23.74
108	1400.	DEAD	1.517E-03	4.671E-03	-30.2
108	0.	LIVE	0.	0.	0.
108	700.	LIVE	0.	0.	0.
108	1400.	LIVE	0.	0.	0.
108	0.	WX	-5.414E-03	1.465E-02	-1.4
108	700.	WX	-5.414E-03	1.698E-05	-1.52
108	1400.	WX	-5.414E-03	-1.461E-02	-1.63
108	0.	WY	0.	0.	0.
108	700.	WY	0.	0.	0.
108	1400.	WY	0.	0.	0.
108	0.	TEMP	0.	0.	0.
108	700.	TEMP	0.	0.	0.
108	1400.	TEMP	0.	0.	0.
109	0.	DEAD	-2.959E-04	-1.179E-02	-19.94
109	450.	DEAD	-2.959E-04	-5.651E-05	-2.37
109	900.	DEAD	-2.959E-04	1.167E-02	-29.68
109	0.	LIVE	0.	0.	0.
109	450.	LIVE	0.	0.	0.
109	900.	LIVE	0.	0.	0.
109	0.	WX	1.126E-03	4.108E-02	-3.11
109	450.	WX	1.126E-03	-7.241E-05	1.28
109	900.	WX	1.126E-03	-4.123E-02	5.66
109	0.	WY	0.	0.	0.
109	450.	WY	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
109	900.	WY	0.	0.	0.
109	0.	TEMP	0.	0.	0.
109	450.	TEMP	0.	0.	0.
109	900.	TEMP	0.	0.	0.
110	0.	DEAD	-1.128E-03	-1.006E-02	-42.92
110	750.41	DEAD	-1.128E-03	7.378E-04	28.69
110	1500.82	DEAD	-1.128E-03	1.154E-02	-24.5
110	0.	LIVE	0.	0.	0.
110	750.41	LIVE	0.	0.	0.
110	1500.82	LIVE	0.	0.	0.
110	0.	WX	3.943E-03	3.638E-02	7.41
110	750.41	WX	3.943E-03	-2.545E-03	4.72
110	1500.82	WX	3.943E-03	-4.147E-02	2.03
110	0.	WY	0.	0.	0.
110	750.41	WY	0.	0.	0.
110	1500.82	WY	0.	0.	0.
110	0.	TEMP	0.	0.	0.
110	750.41	TEMP	0.	0.	0.
110	1500.82	TEMP	0.	0.	0.
111	0.	DEAD	0.13	-2.586E-02	-20.6
111	700.	DEAD	0.13	-2.326E-03	25.59
111	1400.	DEAD	0.13	2.121E-02	-36.82
111	0.	LIVE	0.	0.	0.
111	700.	LIVE	0.	0.	0.
111	1400.	LIVE	0.	0.	0.
111	0.	WX	-0.46	6.403E-02	1.48
111	700.	WX	-0.46	-5.846E-03	2.93
111	1400.	WX	-0.46	-7.572E-02	4.37
111	0.	WY	0.	0.	0.
111	700.	WY	0.	0.	0.
111	1400.	WY	0.	0.	0.
111	0.	TEMP	0.	0.	0.
111	700.	TEMP	0.	0.	0.
111	1400.	TEMP	0.	0.	0.
112	0.	DEAD	-3.609E-02	3.301E-02	-25.5
112	450.	DEAD	-3.609E-02	-1.513E-02	-1.21
112	900.	DEAD	-3.609E-02	-6.327E-02	-21.79
112	0.	LIVE	0.	0.	0.
112	450.	LIVE	0.	0.	0.
112	900.	LIVE	0.	0.	0.
112	0.	WX	0.13	-4.911E-02	2.03
112	450.	WX	0.13	6.394E-02	0.88
112	900.	WX	0.13	0.18	-0.28
112	0.	WY	0.	0.	0.
112	450.	WY	0.	0.	0.
112	900.	WY	0.	0.	0.
112	0.	TEMP	0.	0.	0.
112	450.	TEMP	0.	0.	0.
112	900.	TEMP	0.	0.	0.
113	0.	DEAD	-5.719E-03	2.266E-02	-31.1
113	700.	DEAD	-5.719E-03	1.629E-02	23.38
113	1400.	DEAD	-5.719E-03	9.919E-03	-30.74
113	0.	LIVE	0.	0.	0.
113	700.	LIVE	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
113	1400.	LIVE	0.	0.	0.
113	0.	WX	2.035E-02	-8.433E-02	-0.72
113	700.	WX	2.035E-02	-5.805E-02	-0.23
113	1400.	WX	2.035E-02	-3.177E-02	0.26
113	0.	WY	0.	0.	0.
113	700.	WY	0.	0.	0.
113	1400.	WY	0.	0.	0.
113	0.	TEMP	0.	0.	0.
113	700.	TEMP	0.	0.	0.
113	1400.	TEMP	0.	0.	0.
114	0.	DEAD	4.105E-02	-6.756E-02	-21.05
114	450.	DEAD	4.105E-02	-1.431E-02	-2.26
114	900.	DEAD	4.105E-02	3.893E-02	-28.34
114	0.	LIVE	0.	0.	0.
114	450.	LIVE	0.	0.	0.
114	900.	LIVE	0.	0.	0.
114	0.	WX	-0.14	0.2	0.76
114	450.	WX	-0.14	5.826E-02	0.87
114	900.	WX	-0.14	-8.389E-02	0.99
114	0.	WY	0.	0.	0.
114	450.	WY	0.	0.	0.
114	900.	WY	0.	0.	0.
114	0.	TEMP	0.	0.	0.
114	450.	TEMP	0.	0.	0.
114	900.	TEMP	0.	0.	0.
115	0.	DEAD	-0.12	7.027E-03	-41.82
115	750.41	DEAD	-0.12	1.943E-03	29.25
115	1500.82	DEAD	-0.12	-3.140E-03	-24.46
115	0.	LIVE	0.	0.	0.
115	750.41	LIVE	0.	0.	0.
115	1500.82	LIVE	0.	0.	0.
115	0.	WX	0.44	-2.744E-02	3.6
115	750.41	WX	0.44	-1.727E-02	2.74
115	1500.82	WX	0.44	-7.104E-03	1.88
115	0.	WY	0.	0.	0.
115	750.41	WY	0.	0.	0.
115	1500.82	WY	0.	0.	0.
115	0.	TEMP	0.	0.	0.
115	750.41	TEMP	0.	0.	0.
115	1500.82	TEMP	0.	0.	0.
133	0.	DEAD	2.24	-7.415E-02	-3736.96
133	3553.66	DEAD	2.24	-7.897E-02	1865.8
133	7107.32	DEAD	2.24	-8.379E-02	-3736.19
133	0.	LIVE	0.	0.	0.
133	3553.66	LIVE	0.	0.	0.
133	7107.32	LIVE	0.	0.	0.
133	0.	WX	-8.07	0.22	7.42
133	3553.66	WX	-8.07	0.28	6.01
133	7107.32	WX	-8.07	0.35	4.6
133	0.	WY	0.	0.	0.
133	3553.66	WY	0.	0.	0.
133	7107.32	WY	0.	0.	0.
133	0.	TEMP	0.	0.	0.
133	3553.66	TEMP	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 27: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		Kgf-mm	Kgf-mm	Kgf-mm
133	7107.32	TEMP	0.	0.	0.
134	0.	DEAD	-2.22	-7.222E-02	-3736.33
134	3553.66	DEAD	-2.22	-7.977E-02	1865.81
134	7107.32	DEAD	-2.22	-8.731E-02	-3736.8
134	0.	LIVE	0.	0.	0.
134	3553.66	LIVE	0.	0.	0.
134	7107.32	LIVE	0.	0.	0.
134	0.	WX	8.02	0.31	5.28
134	3553.66	WX	8.02	0.29	5.97
134	7107.32	WX	8.02	0.27	6.66
134	0.	WY	0.	0.	0.
134	3553.66	WY	0.	0.	0.
134	7107.32	WY	0.	0.	0.
134	0.	TEMP	0.	0.	0.
134	3553.66	TEMP	0.	0.	0.
134	7107.32	TEMP	0.	0.	0.
135	0.	DEAD	1.94	-0.23	-3738.94
135	3553.66	DEAD	1.94	-6.980E-03	1866.85
135	7107.32	DEAD	1.94	0.22	-3732.11
135	0.	LIVE	0.	0.	0.
135	3553.66	LIVE	0.	0.	0.
135	7107.32	LIVE	0.	0.	0.
135	0.	WX	-5.67	0.6	10.82
135	3553.66	WX	-5.67	0.18	4.01
135	7107.32	WX	-5.67	-0.25	-2.8
135	0.	WY	0.	0.	0.
135	3553.66	WY	0.	0.	0.
135	7107.32	WY	0.	0.	0.
135	0.	TEMP	0.	0.	0.
135	3553.66	TEMP	0.	0.	0.
135	7107.32	TEMP	0.	0.	0.
136	0.	DEAD	-2.02	-0.17	-3738.68
136	3553.66	DEAD	-2.02	-3.319E-03	1867.05
136	7107.32	DEAD	-2.02	0.17	-3731.96
136	0.	LIVE	0.	0.	0.
136	3553.66	LIVE	0.	0.	0.
136	7107.32	LIVE	0.	0.	0.
136	0.	WX	5.56	0.45	9.
136	3553.66	WX	5.56	7.029E-02	3.83
136	7107.32	WX	5.56	-0.31	-1.34
136	0.	WY	0.	0.	0.
136	3553.66	WY	0.	0.	0.
136	7107.32	WY	0.	0.	0.
136	0.	TEMP	0.	0.	0.
136	3553.66	TEMP	0.	0.	0.
136	7107.32	TEMP	0.	0.	0.

10. Material take-off

This section provides a material take-off.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 28: Material List 2 - By Section Property

Table 28: Material List 2 - By Section Property

Section	ObjectType	NumPieces	TotalLength mm	TotalWeight Kgf
Purlin 150x70x15x1.7	Frame	18	103230.	414.39
Col 150X50X15X3	Frame	8	8960.	53.7
Raf 150X70X15X3	Frame	4	24403.29	142.2
SAG 6	Frame	15	18302.47	4.06
L 50X3	Frame	8	14312.42	32.69
CAB1 12	Cable	6	42643.93	37.86

11. Design preferences

This section provides the design preferences for each type of design, which typically include material reduction factors, framing type, stress ratio limit, deflection limits, and other code specific items.

11.1. Steel design

Table 29: Preferences - Steel Design - AISC360-05-IBC2006, Part 1 of 3

Table 29: Preferences - Steel Design - AISC360-05-IBC2006, Part 1 of 3

FrameType	PatLLF	SRatioLimit	SDC	ImpFactor	SystemRho	SystemSds	SystemR	SystemCd
OMF	0.75	0.95	C	1.	1.	0.5	4.5	5.5

Table 29: Preferences - Steel Design - AISC360-05-IBC2006, Part 2 of 3

Table 29: Preferences - Steel Design - AISC360-05-IBC2006, Part 2 of 3

Omega0	NLCoeff	PhiB	PhiC	PhiTY	PhiTF	PhiV	PhiVRolledI	PhiVT
2.8	0.002	0.9	0.85	0.9	0.75	0.9	1.	0.75

Table 29: Preferences - Steel Design - AISC360-05-IBC2006, Part 3 of 3

Table 29: Preferences - Steel Design - AISC360-05-IBC2006, Part 3 of 3

PlugWeld	HSSWelding	HSSReduceT	DLRat	SDLAndLLRat	LLRat	TotalRat	NetRat
Yes	ERW	No	120.	120.	360.	240.	240.

11.2. Concrete design

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 30: Preferences - Concrete Design - ACI 318-08/IBC2009, Part 1 of 2

Table 30: Preferences - Concrete Design - ACI 318-08/IBC2009, Part 1 of 2

MinEccen	PatLLF	UFLimit	SeisCat
Yes	0.75	0.95	D

Table 30: Preferences - Concrete Design - ACI 318-08/IBC2009, Part 2 of 2

Table 30: Preferences - Concrete Design - ACI 318-08/IBC2009, Part 2 of 2

Rho	Sds	PhiT	PhiCTied	PhiCSpiral	PhiV	PhiVSeismic	PhiVJoint
1.	0.5	0.9	0.65	0.7	0.75	0.6	0.85

11.3. Aluminum design

Table 31: Preferences - Aluminum Design - AA-ASD 2000

Table 31: Preferences - Aluminum Design - AA-ASD 2000

FrameType	SRatioLimit	LatFact	UseLatFact
Moment Frame	1.	1.333333	No

11.4. Cold formed design

Table 32: Preferences - Cold Formed Design - AISI-LRFD96

Table 32: Preferences - Cold Formed Design - AISI-LRFD96

FrameType	SRatioLimit	PhiBS	PhiBUS	PhiBLTB	PhiVS	PhiVNS	PhiT	PhiC
Braced Frame	1.	0.95	0.9	0.9	0.9	1.	0.95	0.85

12. Design overwrites

This section provides the design overwrites for each type of design, which are assigned to individual members of the structure.

12.1. Steel design

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 1 of 6

Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 1 of 6

Frame	DesignSect	FrameType	Fy Kgf/mm2	RLLF	AreaRatio	XLMajor	XLMinor
106	Program Determined	Program Determined	0.	0.	0.	0.	0.
107	Program Determined	Program Determined	0.	0.	0.	0.	0.
108	Program Determined	Program Determined	0.	0.	0.	0.	0.
109	Program Determined	Program Determined	0.	0.	0.	0.	0.
110	Program Determined	Program Determined	0.	0.	0.	0.	0.
111	Program Determined	Program Determined	0.	0.	0.	0.	0.
112	Program Determined	Program Determined	0.	0.	0.	0.	0.
113	Program Determined	Program Determined	0.	0.	0.	0.	0.
114	Program Determined	Program Determined	0.	0.	0.	0.	0.
115	Program Determined	Program Determined	0.	0.	0.	0.	0.
48	Program Determined	Program Determined	0.	0.	0.	0.	0.
48	Program Determined	Program Determined	0.	0.	0.	0.	0.
64	Program Determined	Program Determined	0.	0.	0.	0.	0.
64	Program Determined	Program Determined	0.	0.	0.	0.	0.
65	Program Determined	Program Determined	0.	0.	0.	0.	0.
65	Program Determined	Program Determined	0.	0.	0.	0.	0.
66	Program Determined	Program Determined	0.	0.	0.	0.	0.
66	Program Determined	Program Determined	0.	0.	0.	0.	0.
67	Program Determined	Program Determined	0.	0.	0.	0.	0.
67	Program Determined	Program Determined	0.	0.	0.	0.	0.
31	Program Determined	Program Determined	0.	0.	0.	0.	0.
32	Program Determined	Program Determined	0.	0.	0.	0.	0.
33	Program Determined	Program Determined	0.	0.	0.	0.	0.
34	Program Determined	Program Determined	0.	0.	0.	0.	0.
35	Program Determined	Program Determined	0.	0.	0.	0.	0.
36	Program Determined	Program Determined	0.	0.	0.	0.	0.
37	Program Determined	Program Determined	0.	0.	0.	0.	0.
38	Program Determined	Program Determined	0.	0.	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 2 of 6

Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 2 of 6

Frame	XLLTB	K1Major	K1Minor	K2Major	K2Minor	KLTB	CmMajor	CmMinor
106	0.	0.	0.	0.	0.	0.	0.	0.
107	0.	0.	0.	0.	0.	0.	0.	0.
108	0.	0.	0.	0.	0.	0.	0.	0.
109	0.	0.	0.	0.	0.	0.	0.	0.
110	0.	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	0.	0.
112	0.	0.	0.	0.	0.	0.	0.	0.
113	0.	0.	0.	0.	0.	0.	0.	0.
114	0.	0.	0.	0.	0.	0.	0.	0.
115	0.	0.	0.	0.	0.	0.	0.	0.
48	0.	0.	0.	0.	0.	0.	0.	0.
48	0.	0.	0.	0.	0.	0.	0.	0.
64	0.	0.	0.	0.	0.	0.	0.	0.
64	0.	0.	0.	0.	0.	0.	0.	0.
65	0.	0.	0.	0.	0.	0.	0.	0.
65	0.	0.	0.	0.	0.	0.	0.	0.
66	0.	0.	0.	0.	0.	0.	0.	0.
66	0.	0.	0.	0.	0.	0.	0.	0.
67	0.	0.	0.	0.	0.	0.	0.	0.
67	0.	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.	0.
32	0.	0.	0.	0.	0.	0.	0.	0.
33	0.	0.	0.	0.	0.	0.	0.	0.
34	0.	0.	0.	0.	0.	0.	0.	0.
35	0.	0.	0.	0.	0.	0.	0.	0.
36	0.	0.	0.	0.	0.	0.	0.	0.
37	0.	0.	0.	0.	0.	0.	0.	0.
38	0.	0.	0.	0.	0.	0.	0.	0.

Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 3 of 6

Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 3 of 6

Frame	Cb	B1Major	B1Minor	B2Major	B2Minor	HSSReduceT	HSSWelding	Omega0
106	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
107	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
108	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
109	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
110	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
111	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
112	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
113	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
114	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 3 of 6

Frame	Cb	B1Major	B1Minor	B2Major	B2Minor	HSSReduceT	HSSWelding	Omega0
115	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
48	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
48	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
64	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
64	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
65	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
65	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
66	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
66	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
67	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
67	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
31	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
32	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
33	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
34	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
35	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
36	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
37	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.
38	0.	0.	0.	0.	0.	Program Determined	Program Determined	0.

Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 4 of 6

Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 4 of 6

Frame	Ry	Pnc	Pnt	Mn3	Mn2	Vn2	Vn3
		Kgf	Kgf	Kgf-mm	Kgf-mm	Kgf	Kgf
106	0.	0.	0.	0.	0.	0.	0.
107	0.	0.	0.	0.	0.	0.	0.
108	0.	0.	0.	0.	0.	0.	0.
109	0.	0.	0.	0.	0.	0.	0.
110	0.	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.	0.
112	0.	0.	0.	0.	0.	0.	0.
113	0.	0.	0.	0.	0.	0.	0.
114	0.	0.	0.	0.	0.	0.	0.
115	0.	0.	0.	0.	0.	0.	0.
48	0.	0.	0.	0.	0.	0.	0.
48	0.	0.	0.	0.	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 4 of 6

Frame	Ry	Pnc	Pnt	Mn3	Mn2	Vn2	Vn3
		Kgf	Kgf	Kgf-mm	Kgf-mm	Kgf	Kgf
64	0.	0.	0.	0.	0.	0.	0.
64	0.	0.	0.	0.	0.	0.	0.
65	0.	0.	0.	0.	0.	0.	0.
65	0.	0.	0.	0.	0.	0.	0.
66	0.	0.	0.	0.	0.	0.	0.
66	0.	0.	0.	0.	0.	0.	0.
67	0.	0.	0.	0.	0.	0.	0.
67	0.	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.	0.
32	0.	0.	0.	0.	0.	0.	0.
33	0.	0.	0.	0.	0.	0.	0.
34	0.	0.	0.	0.	0.	0.	0.
35	0.	0.	0.	0.	0.	0.	0.
36	0.	0.	0.	0.	0.	0.	0.
37	0.	0.	0.	0.	0.	0.	0.
38	0.	0.	0.	0.	0.	0.	0.

Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 5 of 6

Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 5 of 6

Frame	DeflType	DLRat	SDLAndLLRat	LLRat	TotalRat	NetRat	DLAbs
							mm
106	Program Determined	0.	0.	0.	0.	0.	0.
107	Program Determined	0.	0.	0.	0.	0.	0.
108	Program Determined	0.	0.	0.	0.	0.	0.
109	Program Determined	0.	0.	0.	0.	0.	0.
110	Program Determined	0.	0.	0.	0.	0.	0.
111	Program Determined	0.	0.	0.	0.	0.	0.
112	Program Determined	0.	0.	0.	0.	0.	0.
113	Program Determined	0.	0.	0.	0.	0.	0.
114	Program Determined	0.	0.	0.	0.	0.	0.
115	Program Determined	0.	0.	0.	0.	0.	0.
48	Program Determined	0.	0.	0.	0.	0.	0.
48	Program Determined	0.	0.	0.	0.	0.	0.
64	Program Determined	0.	0.	0.	0.	0.	0.
64	Program Determined	0.	0.	0.	0.	0.	0.
65	Program Determined	0.	0.	0.	0.	0.	0.
65	Program Determined	0.	0.	0.	0.	0.	0.
66	Program Determined	0.	0.	0.	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 5 of 6

Frame	DeflType	DLRat	SDLAndLLRat	LLRat	TotalRat	NetRat	DLAbs
							mm
66	Program Determined	0.	0.	0.	0.	0.	0.
67	Program Determined	0.	0.	0.	0.	0.	0.
67	Program Determined	0.	0.	0.	0.	0.	0.
31	Program Determined	0.	0.	0.	0.	0.	0.
32	Program Determined	0.	0.	0.	0.	0.	0.
33	Program Determined	0.	0.	0.	0.	0.	0.
34	Program Determined	0.	0.	0.	0.	0.	0.
35	Program Determined	0.	0.	0.	0.	0.	0.
36	Program Determined	0.	0.	0.	0.	0.	0.
37	Program Determined	0.	0.	0.	0.	0.	0.
38	Program Determined	0.	0.	0.	0.	0.	0.

Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 6 of 6

Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 6 of 6

Frame	SDLAndLLAbs	LLAbs	TotalAbs	NetAbs	SpecCamber	DCLimit
	mm	mm	mm	mm	mm	
106	0.	0.	0.	0.	0.	0.
107	0.	0.	0.	0.	0.	0.
108	0.	0.	0.	0.	0.	0.
109	0.	0.	0.	0.	0.	0.
110	0.	0.	0.	0.	0.	0.
111	0.	0.	0.	0.	0.	0.
112	0.	0.	0.	0.	0.	0.
113	0.	0.	0.	0.	0.	0.
114	0.	0.	0.	0.	0.	0.
115	0.	0.	0.	0.	0.	0.
48	0.	0.	0.	0.	0.	0.
48	0.	0.	0.	0.	0.	0.
64	0.	0.	0.	0.	0.	0.
64	0.	0.	0.	0.	0.	0.
65	0.	0.	0.	0.	0.	0.
65	0.	0.	0.	0.	0.	0.
66	0.	0.	0.	0.	0.	0.
66	0.	0.	0.	0.	0.	0.
67	0.	0.	0.	0.	0.	0.
67	0.	0.	0.	0.	0.	0.
31	0.	0.	0.	0.	0.	0.
32	0.	0.	0.	0.	0.	0.
33	0.	0.	0.	0.	0.	0.
34	0.	0.	0.	0.	0.	0.
35	0.	0.	0.	0.	0.	0.
36	0.	0.	0.	0.	0.	0.
37	0.	0.	0.	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 33: Overwrites - Steel Design - AISC360-05-IBC2006, Part 6 of 6

Frame	SDLAndLLAbs	LLAbs	TotalAbs	NetAbs	SpecCamber	DCLimit
	mm	mm	mm	mm	mm	
38	0.	0.	0.	0.	0.	0.

12.2. Cold formed design

Table 34: Overwrites - Cold Formed Design - AISI-LRFD96, Part 1 of 4

Table 34: Overwrites - Cold Formed Design - AISI-LRFD96, Part 1 of 4

Frame	DesignSect	FrameType	RLLF	XLMajor	XLMinor	Fy
						Kgf/mm2
49	Program Determined	Program Determined	0.	0.	0.	0.
50	Program Determined	Program Determined	0.	0.	0.	0.
51	Program Determined	Program Determined	0.	0.	0.	0.
52	Program Determined	Program Determined	0.	0.	0.	0.
53	Program Determined	Program Determined	0.	0.	0.	0.
54	Program Determined	Program Determined	0.	0.	0.	0.
57	Program Determined	Program Determined	0.	0.	0.	0.
58	Program Determined	Program Determined	0.	0.	0.	0.
59	Program Determined	Program Determined	0.	0.	0.	0.
60	Program Determined	Program Determined	0.	0.	0.	0.
61	Program Determined	Program Determined	0.	0.	0.	0.
62	Program Determined	Program Determined	0.	0.	0.	0.
63	Program Determined	Program Determined	0.	0.	0.	0.
42	Program Determined	Program Determined	0.	0.	0.	0.
42	Program Determined	Program Determined	0.	0.	0.	0.
43	Program Determined	Program Determined	0.	0.	0.	0.
43	Program Determined	Program Determined	0.	0.	0.	0.
44	Program Determined	Program Determined	0.	0.	0.	0.
44	Program Determined	Program Determined	0.	0.	0.	0.
45	Program Determined	Program Determined	0.	0.	0.	0.
45	Program Determined	Program Determined	0.	0.	0.	0.
46	Program Determined	Program Determined	0.	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 34: Overwrites - Cold Formed Design - AISI-LRFD96, Part 1 of 4

Frame	DesignSect	FrameType	RLLF	XLMajor	XLMinor	Fy Kgf/mm2
46	Program Determined	Program Determined	0.	0.	0.	0.
47	Program Determined	Program Determined	0.	0.	0.	0.
47	Program Determined	Program Determined	0.	0.	0.	0.
72	Program Determined	Program Determined	0.	0.	0.	0.
72	Program Determined	Program Determined	0.	0.	0.	0.
7	Program Determined	Program Determined	0.	0.	0.	0.
9	Program Determined	Program Determined	0.	0.	0.	0.
12	Program Determined	Program Determined	0.	0.	0.	0.
14	Program Determined	Program Determined	0.	0.	0.	0.
20	Program Determined	Program Determined	0.	0.	0.	0.
22	Program Determined	Program Determined	0.	0.	0.	0.
25	Program Determined	Program Determined	0.	0.	0.	0.
27	Program Determined	Program Determined	0.	0.	0.	0.
76	Program Determined	Program Determined	0.	0.	0.	0.
88	Program Determined	Program Determined	0.	0.	0.	0.

Table 34: Overwrites - Cold Formed Design - AISI-LRFD96, Part 2 of 4

Table 34: Overwrites - Cold Formed Design - AISI-LRFD96, Part 2 of 4

Frame	XKMajor	XKMinor	CmMajor	CmMinor	CtfMajor	CtfMinor	Cb
49	0.	0.	0.	0.	0.	0.	0.
50	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.
52	0.	0.	0.	0.	0.	0.	0.
53	0.	0.	0.	0.	0.	0.	0.
54	0.	0.	0.	0.	0.	0.	0.
57	0.	0.	0.	0.	0.	0.	0.
58	0.	0.	0.	0.	0.	0.	0.
59	0.	0.	0.	0.	0.	0.	0.
60	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.
62	0.	0.	0.	0.	0.	0.	0.
63	0.	0.	0.	0.	0.	0.	0.
42	0.	0.	0.	0.	0.	0.	0.
42	0.	0.	0.	0.	0.	0.	0.
43	0.	0.	0.	0.	0.	0.	0.
43	0.	0.	0.	0.	0.	0.	0.
44	0.	0.	0.	0.	0.	0.	0.
44	0.	0.	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 34: Overwrites - Cold Formed Design - AISI-LRFD96, Part 2 of 4

Frame	XKMajor	XKMinor	CmMajor	CmMinor	CtfMajor	CtfMinor	Cb
45	0.	0.	0.	0.	0.	0.	0.
46	0.	0.	0.	0.	0.	0.	0.
46	0.	0.	0.	0.	0.	0.	0.
47	0.	0.	0.	0.	0.	0.	0.
47	0.	0.	0.	0.	0.	0.	0.
72	0.	0.	0.	0.	0.	0.	0.
72	0.	0.	0.	0.	0.	0.	0.
7	0.	0.	0.	0.	0.	0.	0.
9	0.	0.	0.	0.	0.	0.	0.
12	0.	0.	0.	0.	0.	0.	0.
14	0.	0.	0.	0.	0.	0.	0.
20	0.	0.	0.	0.	0.	0.	0.
22	0.	0.	0.	0.	0.	0.	0.
25	0.	0.	0.	0.	0.	0.	0.
27	0.	0.	0.	0.	0.	0.	0.
76	0.	0.	0.	0.	0.	0.	0.
88	0.	0.	0.	0.	0.	0.	0.

Table 34: Overwrites - Cold Formed Design - AISI-LRFD96, Part 3 of 4

Table 34: Overwrites - Cold Formed Design - AISI-LRFD96, Part 3 of 4

Frame	AlphaMajor	AlphaMinor	Pnc	Pnt	Mn33Yield	Mn22Yield	Mn33LTB	Mn22LTB
			Kgf	Kgf	Kgf-mm	Kgf-mm	Kgf-mm	Kgf-mm
49	0.	0.	0.	0.	0.	0.	0.	0.
50	0.	0.	0.	0.	0.	0.	0.	0.
51	0.	0.	0.	0.	0.	0.	0.	0.
52	0.	0.	0.	0.	0.	0.	0.	0.
53	0.	0.	0.	0.	0.	0.	0.	0.
54	0.	0.	0.	0.	0.	0.	0.	0.
57	0.	0.	0.	0.	0.	0.	0.	0.
58	0.	0.	0.	0.	0.	0.	0.	0.
59	0.	0.	0.	0.	0.	0.	0.	0.
60	0.	0.	0.	0.	0.	0.	0.	0.
61	0.	0.	0.	0.	0.	0.	0.	0.
62	0.	0.	0.	0.	0.	0.	0.	0.
63	0.	0.	0.	0.	0.	0.	0.	0.
42	0.	0.	0.	0.	0.	0.	0.	0.
42	0.	0.	0.	0.	0.	0.	0.	0.
43	0.	0.	0.	0.	0.	0.	0.	0.
43	0.	0.	0.	0.	0.	0.	0.	0.
44	0.	0.	0.	0.	0.	0.	0.	0.
44	0.	0.	0.	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.
46	0.	0.	0.	0.	0.	0.	0.	0.
46	0.	0.	0.	0.	0.	0.	0.	0.
47	0.	0.	0.	0.	0.	0.	0.	0.
47	0.	0.	0.	0.	0.	0.	0.	0.
72	0.	0.	0.	0.	0.	0.	0.	0.
72	0.	0.	0.	0.	0.	0.	0.	0.
7	0.	0.	0.	0.	0.	0.	0.	0.
9	0.	0.	0.	0.	0.	0.	0.	0.
12	0.	0.	0.	0.	0.	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 34: Overwrites - Cold Formed Design - AISI-LRFD96, Part 3 of 4

Frame	AlphaMajor	AlphaMinor	Pnc	Pnt	Mn33Yield	Mn22Yield	Mn33LTB	Mn22LTB
			Kgf	Kgf	Kgf-mm	Kgf-mm	Kgf-mm	Kgf-mm
14	0.	0.	0.	0.	0.	0.	0.	0.
20	0.	0.	0.	0.	0.	0.	0.	0.
22	0.	0.	0.	0.	0.	0.	0.	0.
25	0.	0.	0.	0.	0.	0.	0.	0.
27	0.	0.	0.	0.	0.	0.	0.	0.
76	0.	0.	0.	0.	0.	0.	0.	0.
88	0.	0.	0.	0.	0.	0.	0.	0.

Table 34: Overwrites - Cold Formed Design - AISI-LRFD96, Part 4 of 4

Table 34: Overwrites - Cold Formed Design - AISI-LRFD96, Part 4 of 4

Frame	Vn2	Vn3	FastToDeck	FastEcc	HoleDiaTop	HoleDiaBot	HoleDiaWeb
	Kgf	Kgf		mm	mm	mm	mm
49	0.	0.	No	0.	0.	0.	0.
50	0.	0.	No	0.	0.	0.	0.
51	0.	0.	No	0.	0.	0.	0.
52	0.	0.	No	0.	0.	0.	0.
53	0.	0.	No	0.	0.	0.	0.
54	0.	0.	No	0.	0.	0.	0.
57	0.	0.	No	0.	0.	0.	0.
58	0.	0.	No	0.	0.	0.	0.
59	0.	0.	No	0.	0.	0.	0.
60	0.	0.	No	0.	0.	0.	0.
61	0.	0.	No	0.	0.	0.	0.
62	0.	0.	No	0.	0.	0.	0.
63	0.	0.	No	0.	0.	0.	0.
42	0.	0.	No	0.	0.	0.	0.
42	0.	0.	No	0.	0.	0.	0.
43	0.	0.	No	0.	0.	0.	0.
43	0.	0.	No	0.	0.	0.	0.
44	0.	0.	No	0.	0.	0.	0.
44	0.	0.	No	0.	0.	0.	0.
45	0.	0.	No	0.	0.	0.	0.
45	0.	0.	No	0.	0.	0.	0.
46	0.	0.	No	0.	0.	0.	0.
46	0.	0.	No	0.	0.	0.	0.
47	0.	0.	No	0.	0.	0.	0.
47	0.	0.	No	0.	0.	0.	0.
72	0.	0.	No	0.	0.	0.	0.
72	0.	0.	No	0.	0.	0.	0.
7	0.	0.	No	0.	0.	0.	0.
9	0.	0.	No	0.	0.	0.	0.
12	0.	0.	No	0.	0.	0.	0.
14	0.	0.	No	0.	0.	0.	0.
20	0.	0.	No	0.	0.	0.	0.
22	0.	0.	No	0.	0.	0.	0.
25	0.	0.	No	0.	0.	0.	0.
27	0.	0.	No	0.	0.	0.	0.
76	0.	0.	No	0.	0.	0.	0.
88	0.	0.	No	0.	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

13. Design summary

This section provides the design summary for each type of design, which highlights the controlling demand/capacity ratio and it's associated combination and location in each member.

13.1. Steel design

Table 35: Steel Design 1 - Summary Data - AISC360-05-IBC2006, Part 1 of 2

Table 35: Steel Design 1 - Summary Data - AISC360-05-IBC2006, Part 1 of 2

Frame	Location	Combo	DesignSect	DesignType	Ratio	RatioType
	mm					
106	1400.	1.4D+1.2T	SAG 6	Brace	0.069678	PMM
107	0.	1.4D+1.2T	SAG 6	Brace	0.05227	PMM
108	0.	1.2D+0.5L+1.3W X	SAG 6	Brace	0.066507	PMM
109	900.	1.4D+1.2T	SAG 6	Brace	0.057725	PMM
110	0.	1.4D+1.2T	SAG 6	Brace	0.078166	PMM
111	1400.	1.4D+1.2T	SAG 6	Brace	0.066761	PMM
112	0.	1.2D+0.5L+1.3W X	SAG 6	Brace	0.046576	PMM
113	0.	1.4D+1.2T	SAG 6	Brace	0.110535	PMM
114	900.	1.4D+1.2T	SAG 6	Brace	0.051382	PMM
115	0.	1.4D+1.2T	SAG 6	Brace	0.082476	PMM
48	1400.	1.4D+1.2T	SAG 6	Brace	0.06678	PMM
64	0.	1.2D+0.5L+1.3W X	SAG 6	Brace	0.046431	PMM
65	0.	1.4D+1.2T	SAG 6	Brace	0.110799	PMM
66	900.	1.4D+1.2T	SAG 6	Brace	0.051374	PMM
67	0.	1.4D+1.2T	SAG 6	Brace	0.087146	PMM
31	1875.06	0.9D+1.3W+1.2T	L 50X3	Brace	0.436084	PMM
32	1703.04	0.9D+1.3W+1.2T	L 50X3	Brace	0.400977	PMM
33	1875.06	1.4D+1.2T	L 50X3	Brace	0.377082	PMM
34	1703.04	1.4D+1.2T	L 50X3	Brace	0.328943	PMM
35	1875.06	1.4D+1.2T	L 50X3	Brace	0.378259	PMM
36	1703.04	1.4D+1.2T	L 50X3	Brace	0.330793	PMM
37	1875.06	0.9D+1.3W+1.2T	L 50X3	Brace	0.432364	PMM
38	1703.04	0.9D+1.3W+1.2T	L 50X3	Brace	0.403038	PMM

Table 35: Steel Design 1 - Summary Data - AISC360-05-IBC2006, Part 2 of 2

Table 35: Steel Design 1 - Summary Data - AISC360-05-IBC2006, Part 2 of 2

Frame	Status	ErrMsg	WarnMsg
106	No Messages	No Messages	No Messages
107	No Messages	No Messages	No Messages
108	No Messages	No Messages	No Messages
109	No Messages	No Messages	No Messages
110	No Messages	No Messages	No Messages
111	No Messages	No Messages	No Messages
112	No Messages	No Messages	No Messages
113	No Messages	No Messages	No Messages
114	No Messages	No Messages	No Messages
115	No Messages	No Messages	No Messages
48	No Messages	No Messages	No Messages

Engr. Khurram Shahzad
BSc. Civil Engineering
PEC # Civil/54490
Structural Design Engineer
Riaz-ud-Din Engineering (Pvt.) Limited

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 35: Steel Design 1 - Summary Data - AISC360-05-IBC2006, Part 2 of 2

Frame	Status	ErrMsg	WarnMsg
64	No Messages	No Messages	No Messages
65	No Messages	No Messages	No Messages
66	No Messages	No Messages	No Messages
67	No Messages	No Messages	No Messages
31	No Messages	No Messages	No Messages
32	No Messages	No Messages	No Messages
33	No Messages	No Messages	No Messages
34	No Messages	No Messages	No Messages
35	No Messages	No Messages	No Messages
36	No Messages	No Messages	No Messages
37	No Messages	No Messages	No Messages
38	No Messages	No Messages	No Messages

Engr. Khurram Shahzad
BSc. Civil Engineering
PEC # Civil/54490
Structural Design Engineer
Riaz-ud-Din Engineering (Pvt.) Limited

13.2. Cold formed design

Table 36: Cold Formed Design 1 - Summary Data - AISI-LRFD96, Part 1 of 2

Table 36: Cold Formed Design 1 - Summary Data - AISI-LRFD96, Part 1 of 2

Frame	Location mm	Combo	DesignSect	DesignType	Ratio	RatioType
49	5735.	0.9D+1.3W+1.2T	Purlin 150x70x15x1.7	Beam	0.880332	PMM
50	0.	0.9D+1.3W+1.2T	Purlin 150x70x15x1.7	Beam	0.890317	PMM
51	0.	0.9D+1.3W+1.2T	Purlin 150x70x15x1.7	Beam	0.87999	PMM
52	5735.	0.9D+1.3W+1.2T	Purlin 150x70x15x1.7	Beam	0.886009	PMM
53	5735.	0.9D+1.3W+1.2T	Purlin 150x70x15x1.7	Beam	0.889629	PMM
54	5735.	0.9D+1.3W+1.2T	Purlin 150x70x15x1.7	Beam	0.881123	PMM
57	951.38	0.9D+1.3W+1.2T	Raf 150X70X15X3	Brace	0.320023	PMM
58	0.	0.9D+1.3W+1.2T	Purlin 150x70x15x1.7	Beam	0.897129	PMM
59	0.	0.9D+1.3W+1.2T	Purlin 150x70x15x1.7	Beam	0.906805	PMM
60	0.	0.9D+1.3W+1.2T	Purlin 150x70x15x1.7	Beam	0.914112	PMM
61	0.	0.9D+1.3W+1.2T	Purlin 150x70x15x1.7	Beam	0.907498	PMM
62	0.	0.9D+1.3W+1.2T	Purlin 150x70x15x1.7	Beam	0.908781	PMM
63	0.	0.9D+1.3W+1.2T	Purlin 150x70x15x1.7	Beam	0.898683	PMM
42	5735.	0.9D+1.3W+1.2T	Purlin 150x70x15x1.7	Beam	0.897095	PMM
43	5735.	0.9D+1.3W+1.2T	Purlin 150x70x15x1.7	Beam	0.906904	PMM
44	5735.	0.9D+1.3W+1.2T	Purlin 150x70x15x1.7	Beam	0.913696	PMM
45	5735.	0.9D+1.3W+1.2T	Purlin 150x70x15x1.7	Beam	0.907883	PMM

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 36: Cold Formed Design 1 - Summary Data - AISI-LRFD96, Part 1 of 2

Frame	Location mm	Combo	DesignSect	DesignType	Ratio	RatioType
46	5735.	0.9D+1.3W+1.2T	Purlin 150x70x15x1.7	Beam	0.907645	PMM
47	5735.	0.9D+1.3W+1.2T	Purlin 150x70x15x1.7	Beam	0.899522	PMM
72	951.38	0.9D+1.3W+1.2T	Raf 150X70X15X3	Brace	0.315002	PMM
7	970.	0.9D+1.3W+1.2T	Col 150X50X15X3	Column	0.408341	PMM
9	970.	0.9D+1.3W+1.2T	Col 150X50X15X3	Column	0.160618	PMM
12	970.	0.9D+1.3W+1.2T	Col 150X50X15X3	Column	0.406398	PMM
14	970.	0.9D+1.3W+1.2T	Col 150X50X15X3	Column	0.156345	PMM
20	1270.	0.9D+1.3W+1.2T	Col 150X50X15X3	Column	0.379717	PMM
22	1270.	0.9D+1.3W+1.2T	Col 150X50X15X3	Column	0.155232	PMM
25	1270.	0.9D+1.3W+1.2T	Col 150X50X15X3	Column	0.38004	PMM
27	1270.	0.9D+1.3W+1.2T	Col 150X50X15X3	Column	0.141757	PMM
76	951.38	0.9D+1.3W+1.2T	Raf 150X70X15X3	Brace	0.855769	PMM
88	951.38	0.9D+1.3W+1.2T	Raf 150X70X15X3	Brace	0.853855	PMM

Table 36: Cold Formed Design 1 - Summary Data - AISI-LRFD96, Part 2 of 2

Table 36: Cold Formed Design 1 - Summary Data - AISI-LRFD96, Part 2 of 2

Frame	Status	ErrMsg	WarnMsg
49	No Messages	No Messages	No Messages
50	No Messages	No Messages	No Messages
51	No Messages	No Messages	No Messages
52	No Messages	No Messages	No Messages
53	No Messages	No Messages	No Messages
54	No Messages	No Messages	No Messages
57	No Messages	No Messages	No Messages
58	No Messages	No Messages	No Messages
59	No Messages	No Messages	No Messages
60	No Messages	No Messages	No Messages
61	No Messages	No Messages	No Messages
62	No Messages	No Messages	No Messages
63	No Messages	No Messages	No Messages
42	No Messages	No Messages	No Messages
43	No Messages	No Messages	No Messages
44	No Messages	No Messages	No Messages
45	No Messages	No Messages	No Messages
46	No Messages	No Messages	No Messages
47	No Messages	No Messages	No Messages
72	No Messages	No Messages	No Messages
7	No Messages	No Messages	No Messages
9	No Messages	No Messages	No Messages
12	No Messages	No Messages	No Messages
14	No Messages	No Messages	No Messages

Engr. Khurram Shahzad
BSc. Civil Engineering
PEC # Civil/54490
Structural Design Engineer
Riaz-ud-Din Engineering (Pvt.) Limited

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 36: Cold Formed Design 1 - Summary Data - AISI-LRFD96, Part 2 of 2

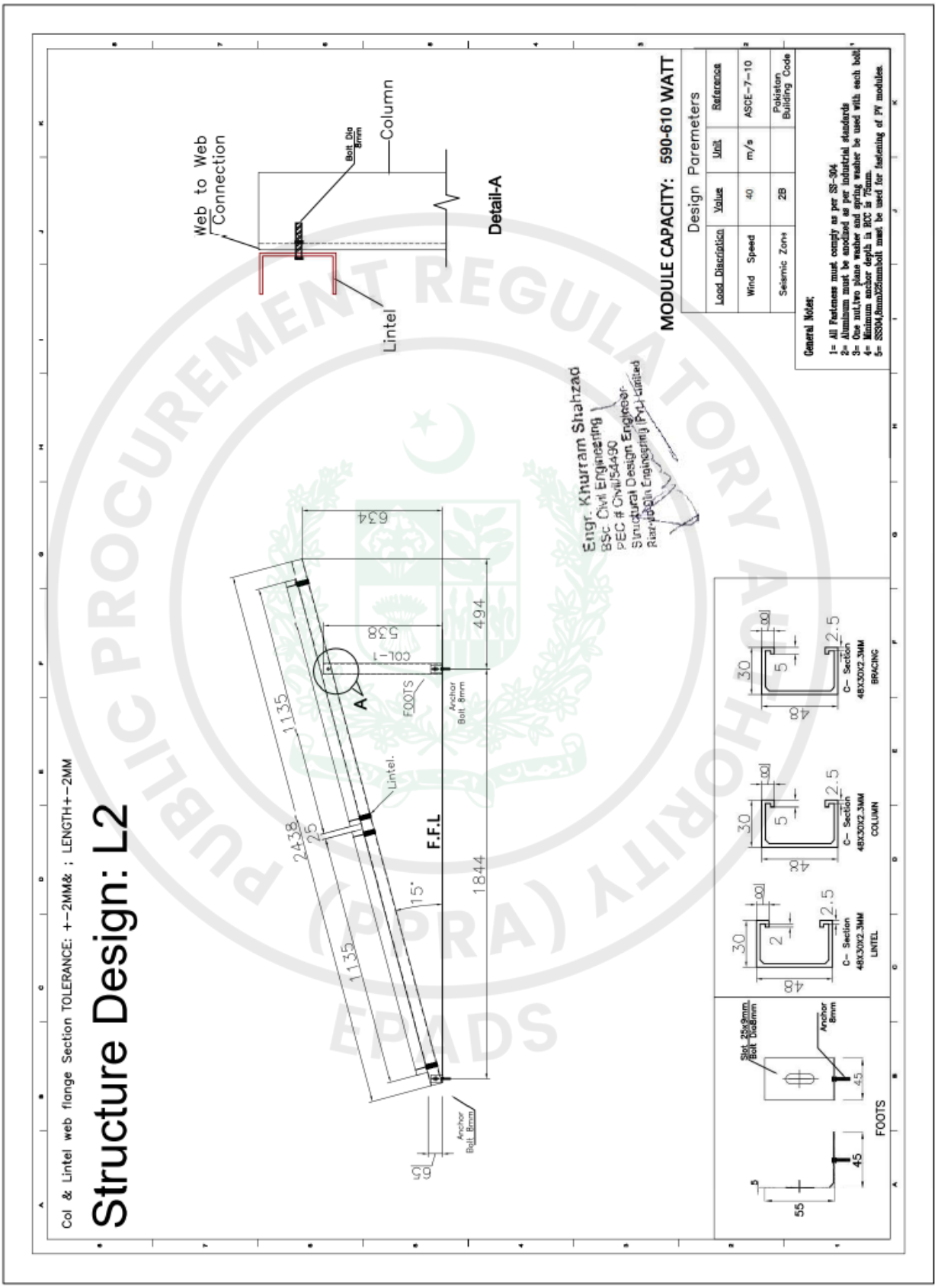
Frame	Status	ErrMsg	WarnMsg
20	No Messages	No Messages	No Messages
22	No Messages	No Messages	No Messages
25	No Messages	No Messages	No Messages
27	No Messages	No Messages	No Messages
76	No Messages	No Messages	No Messages
88	No Messages	No Messages	No Messages

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

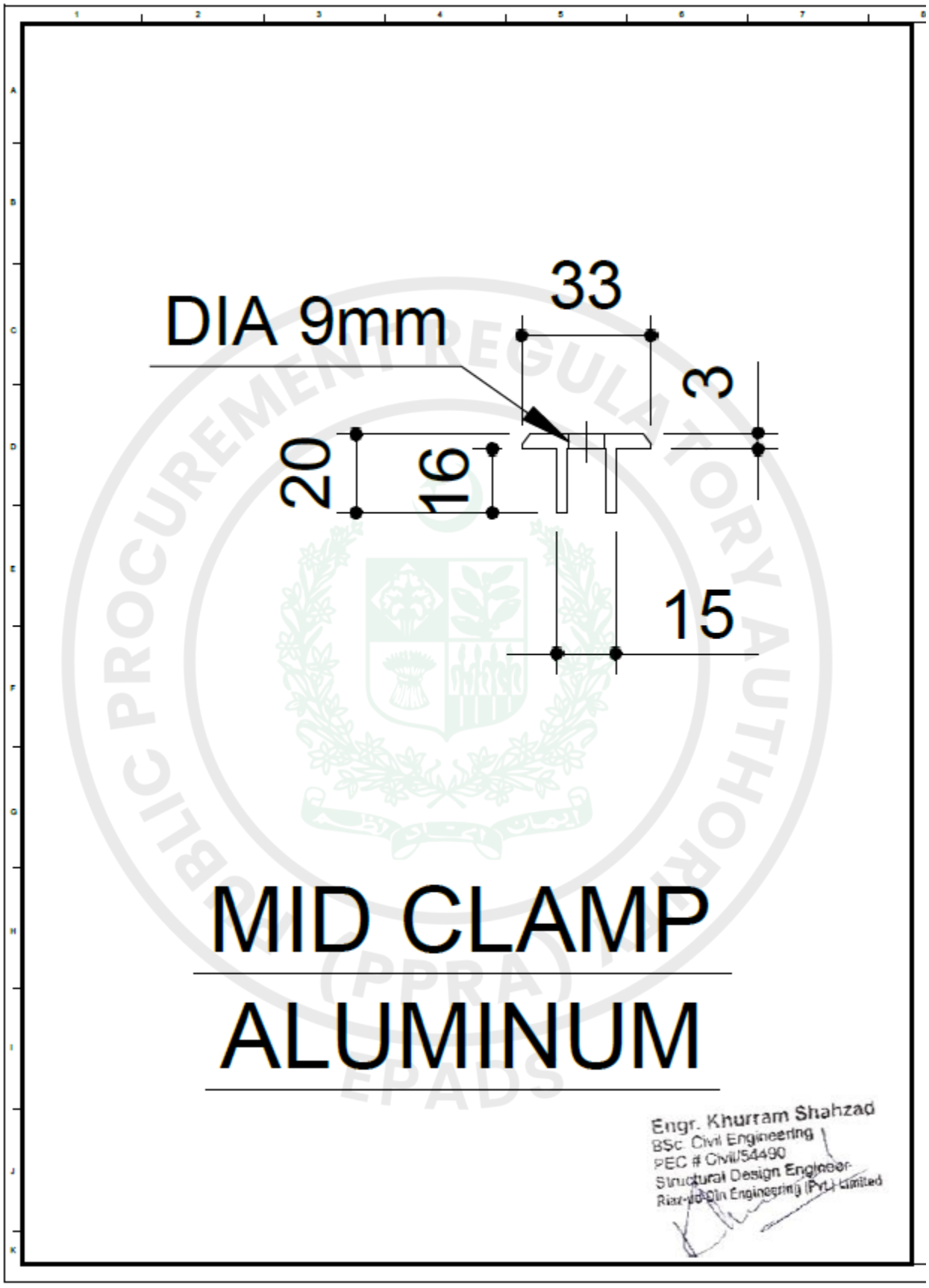
Engr. Khurram Shahzad
BSc. Civil Engineering
PEC # Civil/54490
Structural Design Engineer
Riaz-ud-Din Engineering (Pvt.) Limited

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

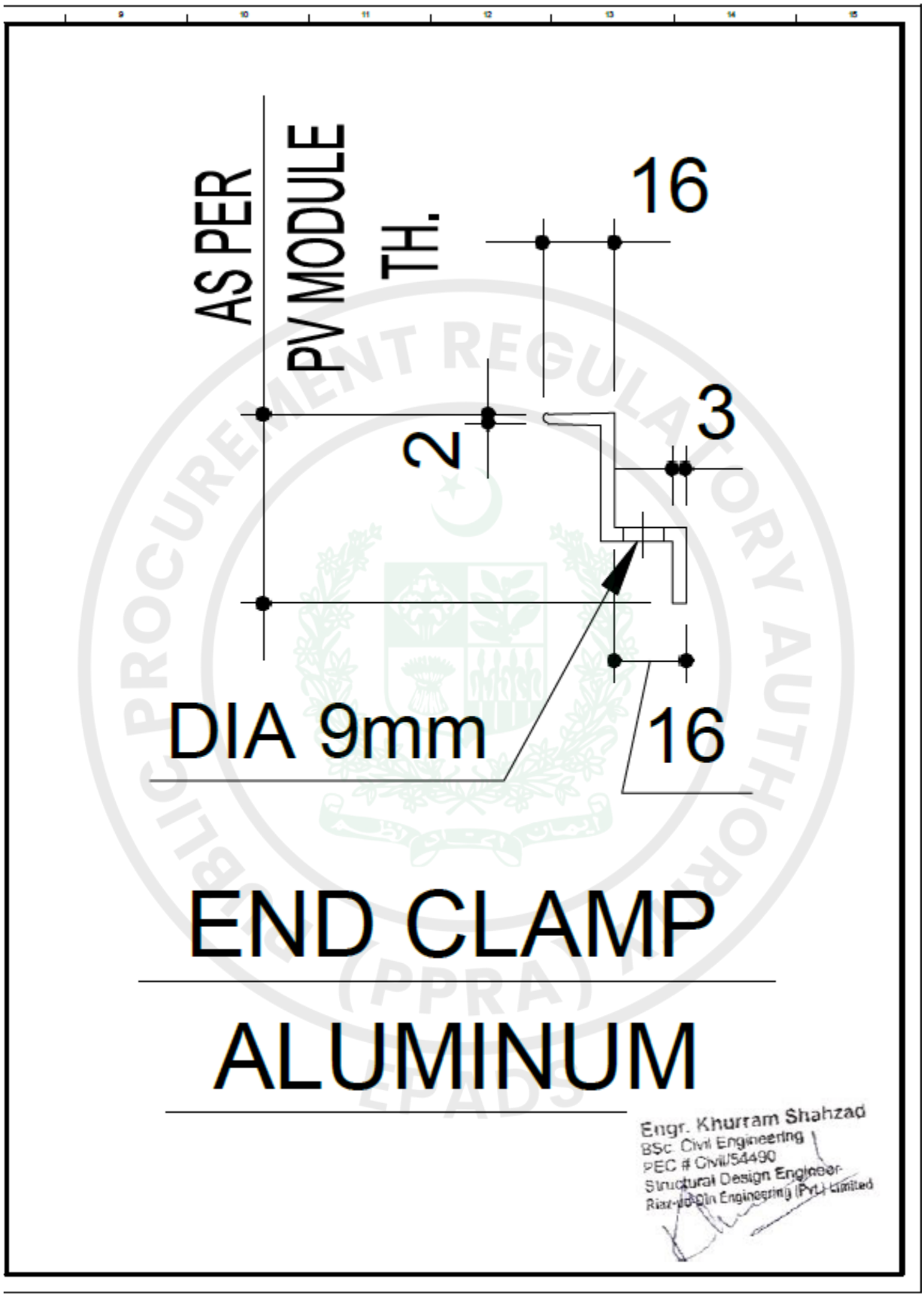
DIAGRAMS#19: L2



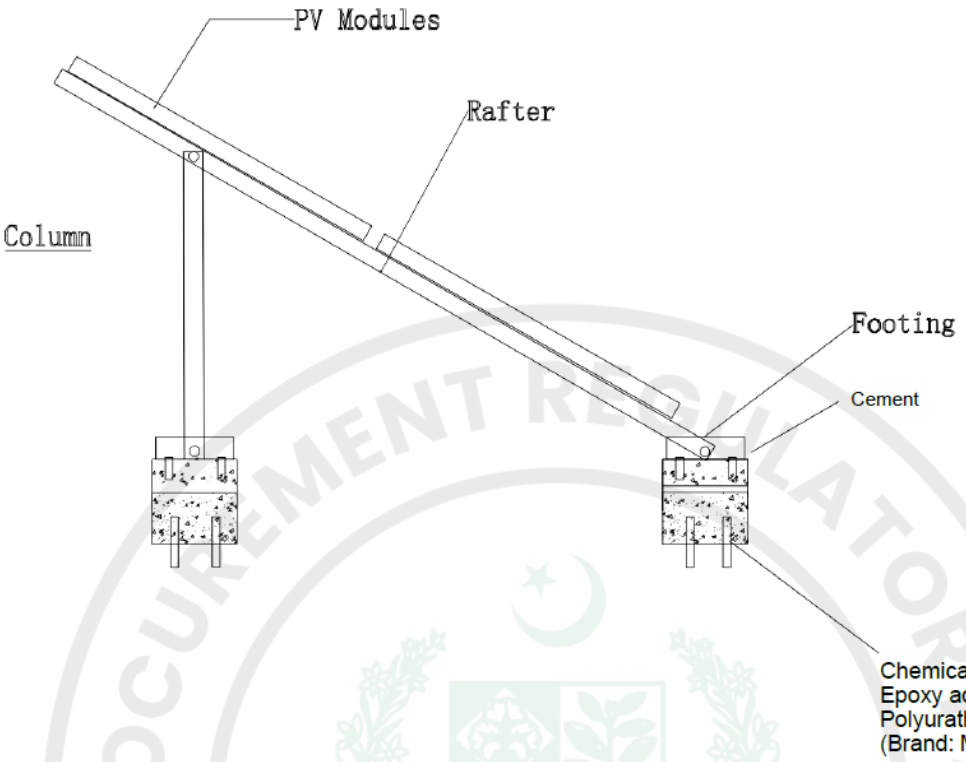
e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026



e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026



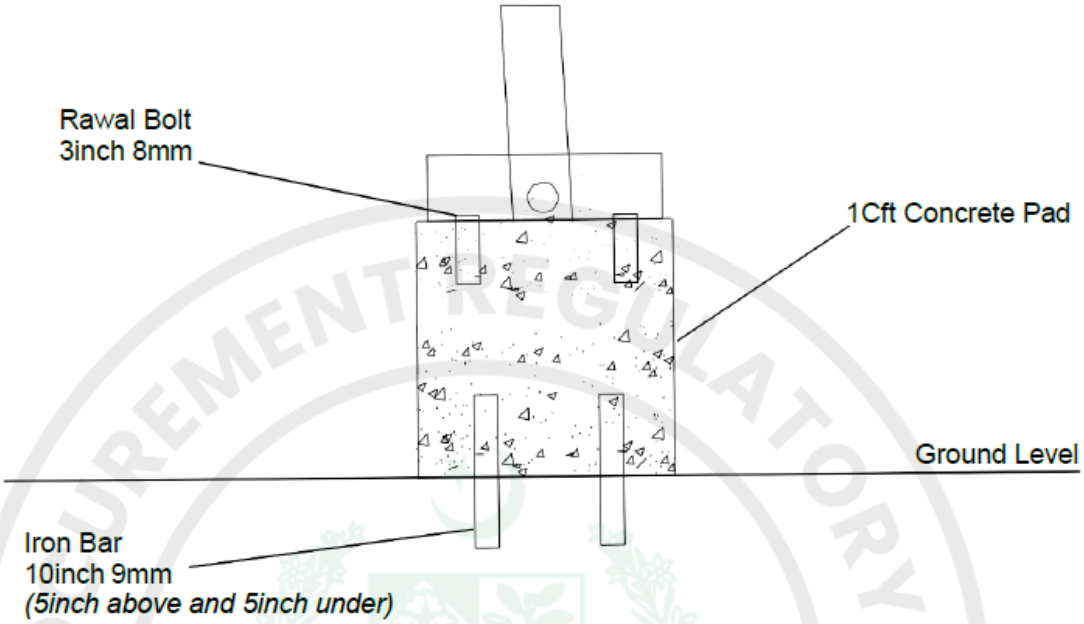
e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

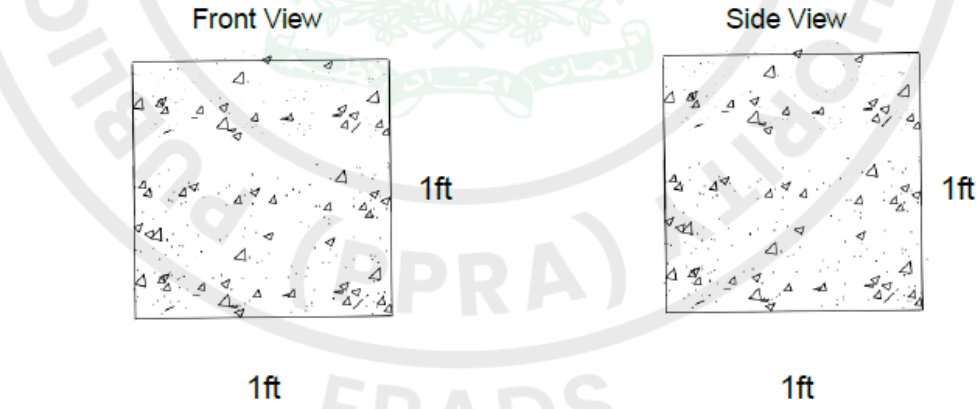


Engr. Khurram Shahzad
BSc. Civil Engineering
PEC # Civil/54490
Structural Design Engineer
Riaz-ud-Din Engineering (Pvt.) Limited

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

PUBLIC PROCUREMENT REGULATORY AUTHORITY
(PPRA)
EPADS





Engr. Khurram Shahzad
BSc. Civil Engineering
PEC # Civil/54490
Structural Design Engineer-
Riaz-ud-Din Engineering (Pvt.) Limited

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026



PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

SAP2000 Analysis Report

Prepared by

Elite Solutions

Model Name: L2 GI @ 15 degree.v0.sdb

Contents

1. Model geometry 4
   1.1. Joint coordinates 4
   1.2. Joint restraints 4
   1.3. Element connectivity 5
2. Material properties 5
3. Section properties 6
   3.1. Frames 6
   3.2. Cables 7
   3.3. Solids 8
4. Load patterns 8
   4.1. Definitions 8
   4.2. Auto seismic loading 8
5. Load cases 9
   5.1. Definitions 9
   5.2. Static case load assignments 10
   5.3. Response spectrum case load assignments 10
6. Load combinations 10
7. Structure results 17
   7.1. Mass summary 17
   7.2. Base reactions 18
8. Joint results 18
9. Frame results 21
10. Material take-off 28
11. Design preferences 29
   11.1. Steel design 29
   11.2. Concrete design 29
   11.3. Aluminum design 30
   11.4. Cold formed design 30
12. Design overwrites 30
   12.1. Steel design 30
13. Design summary 32
   13.1. Steel design 32

List of Figures

Figure 1: Finite element model 4
Figure 2: Deformed shape 17

List of Tables

Table 1: Joint Coordinates 4
Table 2: Joint Restraint Assignments 5
Table 3: Connectivity - Frame 5
Table 4: Frame Section Assignments 5
Table 5: Material Properties 02 - Basic Mechanical Properties 5
Table 6: Material Properties 03a - Steel Data 5
Table 7: Material Properties 03b - Concrete Data 6
Table 8: Material Properties 03c - Aluminum Data 6
Table 9: Material Properties 03f - Tendon Data 6
Table 10: Frame Section Properties 01 - General, Part 1 of 6 6
Table 10: Frame Section Properties 01 - General, Part 2 of 6 6
Table 10: Frame Section Properties 01 - General, Part 3 of 6 6
Table 10: Frame Section Properties 01 - General, Part 4 of 6 7
Table 10: Frame Section Properties 01 - General, Part 5 of 6 7
Table 10: Frame Section Properties 01 - General, Part 6 of 6 7
Table 11: Frame Property Modifiers, Part 1 of 2 7
Table 11: Frame Property Modifiers, Part 2 of 2 7
Table 12: Cable Section Definitions, Part 1 of 2 8
Table 12: Cable Section Definitions, Part 2 of 2 8

Table 13: Solid Property Definitions 8
Table 14: Load Pattern Definitions 8
Table 15: Auto Seismic - UBC97, Part 1 of 3 8
Table 15: Auto Seismic - UBC97, Part 2 of 3 9
Table 15: Auto Seismic - UBC97, Part 3 of 3 9
Table 16: Load Case Definitions, Part 1 of 2 9
Table 16: Load Case Definitions, Part 2 of 2 9
Table 17: Case - Static 1 - Load Assignments 10
Table 18: Function - Response Spectrum - User 10
Table 19: Combination Definitions 11
Table 20: Assembled Joint Masses, Part 1 of 2 17
Table 20: Assembled Joint Masses, Part 2 of 2 17
Table 21: Base Reactions 18
Table 22: Joint Displacements 18
Table 23: Joint Reactions 20
Table 24: Element Forces - Frames, Part 1 of 2 21
Table 24: Element Forces - Frames, Part 2 of 2 25
Table 25: Material List 2 - By Section Property 28
Table 26: Preferences - Steel Design - AISC 360-16, Part 1 of 4 29
Table 26: Preferences - Steel Design - AISC 360-16, Part 2 of 4 29
Table 26: Preferences - Steel Design - AISC 360-16, Part 3 of 4 29
Table 26: Preferences - Steel Design - AISC 360-16, Part 4 of 4 29
Table 27: Preferences - Concrete Design - ACI 318-08/IBC2009, Part 1 of 2 29
Table 27: Preferences - Concrete Design - ACI 318-08/IBC2009, Part 2 of 2 29
Table 28: Preferences - Concrete Shell Design - Eurocode 2-2004 30
Table 29: Preferences - Aluminum Design - AA 2015, Part 1 of 2 30
Table 29: Preferences - Aluminum Design - AA 2015, Part 2 of 2 30
Table 30: Preferences - Cold Formed Design - AISI-ASD96 30
Table 31: Overwrites - Steel Design - AISC 360-16, Part 1 of 7 30
Table 31: Overwrites - Steel Design - AISC 360-16, Part 2 of 7 31
Table 31: Overwrites - Steel Design - AISC 360-16, Part 3 of 7 31
Table 31: Overwrites - Steel Design - AISC 360-16, Part 4 of 7 31
Table 31: Overwrites - Steel Design - AISC 360-16, Part 5 of 7 31
Table 31: Overwrites - Steel Design - AISC 360-16, Part 6 of 7 32
Table 31: Overwrites - Steel Design - AISC 360-16, Part 7 of 7 32
Table 32: Steel Design 1 - Summary Data - AISC 360-16, Part 1 of 2 32
Table 32: Steel Design 1 - Summary Data - AISC 360-16, Part 2 of 2 32

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

1. Model geometry

This section provides model geometry information, including items such as joint coordinates, joint restraints, and element connectivity.

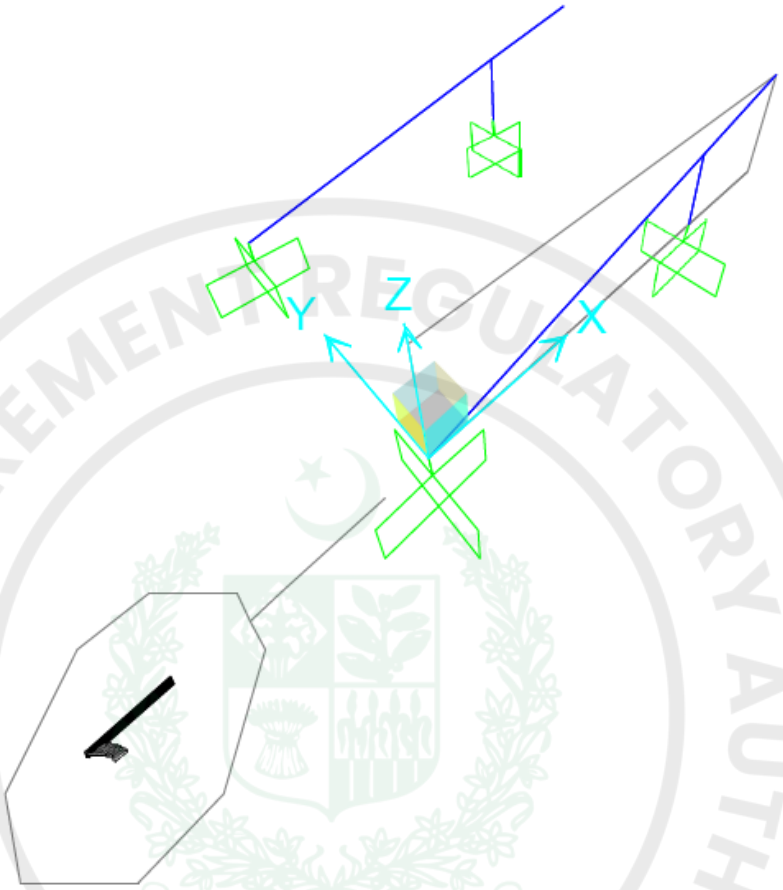


Figure 1: Finite element model

1.1. Joint coordinates

Table 1: Joint Coordinates

Table 1: Joint Coordinates

Joint	CoordSys	CoordType	GlobalX mm	GlobalY mm	GlobalZ mm
1	GLOBAL	Cartesian	0.	0.	0.
2	GLOBAL	Cartesian	2213.	0.	593.
7	GLOBAL	Cartesian	0.	1400.	0.
8	GLOBAL	Cartesian	2213.	1400.	593.
9	GLOBAL	Cartesian	1585.	1400.	0.
10	GLOBAL	Cartesian	1585.	1400.	424.72
14	GLOBAL	Cartesian	1585.	0.	0.
15	GLOBAL	Cartesian	1585.	0.	424.72

1.2. Joint restraints

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 2: Joint Restraint Assignments

Table 2: Joint Restraint Assignments

Joint	U1	U2	U3	R1	R2	R3
1	Yes	Yes	Yes	Yes	Yes	Yes
7	Yes	Yes	Yes	Yes	Yes	Yes
9	Yes	Yes	Yes	Yes	Yes	Yes
14	Yes	Yes	Yes	Yes	Yes	Yes

1.3. Element connectivity

Table 3: Connectivity - Frame

Table 3: Connectivity - Frame

Frame	JointI	JointJ	Length mm
3	10	9	424.72
5	1	15	1640.92
6	15	2	650.16
7	7	10	1640.92
8	10	8	650.16
21	15	14	424.72

Table 4: Frame Section Assignments

Table 4: Frame Section Assignments

Frame	AnalSect	DesignSect	MatProp
3	Column	Column	Default
5	Purlin	Purlin	Default
6	Purlin	Purlin	Default
7	Purlin	Purlin	Default
8	Purlin	Purlin	Default
21	Column	Column	Default

2. Material properties

This section provides material property information for materials used in the model.

Table 5: Material Properties 02 - Basic Mechanical Properties

Table 5: Material Properties 02 - Basic Mechanical Properties

Material	UnitWeight KN/mm3	UnitMass KN-s2/mm4	E1 KN/mm2	G12 KN/mm2	U12	A1 1/C
4000Psi	2.3563E-08	2.4028E-12	24.85558	10.35649	0.2	9.9000E-06
6061T6	2.6602E-08	2.7145E-12	69.63705	26.17934	0.33	2.3580E-05
A36	7.6973E-08	7.8490E-12	199.94798	76.90307	0.3	1.1700E-05
A416Gr250	7.6973E-08	7.8490E-12	196.5006			1.1700E-05

Table 6: Material Properties 03a - Steel Data

Table 6: Material Properties 03a - Steel Data

Material	Fy KN/mm2	Fu KN/mm2	FinalSlope	CoupModType
A36	0.24821	0.3999	-0.1	Von Mises

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 7: Material Properties 03b - Concrete Data

Table 7: Material Properties 03b - Concrete Data

Material	Fc	eFc	FinalSlope	CoupModType
	KN/mm2	KN/mm2		
4000Psi	0.02758	0.02758	-0.1	Modified Darwin-Pecknold

Table 8: Material Properties 03c - Aluminum Data

Table 8: Material Properties 03c - Aluminum Data

Material	AlumType	Alloy	Fcy	Fty	Ftu	Fsu	CoupModType
			KN/mm2	KN/mm2	KN/mm2	KN/mm2	
6061T6	Wrought	6061-T6	0.24132	0.24132	0.262	0.16547	Von Mises

Table 9: Material Properties 03f - Tendon Data

Table 9: Material Properties 03f - Tendon Data

Material	Fy	Fu	FinalSlope	CoupModType
	KN/mm2	KN/mm2		
A416Gr250	1.4934	1.72369	-0.1	Von Mises

3. Section properties

This section provides section property information for objects used in the model.

3.1. Frames

Table 10: Frame Section Properties 01 - General, Part 1 of 6

Table 10: Frame Section Properties 01 - General, Part 1 of 6

SectionName	Material	Shape	FilletRadius	t3	t2	tf	tw
			mm	mm	mm	mm	mm
Column	A36	Channel	0.	44.45	25.4	1.8	1.8
Purlin	A36	Channel	0.	50.8	25.4	1.8	1.8

Table 10: Frame Section Properties 01 - General, Part 2 of 6

Table 10: Frame Section Properties 01 - General, Part 2 of 6

SectionName	S33Top	S33Bot	S22Left	Area	TorsConst	S22Right	I33	I22
	mm3	mm3	mm3	mm2	mm4	mm3	mm4	mm4
Column	2332.18	2332.18	1426.09	164.97	171.55	590.82	51832.64	10610.89
Purlin	2782.86	2782.86	1577.84	176.4	183.9	602.25	70684.66	11071.26

Table 10: Frame Section Properties 01 - General, Part 3 of 6

Table 10: Frame Section Properties 01 - General, Part 3 of 6

SectionName	I23	AS2	CGOffset3	AS3
	mm4	mm2	mm	mm2
Column	0.	80.01	0.	91.44
Purlin	0.	91.44	0.	91.44

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 10: Frame Section Properties 01 - General, Part 4 of 6

Table 10: Frame Section Properties 01 - General, Part 4 of 6

SectionName	CGOffset2	Z33	EccV3	Cw	Z22	R33	IncludeSCAn	R22
	mm	mm3	mm	mm6	mm3	mm		mm
Column	5.259	2700.88	0.	3367644.68	1072.84	17.726	Yes	8.02
Purlin	5.683	3242.81	0.	4642400.13	1084.62	20.018	Yes	7.922

Table 10: Frame Section Properties 01 - General, Part 5 of 6

Table 10: Frame Section Properties 01 - General, Part 5 of 6

SectionName	EccV2	AMod	A2Mod	A3Mod	JMod	I2Mod	I3Mod	MMod
	mm							
Column	21.295	1.	1.	1.	1.	1.	1.	1.
Purlin	20.988	1.	1.	1.	1.	1.	1.	1.

Table 10: Frame Section Properties 01 - General, Part 6 of 6

Table 10: Frame Section Properties 01 - General, Part 6 of 6

SectionName	WMod
Column	1.
Purlin	1.

Table 11: Frame Property Modifiers, Part 1 of 2

Table 11: Frame Property Modifiers, Part 1 of 2

Frame	AMod	AS2Mod	AS3Mod	JMod	I22Mod	I33Mod	MassMod	WeightMod
3	1.	1.	1.	1.	1.	1.	1.	1.
5	1.	1.	1.	1.	1.	1.	1.	1.
6	1.	1.	1.	1.	1.	1.	1.	1.
7	1.	1.	1.	1.	1.	1.	1.	1.
8	1.	1.	1.	1.	1.	1.	1.	1.
21	1.	1.	1.	1.	1.	1.	1.	1.

Table 11: Frame Property Modifiers, Part 2 of 2

Table 11: Frame Property Modifiers, Part 2 of 2

Frame	EAModifier	EIModifier
3	0.8	0.8
5	0.8	0.8
6	0.8	0.8
7	0.8	0.8
8	0.8	0.8
21	0.8	0.8

3.2. Cables

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 12: Cable Section Definitions, Part 1 of 2

Table 12: Cable Section Definitions, Part 1 of 2

CableSect	Material	Diameter	Area	TorsConst	I	AS
		mm	mm2	mm4	mm4	mm2
CABLE	A416Gr250	12.	113.1	2035.75	1017.88	101.79

Table 12: Cable Section Definitions, Part 2 of 2

Table 12: Cable Section Definitions, Part 2 of 2

CableSect	AMod	A2Mod	A3Mod	JMod	I2Mod	I3Mod	MMod	WMod
CABLE	1.	1.	1.	1.	1.	1.	1.	1.

3.3. Solids

Table 13: Solid Property Definitions

Table 13: Solid Property Definitions

SolidProp	Material	MatAngleA	MatAngleB	MatAngleC
		Degrees	Degrees	Degrees
Solid1	4000Psi	0.	0.	0.

4. Load patterns

This section provides loading information as applied to the model.

4.1. Definitions

Table 14: Load Pattern Definitions

Table 14: Load Pattern Definitions

LoadPat	DesignType	SelfWtMult	AutoLoad
DL	Dead	1.	
RL	Roof Live	0.	
EQX	Quake	0.	UBC97
EQY	Quake	0.	UBC97
W2X+	Wind	0.	None
W3X+	Wind	0.	None
W3X-	Wind	0.	None
W1X-	Wind	0.	None
W2X-	Wind	0.	None
W1X+	Wind	0.	None
Wlong+	Wind	0.	None
Wlong-	Wind	0.	None

4.2. Auto seismic loading

Table 15: Auto Seismic - UBC97, Part 1 of 3

Table 15: Auto Seismic - UBC97, Part 1 of 3

LoadPat	Dir	PercentEcc	Ct	R	SoilType
EQX	X	0.05	0.035	4.5	SD

Table 15: Auto Seismic - UBC97, Part 1 of 3

LoadPat	Dir	PercentEcc	Ct	R	SoilType
EQY	Y	0.05	0.035	4.5	SD

Table 15: Auto Seismic - UBC97, Part 2 of 3

Table 15: Auto Seismic - UBC97, Part 2 of 3

LoadPat	Z	Ca	Cv	SourceType	SourceDist km	Na	Nv
EQX	0.15	0.22	0.32	B	0.	1.3	1.6
EQY	0.15	0.22	0.32	B	0.	1.3	1.6

Table 15: Auto Seismic - UBC97, Part 3 of 3

Table 15: Auto Seismic - UBC97, Part 3 of 3

LoadPat	I	TUsed Sec	WeightUsed KN	BaseShear KN	FtUsed KN
EQX	1.	0.0807	0.045	5.540E-03	0.
EQY	1.	0.0807	0.045	5.540E-03	0.

5. Load cases

This section provides load case information.

5.1. Definitions

Table 16: Load Case Definitions, Part 1 of 2

Table 16: Load Case Definitions, Part 1 of 2

Case	Type	InitialCond	ModalCase	BaseCase	MassSource	DesActOpt
EQX	LinStatic	Zero				Prog Det
DEAD	LinStatic	Zero				Prog Det
RL	LinStatic	Zero				Prog Det
EQY	LinStatic	Zero				Prog Det
WIX+	LinStatic	Zero				Prog Det
W2X+	LinStatic	Zero				Prog Det
W3X+	LinStatic	Zero				Prog Det
W3X-	LinStatic	Zero				Prog Det
W1X-	LinStatic	Zero				Prog Det
W2X-	LinStatic	Zero				Prog Det
W1X+	LinStatic	Zero				Prog Det
Wlong+	LinStatic	Zero				Prog Det
Wlong-	LinStatic	Zero				Prog Det

Table 16: Load Case Definitions, Part 2 of 2

Table 16: Load Case Definitions, Part 2 of 2

Case	DesignAct
EQX	Short-Term Composite
DEAD	Non-Composite
RL	Short-Term Composite
EQY	Short-Term Composite
WIX+	Other

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 16: Load Case Definitions, Part 2 of 2

Case	DesignAct
W2X+	Short-Term Composite
W3X+	Short-Term Composite
W3X-	Short-Term Composite
W1X-	Short-Term Composite
W2X-	Short-Term Composite
W1X+	Short-Term Composite
Wlong+	Short-Term Composite
Wlong-	Short-Term Composite

5.2. Static case load assignments

Table 17: Case - Static 1 - Load Assignments

Table 17: Case - Static 1 - Load Assignments

Case	LoadType	LoadName	LoadSF
EQX	Load pattern	EQX	1.
DEAD	Load pattern	DL	1.
RL	Load pattern	RL	1.
EQY	Load pattern	EQY	1.
W2X+	Load pattern	W2X+	1.
W3X+	Load pattern	W3X+	1.
W3X-	Load pattern	W3X-	1.
W1X-	Load pattern	W1X-	1.
W2X-	Load pattern	W2X-	1.
W1X+	Load pattern	W1X+	1.
Wlong+	Load pattern	Wlong+	1.
Wlong-	Load pattern	Wlong-	1.

5.3. Response spectrum case load assignments

Table 18: Function - Response Spectrum - User

Table 18: Function - Response Spectrum - User

Name	Period Sec	Accel	FuncDamp
UNIFRS	0.	1.	0.05
UNIFRS	1.	1.	

6. Load combinations

This section provides load combination information.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 19: Combination Definitions

Table 19: Combination Definitions

ComboName	ComboType	CaseName	ScaleFactor
D+L	Linear Add	DEAD	1.
D+L		RL	1.
D	Linear Add	DEAD	1.
D+W1X+	Linear Add	DEAD	1.
D+W1X+		W1X+	1.
D+W2X+	Linear Add	DEAD	1.
D+W2X+		W2X+	1.
D+W3X+	Linear Add	DEAD	1.
D+W3X+		W3X+	1.
D+0.6W1X-	Linear Add	DEAD	1.
D+0.6W1X-		W1X-	0.6
D+W2X-	Linear Add	DEAD	1.
D+W2X-		W2X-	1.
D+W3X-	Linear Add	DEAD	1.
D+W3X-		W3X-	1.
D+Wlong(+)	Linear Add	DEAD	1.
D+Wlong(+)		Wlong+	1.
D+W(long)-	Linear Add	DEAD	1.
D+W(long)-		Wlong-	1.
D+0.5W1X+	Linear Add	DEAD	1.
D+0.5W1X+		W1X+	0.5
D+0.5W2X+	Linear Add	DEAD	1.
D+0.5W2X+		W2X+	0.5
D+0.5W3X+	Linear Add	DEAD	1.
D+0.5W3X+		W3X+	0.5
D+0.5W1X-	Linear Add	DEAD	1.
D+0.5W1X-		W1X-	0.5
D+0.5W2X-	Linear Add	DEAD	1.
D+0.5W2X-		W2X-	0.5
D+0.5W3X-	Linear Add	DEAD	1.
D+0.5W3X-		W3X-	0.5
D+0.5Wlong(+)	Linear Add	DEAD	1.
D+0.5Wlong(+)		Wlong+	0.5
D+0.5W(long)-	Linear Add	DEAD	1.
D+0.5W(long)-		Wlong-	0.5
0.75D+EQX	Linear Add	DEAD	0.75
0.75D+EQX		EQX	1.
0.75D+EQY	Linear Add	DEAD	0.75
0.75D+EQY		EQY	1.
0.75D-EQY	Linear Add	DEAD	0.75
0.75D-EQY		EQY	-1.
UDSTL1	Linear Add	DEAD	1.3
UDSTL2	Linear Add	DEAD	1.1
UDSTL2		W2X+	1.35
UDSTL3	Linear Add	DEAD	1.1
UDSTL3		W2X+	-1.35
UDSTL4	Linear Add	DEAD	1.1
UDSTL4		W3X+	1.35
UDSTL5	Linear Add	DEAD	1.1
UDSTL5		W3X+	-1.35
UDSTL6	Linear Add	DEAD	1.1
UDSTL6		W3X-	1.35
UDSTL7	Linear Add	DEAD	1.1
UDSTL7		W3X-	-1.35
UDSTL8	Linear Add	DEAD	1.1
UDSTL8		W1X-	1.35
UDSTL9	Linear Add	DEAD	1.1
UDSTL9		W1X-	-1.35
UDSTL10	Linear Add	DEAD	1.1
UDSTL10		W2X-	1.35
UDSTL11	Linear Add	DEAD	1.1
UDSTL11		W2X-	-1.35

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 19: Combination Definitions

ComboName	ComboType	CaseName	ScaleFactor
UDSTL12	Linear Add	DEAD	1.1
UDSTL12		W1X+	1.35
UDSTL13	Linear Add	DEAD	1.1
UDSTL13		W1X+	-1.35
UDSTL14	Linear Add	DEAD	1.1
UDSTL14		Wlong+	1.35
UDSTL15	Linear Add	DEAD	1.1
UDSTL15		Wlong+	-1.35
UDSTL16	Linear Add	DEAD	1.1
UDSTL16		Wlong-	1.35
UDSTL17	Linear Add	DEAD	1.1
UDSTL17		Wlong-	-1.35
UDSTL18	Linear Add	DEAD	1.1
UDSTL18		W2X+	1.35
UDSTL19	Linear Add	DEAD	1.1
UDSTL19		W2X+	-1.35
UDSTL20	Linear Add	DEAD	1.1
UDSTL20		W3X+	1.35
UDSTL21	Linear Add	DEAD	1.1
UDSTL21		W3X+	-1.35
UDSTL22	Linear Add	DEAD	1.1
UDSTL22		W3X-	1.35
UDSTL23	Linear Add	DEAD	1.1
UDSTL23		W3X-	-1.35
UDSTL24	Linear Add	DEAD	1.1
UDSTL24		W1X-	1.35
UDSTL25	Linear Add	DEAD	1.1
UDSTL25		W1X-	-1.35
UDSTL26	Linear Add	DEAD	1.1
UDSTL26		W2X-	1.35
UDSTL27	Linear Add	DEAD	1.1
UDSTL27		W2X-	-1.35
UDSTL28	Linear Add	DEAD	1.1
UDSTL28		W1X+	1.35
UDSTL29	Linear Add	DEAD	1.1
UDSTL29		W1X+	-1.35
UDSTL30	Linear Add	DEAD	1.1
UDSTL30		Wlong+	1.35
UDSTL31	Linear Add	DEAD	1.1
UDSTL31		Wlong+	-1.35
UDSTL32	Linear Add	DEAD	1.1
UDSTL32		Wlong-	1.35
UDSTL33	Linear Add	DEAD	1.1
UDSTL33		Wlong-	-1.35
UDSTL34	Linear Add	DEAD	0.9
UDSTL34		W2X+	1.35
UDSTL35	Linear Add	DEAD	0.9
UDSTL35		W2X+	-1.35
UDSTL36	Linear Add	DEAD	0.9
UDSTL36		W3X+	1.35
UDSTL37	Linear Add	DEAD	0.9
UDSTL37		W3X+	-1.35
UDSTL38	Linear Add	DEAD	0.9
UDSTL38		W3X-	1.35
UDSTL39	Linear Add	DEAD	0.9
UDSTL39		W3X-	-1.35
UDSTL40	Linear Add	DEAD	0.9
UDSTL40		W1X-	1.35
UDSTL41	Linear Add	DEAD	0.9
UDSTL41		W1X-	-1.35
UDSTL42	Linear Add	DEAD	0.9
UDSTL42		W2X-	1.35
UDSTL43	Linear Add	DEAD	0.9
UDSTL43		W2X-	-1.35

Table 19: Combination Definitions

ComboName	ComboType	CaseName	ScaleFactor
UDSTL44	Linear Add	DEAD	0.9
UDSTL44		W1X+	1.35
UDSTL45	Linear Add	DEAD	0.9
UDSTL45		W1X+	-1.35
UDSTL46	Linear Add	DEAD	0.9
UDSTL46		Wlong+	1.35
UDSTL47	Linear Add	DEAD	0.9
UDSTL47		Wlong+	-1.35
UDSTL48	Linear Add	DEAD	0.9
UDSTL48		Wlong-	1.35
UDSTL49	Linear Add	DEAD	0.9
UDSTL49		Wlong-	-1.35
UDSTL50	Linear Add	DEAD	1.1
UDSTL50		EQX	0.9
UDSTL51	Linear Add	DEAD	1.1
UDSTL51		EQX	-0.9
UDSTL52	Linear Add	DEAD	1.1
UDSTL52		EQY	0.9
UDSTL53	Linear Add	DEAD	1.1
UDSTL53		EQY	-0.9
UDSTL54	Linear Add	DEAD	0.9
UDSTL54		EQX	0.9
UDSTL55	Linear Add	DEAD	0.9
UDSTL55		EQX	-0.9
UDSTL56	Linear Add	DEAD	0.9
UDSTL56		EQY	0.9
UDSTL57	Linear Add	DEAD	0.9
UDSTL57		EQY	-0.9
UDSTL58	Linear Add	DEAD	1.
DALM1	Linear Add	DEAD	1.
DALM2	Linear Add	DEAD	1.
DALM2		RL	1.
DALM3	Linear Add	DEAD	1.
DALM3		RL	0.75
DALM4	Linear Add	DEAD	1.
DALM4		W2X+	0.45
DALM5	Linear Add	DEAD	1.
DALM5		W2X+	-0.45
DALM6	Linear Add	DEAD	1.
DALM6		W3X+	0.45
DALM7	Linear Add	DEAD	1.
DALM7		W3X+	-0.45
DALM8	Linear Add	DEAD	1.
DALM8		W3X-	0.45
DALM9	Linear Add	DEAD	1.
DALM9		W3X-	-0.45
DALM10	Linear Add	DEAD	1.
DALM10		W1X-	0.45
DALM11	Linear Add	DEAD	1.
DALM11		W1X-	-0.45
DALM12	Linear Add	DEAD	1.
DALM12		W2X-	0.45
DALM13	Linear Add	DEAD	1.
DALM13		W2X-	-0.45
DALM14	Linear Add	DEAD	1.
DALM14		W1X+	0.45
DALM15	Linear Add	DEAD	1.
DALM15		W1X+	-0.45
DALM16	Linear Add	DEAD	1.
DALM16		Wlong+	0.45
DALM17	Linear Add	DEAD	1.
DALM17		Wlong+	-0.45
DALM18	Linear Add	DEAD	1.
DALM18		Wlong-	0.45

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 19: Combination Definitions

ComboName	ComboType	CaseName	ScaleFactor
DALM19	Linear Add	DEAD	1.
DALM19		Wlong-	-0.45
DALM20	Linear Add	DEAD	1.
DALM20		RL	0.75
DALM20		W2X+	0.45
DALM21	Linear Add	DEAD	1.
DALM21		RL	0.75
DALM21		W2X+	-0.45
DALM22	Linear Add	DEAD	1.
DALM22		RL	0.75
DALM22		W3X+	0.45
DALM23	Linear Add	DEAD	1.
DALM23		RL	0.75
DALM23		W3X+	-0.45
DALM24	Linear Add	DEAD	1.
DALM24		RL	0.75
DALM24		W3X-	0.45
DALM25	Linear Add	DEAD	1.
DALM25		RL	0.75
DALM25		W3X-	-0.45
DALM26	Linear Add	DEAD	1.
DALM26		RL	0.75
DALM26		W1X-	0.45
DALM27	Linear Add	DEAD	1.
DALM27		RL	0.75
DALM27		W1X-	-0.45
DALM28	Linear Add	DEAD	1.
DALM28		RL	0.75
DALM28		W2X-	0.45
DALM29	Linear Add	DEAD	1.
DALM29		RL	0.75
DALM29		W2X-	-0.45
DALM30	Linear Add	DEAD	1.
DALM30		RL	0.75
DALM30		W1X+	0.45
DALM31	Linear Add	DEAD	1.
DALM31		RL	0.75
DALM31		W1X+	-0.45
DALM32	Linear Add	DEAD	1.
DALM32		RL	0.75
DALM32		Wlong+	0.45
DALM33	Linear Add	DEAD	1.
DALM33		RL	0.75
DALM33		Wlong+	-0.45
DALM34	Linear Add	DEAD	1.
DALM34		RL	0.75
DALM34		Wlong-	0.45
DALM35	Linear Add	DEAD	1.
DALM35		RL	0.75
DALM35		Wlong-	-0.45
DALM36	Linear Add	DEAD	1.
DALM36		W2X+	0.6
DALM37	Linear Add	DEAD	1.
DALM37		W2X+	-0.6
DALM38	Linear Add	DEAD	1.
DALM38		W3X+	0.6
DALM39	Linear Add	DEAD	1.
DALM39		W3X+	-0.6
DALM40	Linear Add	DEAD	1.
DALM40		W3X-	0.6
DALM41	Linear Add	DEAD	1.
DALM41		W3X-	-0.6
DALM42	Linear Add	DEAD	1.
DALM42		W1X-	0.6

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 19: Combination Definitions

ComboName	ComboType	CaseName	ScaleFactor
DALM43	Linear Add	DEAD	1.
DALM43		W1X-	-0.6
DALM44	Linear Add	DEAD	1.
DALM44		W2X-	0.6
DALM45	Linear Add	DEAD	1.
DALM45		W2X-	-0.6
DALM46	Linear Add	DEAD	1.
DALM46		W1X+	0.6
DALM47	Linear Add	DEAD	1.
DALM47		W1X+	-0.6
DALM48	Linear Add	DEAD	1.
DALM48		Wlong+	0.6
DALM49	Linear Add	DEAD	1.
DALM49		Wlong+	-0.6
DALM50	Linear Add	DEAD	1.
DALM50		Wlong-	0.6
DALM51	Linear Add	DEAD	1.
DALM51		Wlong-	-0.6
DALM52	Linear Add	DEAD	0.6
DALM52		W2X+	0.6
DALM53	Linear Add	DEAD	0.6
DALM53		W2X+	-0.6
DALM54	Linear Add	DEAD	0.6
DALM54		W3X+	0.6
DALM55	Linear Add	DEAD	0.6
DALM55		W3X+	-0.6
DALM56	Linear Add	DEAD	0.6
DALM56		W3X-	0.6
DALM57	Linear Add	DEAD	0.6
DALM57		W3X-	-0.6
DALM58	Linear Add	DEAD	0.6
DALM58		W1X-	0.6
DALM59	Linear Add	DEAD	0.6
DALM59		W1X-	-0.6
DALM60	Linear Add	DEAD	0.6
DALM60		W2X-	0.6
DALM61	Linear Add	DEAD	0.6
DALM61		W2X-	-0.6
DALM62	Linear Add	DEAD	0.6
DALM62		W1X+	0.6
DALM63	Linear Add	DEAD	0.6
DALM63		W1X+	-0.6
DALM64	Linear Add	DEAD	0.6
DALM64		Wlong+	0.6
DALM65	Linear Add	DEAD	0.6
DALM65		Wlong+	-0.6
DALM66	Linear Add	DEAD	0.6
DALM66		Wlong-	0.6
DALM67	Linear Add	DEAD	0.6
DALM67		Wlong-	-0.6
DALM68	Linear Add	DEAD	1.
DALM68		EQX	0.525
DALM69	Linear Add	DEAD	1.
DALM69		EQX	-0.525
DALM70	Linear Add	DEAD	1.
DALM70		EQY	0.525
DALM71	Linear Add	DEAD	1.
DALM71		EQY	-0.525
DALM72	Linear Add	DEAD	1.
DALM72		EQX	0.7
DALM73	Linear Add	DEAD	1.
DALM73		EQX	-0.7
DALM74	Linear Add	DEAD	1.
DALM74		EQY	0.7

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 19: Combination Definitions

ComboName	ComboType	CaseName	ScaleFactor
DALM75	Linear Add	DEAD	1.
DALM75		EQY	-0.7
DALM76	Linear Add	DEAD	0.6
DALM76		EQX	0.7
DALM77	Linear Add	DEAD	0.6
DALM77		EQX	-0.7
DALM78	Linear Add	DEAD	0.6
DALM78		EQY	0.7
DALM79	Linear Add	DEAD	0.6
DALM79		EQY	-0.7
DALM80	Linear Add	DEAD	1.

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

7. Structure results

This section provides structure results, including items such as structural periods and base reactions.

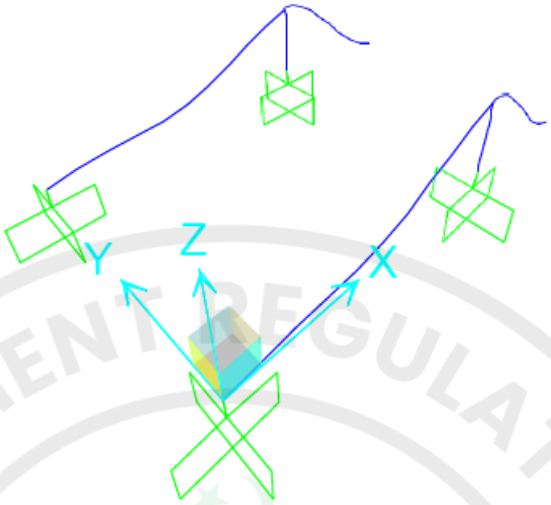


Figure 2: Deformed shape

7.1. Mass summary

Table 20: Assembled Joint Masses, Part 1 of 2

Table 20: Assembled Joint Masses, Part 1 of 2

Joint	MassSource	U1 KN-s2/mm	U2 KN-s2/mm	U3 KN-s2/mm	R1 KN-mm-s2	R2 KN-mm-s2	R3 KN-mm-s2	CenterX mm
1	MSSSRC1	1.136E-06	1.136E-06	1.136E-06	0.	0.	0.	0.
2	MSSSRC1	4.501E-07	4.501E-07	4.501E-07	0.	0.	0.	2213.
7	MSSSRC1	1.136E-06	1.136E-06	1.136E-06	0.	0.	0.	0.
8	MSSSRC1	4.501E-07	4.501E-07	4.501E-07	0.	0.	0.	2213.
9	MSSSRC1	2.750E-07	2.750E-07	2.750E-07	0.	0.	0.	1585.
10	MSSSRC1	1.861E-06	1.861E-06	1.861E-06	0.	0.	0.	1585.
14	MSSSRC1	2.750E-07	2.750E-07	2.750E-07	0.	0.	0.	1585.
15	MSSSRC1	1.861E-06	1.861E-06	1.861E-06	0.	0.	0.	1585.
SumAccelUX	MSSSRC1	7.444E-06	0.	0.	0.	0.	0.	1177.2
SumAccelUY	MSSSRC1	0.	7.444E-06	0.	0.	0.	0.	1177.2
SumAccelUZ	MSSSRC1	0.	0.	7.444E-06	0.	0.	0.	1177.2

Table 20: Assembled Joint Masses, Part 2 of 2

Table 20: Assembled Joint Masses, Part 2 of 2

Joint	MassSource	CenterY mm	CenterZ mm
1	MSSSRC1	0.	0.
2	MSSSRC1	0.	593.
7	MSSSRC1	1400.	0.
8	MSSSRC1	1400.	593.
9	MSSSRC1	1400.	0.
10	MSSSRC1	1400.	424.72
14	MSSSRC1	0.	0.
15	MSSSRC1	0.	424.72
SumAccelUX	MSSSRC1	700.	284.07
SumAccelUY	MSSSRC1	700.	284.07
SumAccelUZ	MSSSRC1	700.	284.07

7.2. Base reactions

Table 21: Base Reactions

Table 21: Base Reactions

OutputCase	GlobalFX	GlobalFY	GlobalFZ	GlobalMX	GlobalMY	GlobalMZ
	KN	KN	KN	KN-mm	KN-mm	KN-mm
EQX	-5.540E-03	-6.077E-20	5.926E-18	4.365E-15	-2.59	3.88
DEAD	1.335E-15	-1.698E-17	0.715	500.48	-796.27	-1.021E-12
RL	0.	0.	0.	0.	0.	0.
EQY	1.975E-18	-5.540E-03	1.358E-18	2.59	-3.726E-15	-9.66
WIX+	0.	0.	0.	0.	0.	0.
W2X+	0.	0.	0.	0.	0.	0.
W3X+	0.	0.	0.	0.	0.	0.
W3X-	0.	0.	0.	0.	0.	0.
W1X-	1.039	1.010E-16	-3.876	-2712.89	4596.22	-726.95
W2X-	0.	0.	0.	0.	0.	0.
W1X+	0.	0.	0.	0.	0.	0.
Wlong+	0.	0.	0.	0.	0.	0.
Wlong-	0.	0.	0.	0.	0.	0.

8. Joint results

This section provides joint results, including items such as displacements and reactions.

Table 22: Joint Displacements

Table 22: Joint Displacements

Joint	OutputCase	U1	U2	U3	R1	R2	R3
		mm	mm	mm	Radians	Radians	Radians
1	EQX	0.	0.	0.	0.	0.	0.
1	DEAD	0.	0.	0.	0.	0.	0.
1	RL	0.	0.	0.	0.	0.	0.
1	EQY	0.	0.	0.	0.	0.	0.
1	WIX+	0.	0.	0.	0.	0.	0.
1	W2X+	0.	0.	0.	0.	0.	0.
1	W3X+	0.	0.	0.	0.	0.	0.
1	W3X-	0.	0.	0.	0.	0.	0.
1	W1X-	0.	0.	0.	0.	0.	0.
1	W2X-	0.	0.	0.	0.	0.	0.
1	W1X+	0.	0.	0.	0.	0.	0.
1	Wlong+	0.	0.	0.	0.	0.	0.
1	Wlong-	0.	0.	0.	0.	0.	0.
2	EQX	0.001651	0.000453	-0.005563	-0.000168	4.086E-06	-0.000044
2	DEAD	0.312644	-0.011976	-1.168566	-0.044976	0.000466	-0.012072
2	RL	0.	0.	0.	0.	0.	0.
2	EQY	0.000542	0.140164	-0.002259	-0.00015	3.601E-06	0.000146
2	WIX+	0.	0.	0.	0.	0.	0.
2	W2X+	0.	0.	0.	0.	0.	0.
2	W3X+	0.	0.	0.	0.	0.	0.
2	W3X-	0.	0.	0.	0.	0.	0.
2	W1X-	-1.868173	0.098187	6.916881	0.265302	-0.00279	0.07125
2	W2X-	0.	0.	0.	0.	0.	0.
2	W1X+	0.	0.	0.	0.	0.	0.
2	Wlong+	0.	0.	0.	0.	0.	0.
2	Wlong-	0.	0.	0.	0.	0.	0.
7	EQX	0.	0.	0.	0.	0.	0.
7	DEAD	0.	0.	0.	0.	0.	0.
7	RL	0.	0.	0.	0.	0.	0.
7	EQY	0.	0.	0.	0.	0.	0.
7	WIX+	0.	0.	0.	0.	0.	0.
7	W2X+	0.	0.	0.	0.	0.	0.
7	W3X+	0.	0.	0.	0.	0.	0.

Table 22: Joint Displacements

Joint	OutputCase	U1 mm	U2 mm	U3 mm	R1 Radians	R2 Radians	R3 Radians
7	W3X-	0.	0.	0.	0.	0.	0.
7	W1X-	0.	0.	0.	0.	0.	0.
7	W2X-	0.	0.	0.	0.	0.	0.
7	W1X+	0.	0.	0.	0.	0.	0.
7	Wlong+	0.	0.	0.	0.	0.	0.
7	Wlong-	0.	0.	0.	0.	0.	0.
8	EQX	0.001651	0.000453	-0.005563	-0.000168	4.086E-06	-0.000044
8	DEAD	0.312644	-0.011976	-1.168566	-0.044976	0.000466	-0.012072
8	RL	0.	0.	0.	0.	0.	0.
8	EQY	0.000542	0.140164	-0.002259	-0.00015	3.601E-06	0.000146
8	WIX+	0.	0.	0.	0.	0.	0.
8	W2X+	0.	0.	0.	0.	0.	0.
8	W3X+	0.	0.	0.	0.	0.	0.
8	W3X-	0.	0.	0.	0.	0.	0.
8	W1X-	-1.868173	0.098187	6.916881	0.265302	-0.00279	0.07125
8	W2X-	0.	0.	0.	0.	0.	0.
8	W1X+	0.	0.	0.	0.	0.	0.
8	Wlong+	0.	0.	0.	0.	0.	0.
8	Wlong-	0.	0.	0.	0.	0.	0.
9	EQX	0.	0.	0.	0.	0.	0.
9	DEAD	0.	0.	0.	0.	0.	0.
9	RL	0.	0.	0.	0.	0.	0.
9	EQY	0.	0.	0.	0.	0.	0.
9	WIX+	0.	0.	0.	0.	0.	0.
9	W2X+	0.	0.	0.	0.	0.	0.
9	W3X+	0.	0.	0.	0.	0.	0.
9	W3X-	0.	0.	0.	0.	0.	0.
9	W1X-	0.	0.	0.	0.	0.	0.
9	W2X-	0.	0.	0.	0.	0.	0.
9	W1X+	0.	0.	0.	0.	0.	0.
9	Wlong+	0.	0.	0.	0.	0.	0.
9	Wlong-	0.	0.	0.	0.	0.	0.
10	EQX	0.000151	-0.000034	-0.000011	2.175E-07	1.380E-06	8.347E-07
10	DEAD	0.000543	0.000467	-0.002921	-3.601E-06	-0.000015	-0.000021
10	RL	0.	0.	0.	0.	0.	0.
10	EQY	-0.000064	0.037642	1.931E-06	-0.000132	3.601E-06	0.000082
10	WIX+	0.	0.	0.	0.	0.	0.
10	W2X+	0.	0.	0.	0.	0.	0.
10	W3X+	0.	0.	0.	0.	0.	0.
10	W3X-	0.	0.	0.	0.	0.	0.
10	W1X-	-0.019268	-0.001836	0.017006	0.00002	0.000047	0.000165
10	W2X-	0.	0.	0.	0.	0.	0.
10	W1X+	0.	0.	0.	0.	0.	0.
10	Wlong+	0.	0.	0.	0.	0.	0.
10	Wlong-	0.	0.	0.	0.	0.	0.
14	EQX	0.	0.	0.	0.	0.	0.
14	DEAD	0.	0.	0.	0.	0.	0.
14	RL	0.	0.	0.	0.	0.	0.
14	EQY	0.	0.	0.	0.	0.	0.
14	WIX+	0.	0.	0.	0.	0.	0.
14	W2X+	0.	0.	0.	0.	0.	0.
14	W3X+	0.	0.	0.	0.	0.	0.
14	W3X-	0.	0.	0.	0.	0.	0.
14	W1X-	0.	0.	0.	0.	0.	0.
14	W2X-	0.	0.	0.	0.	0.	0.
14	W1X+	0.	0.	0.	0.	0.	0.
14	Wlong+	0.	0.	0.	0.	0.	0.
14	Wlong-	0.	0.	0.	0.	0.	0.
15	EQX	0.000151	-0.000034	-0.000011	2.175E-07	1.380E-06	8.347E-07
15	DEAD	0.000543	0.000467	-0.002921	-3.601E-06	-0.000015	-0.000021
15	RL	0.	0.	0.	0.	0.	0.
15	EQY	-0.000064	0.037642	1.931E-06	-0.000132	3.601E-06	0.000082
15	WIX+	0.	0.	0.	0.	0.	0.
15	W2X+	0.	0.	0.	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 22: Joint Displacements

Joint	OutputCase	U1 mm	U2 mm	U3 mm	R1 Radians	R2 Radians	R3 Radians
15	W3X+	0.	0.	0.	0.	0.	0.
15	W3X-	0.	0.	0.	0.	0.	0.
15	W1X-	-0.019268	-0.001836	0.017006	0.00002	0.000047	0.000165
15	W2X-	0.	0.	0.	0.	0.	0.
15	W1X+	0.	0.	0.	0.	0.	0.
15	Wlong+	0.	0.	0.	0.	0.	0.
15	Wlong-	0.	0.	0.	0.	0.	0.

Table 23: Joint Reactions

Table 23: Joint Reactions

Joint	OutputCase	F1 KN	F2 KN	F3 KN	M1 KN-mm	M2 KN-mm	M3 KN-mm
1	EQX	-2.952E-03	3.900E-06	-8.333E-04	2.582E-04	2.163E-02	2.334E-03
1	DEAD	4.672E-03	-9.708E-05	0.128	2.627E-03	-33.64	-5.502E-02
1	RL	0.	0.	0.	0.	0.	0.
1	EQY	1.326E-03	3.310E-04	1.500E-04	-2.590E-02	0.13	0.12
1	WIX+	0.	0.	0.	0.	0.	0.
1	W2X+	0.	0.	0.	0.	0.	0.
1	W3X+	0.	0.	0.	0.	0.	0.
1	W3X-	0.	0.	0.	0.	0.	0.
1	W1X-	0.482	7.688E-04	-0.617	-6.456E-02	197.91	0.42
1	W2X-	0.	0.	0.	0.	0.	0.
1	W1X+	0.	0.	0.	0.	0.	0.
1	Wlong+	0.	0.	0.	0.	0.	0.
1	Wlong-	0.	0.	0.	0.	0.	0.
7	EQX	-2.952E-03	3.900E-06	-8.333E-04	2.582E-04	2.163E-02	2.334E-03
7	DEAD	4.672E-03	-9.708E-05	0.128	2.627E-03	-33.64	-5.502E-02
7	RL	0.	0.	0.	0.	0.	0.
7	EQY	1.326E-03	3.310E-04	1.500E-04	-2.590E-02	0.13	0.12
7	WIX+	0.	0.	0.	0.	0.	0.
7	W2X+	0.	0.	0.	0.	0.	0.
7	W3X+	0.	0.	0.	0.	0.	0.
7	W3X-	0.	0.	0.	0.	0.	0.
7	W1X-	0.482	7.688E-04	-0.617	-6.456E-02	197.91	0.42
7	W2X-	0.	0.	0.	0.	0.	0.
7	W1X+	0.	0.	0.	0.	0.	0.
7	Wlong+	0.	0.	0.	0.	0.	0.
7	Wlong-	0.	0.	0.	0.	0.	0.
9	EQX	1.819E-04	-3.900E-06	8.333E-04	-2.582E-04	4.956E-03	3.847E-03
9	DEAD	-4.672E-03	9.708E-05	0.23	-2.627E-03	-0.64	-9.884E-02
9	RL	0.	0.	0.	0.	0.	0.
9	EQY	-1.326E-03	-3.101E-03	-1.500E-04	1.32	-0.37	-3.078E-02
9	WIX+	0.	0.	0.	0.	0.	0.
9	W2X+	0.	0.	0.	0.	0.	0.
9	W3X+	0.	0.	0.	0.	0.	0.
9	W3X-	0.	0.	0.	0.	0.	0.
9	W1X-	0.038	-7.688E-04	-1.321	6.456E-02	6.85	0.8
9	W2X-	0.	0.	0.	0.	0.	0.
9	W1X+	0.	0.	0.	0.	0.	0.
9	Wlong+	0.	0.	0.	0.	0.	0.
9	Wlong-	0.	0.	0.	0.	0.	0.
14	EQX	1.819E-04	-3.900E-06	8.333E-04	-2.582E-04	4.956E-03	3.847E-03
14	DEAD	-4.672E-03	9.708E-05	0.23	-2.627E-03	-0.64	-9.884E-02
14	RL	0.	0.	0.	0.	0.	0.
14	EQY	-1.326E-03	-3.101E-03	-1.500E-04	1.32	-0.37	-3.078E-02
14	WIX+	0.	0.	0.	0.	0.	0.
14	W2X+	0.	0.	0.	0.	0.	0.
14	W3X+	0.	0.	0.	0.	0.	0.
14	W3X-	0.	0.	0.	0.	0.	0.
14	W1X-	0.038	-7.688E-04	-1.321	6.456E-02	6.85	0.8
14	W2X-	0.	0.	0.	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 23: Joint Reactions

Joint	OutputCase	F1	F2	F3	M1	M2	M3
		KN	KN	KN	KN-mm	KN-mm	KN-mm
14	W1X+	0.	0.	0.	0.	0.	0.
14	Wlong+	0.	0.	0.	0.	0.	0.
14	Wlong-	0.	0.	0.	0.	0.	0.

9. Frame results

This section provides frame force results.

Table 24: Element Forces - Frames, Part 1 of 2

Table 24: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		KN	KN	KN
3	0.	EQX	-8.333E-04	1.819E-04	3.900E-06
3	212.36	EQX	-8.333E-04	1.819E-04	3.900E-06
3	424.72	EQX	-8.333E-04	1.819E-04	3.900E-06
3	0.	DEAD	-0.224	-4.672E-03	-9.708E-05
3	212.36	DEAD	-0.227	-4.672E-03	-9.708E-05
3	424.72	DEAD	-0.23	-4.672E-03	-9.708E-05
3	0.	RL	0.	0.	0.
3	212.36	RL	0.	0.	0.
3	424.72	RL	0.	0.	0.
3	0.	EQY	1.500E-04	-1.326E-03	3.101E-03
3	212.36	EQY	1.500E-04	-1.326E-03	3.101E-03
3	424.72	EQY	1.500E-04	-1.326E-03	3.101E-03
3	0.	WIX+	0.	0.	0.
3	212.36	WIX+	0.	0.	0.
3	424.72	WIX+	0.	0.	0.
3	0.	W2X+	0.	0.	0.
3	212.36	W2X+	0.	0.	0.
3	424.72	W2X+	0.	0.	0.
3	0.	W3X+	0.	0.	0.
3	212.36	W3X+	0.	0.	0.
3	424.72	W3X+	0.	0.	0.
3	0.	W3X-	0.	0.	0.
3	212.36	W3X-	0.	0.	0.
3	424.72	W3X-	0.	0.	0.
3	0.	W1X-	1.321	0.038	7.688E-04
3	212.36	W1X-	1.321	0.038	7.688E-04
3	424.72	W1X-	1.321	0.038	7.688E-04
3	0.	W2X-	0.	0.	0.
3	212.36	W2X-	0.	0.	0.
3	424.72	W2X-	0.	0.	0.
3	0.	W1X+	0.	0.	0.
3	212.36	W1X+	0.	0.	0.
3	424.72	W1X+	0.	0.	0.
3	0.	Wlong+	0.	0.	0.
3	212.36	Wlong+	0.	0.	0.
3	424.72	Wlong+	0.	0.	0.
3	0.	Wlong-	0.	0.	0.
3	212.36	Wlong-	0.	0.	0.
3	424.72	Wlong-	0.	0.	0.
5	0.	EQX	3.067E-03	4.084E-05	3.900E-06
5	820.46	EQX	3.067E-03	4.084E-05	3.900E-06
5	1640.92	EQX	3.067E-03	4.084E-05	3.900E-06
5	0.	DEAD	-0.038	-0.122	-9.708E-05
5	820.46	DEAD	-4.987E-03	-5.613E-04	-9.708E-05
5	1640.92	DEAD	0.028	0.121	-9.708E-05
5	0.	RL	0.	0.	0.
5	820.46	RL	0.	0.	0.
5	1640.92	RL	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 24: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		KN	KN	KN
5	0.	EQY	-1.320E-03	1.984E-04	3.310E-04
5	820.46	EQY	-1.320E-03	1.984E-04	3.310E-04
5	1640.92	EQY	-1.320E-03	1.984E-04	3.310E-04
5	0.	WIX+	0.	0.	0.
5	820.46	WIX+	0.	0.	0.
5	1640.92	WIX+	0.	0.	0.
5	0.	W2X+	0.	0.	0.
5	820.46	W2X+	0.	0.	0.
5	1640.92	W2X+	0.	0.	0.
5	0.	W3X+	0.	0.	0.
5	820.46	W3X+	0.	0.	0.
5	1640.92	W3X+	0.	0.	0.
5	0.	W3X-	0.	0.	0.
5	820.46	W3X-	0.	0.	0.
5	1640.92	W3X-	0.	0.	0.
5	0.	W1X-	-0.305	0.721	7.688E-04
5	820.46	W1X-	-0.305	2.245E-03	7.688E-04
5	1640.92	W1X-	-0.305	-0.716	7.688E-04
5	0.	W2X-	0.	0.	0.
5	820.46	W2X-	0.	0.	0.
5	1640.92	W2X-	0.	0.	0.
5	0.	W1X+	0.	0.	0.
5	820.46	W1X+	0.	0.	0.
5	1640.92	W1X+	0.	0.	0.
5	0.	Wlong+	0.	0.	0.
5	820.46	Wlong+	0.	0.	0.
5	1640.92	Wlong+	0.	0.	0.
5	0.	Wlong-	0.	0.	0.
5	820.46	Wlong-	0.	0.	0.
5	1640.92	Wlong-	0.	0.	0.
6	0.	EQX	6.754E-04	-1.810E-04	-1.775E-19
6	325.08	EQX	6.754E-04	-1.810E-04	-1.775E-19
6	650.16	EQX	6.754E-04	-1.810E-04	-1.775E-19
6	0.	DEAD	-0.026	-0.097	-4.321E-17
6	325.08	DEAD	-0.013	-0.048	-4.321E-17
6	650.16	DEAD	1.043E-15	-7.606E-16	-4.321E-17
6	0.	RL	0.	0.	0.
6	325.08	RL	0.	0.	0.
6	650.16	RL	0.	0.	0.
6	0.	EQY	3.951E-18	-1.482E-18	-6.993E-04
6	325.08	EQY	3.951E-18	-1.482E-18	-6.993E-04
6	650.16	EQY	3.951E-18	-1.482E-18	-6.993E-04
6	0.	WIX+	0.	0.	0.
6	325.08	WIX+	0.	0.	0.
6	650.16	WIX+	0.	0.	0.
6	0.	W2X+	0.	0.	0.
6	325.08	W2X+	0.	0.	0.
6	650.16	W2X+	0.	0.	0.
6	0.	W3X+	0.	0.	0.
6	325.08	W3X+	0.	0.	0.
6	650.16	W3X+	0.	0.	0.
6	0.	W3X-	0.	0.	0.
6	325.08	W3X-	0.	0.	0.
6	650.16	W3X-	0.	0.	0.
6	0.	W1X-	-1.669E-14	0.569	1.442E-16
6	325.08	W1X-	-1.669E-14	0.285	1.442E-16
6	650.16	W1X-	-1.669E-14	4.863E-15	1.442E-16
6	0.	W2X-	0.	0.	0.
6	325.08	W2X-	0.	0.	0.
6	650.16	W2X-	0.	0.	0.
6	0.	W1X+	0.	0.	0.
6	325.08	W1X+	0.	0.	0.
6	650.16	W1X+	0.	0.	0.
6	0.	Wlong+	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 24: Element Forces - Frames, Part 1 of 2

Frame	Station	OutputCase	P	V2	V3
	mm		KN	KN	KN
6	325.08	Wlong+	0.	0.	0.
6	650.16	Wlong+	0.	0.	0.
6	0.	Wlong-	0.	0.	0.
6	325.08	Wlong-	0.	0.	0.
6	650.16	Wlong-	0.	0.	0.
7	0.	EQX	3.067E-03	4.084E-05	3.900E-06
7	820.46	EQX	3.067E-03	4.084E-05	3.900E-06
7	1640.92	EQX	3.067E-03	4.084E-05	3.900E-06
7	0.	DEAD	-0.038	-0.122	-9.708E-05
7	820.46	DEAD	-4.987E-03	-5.613E-04	-9.708E-05
7	1640.92	DEAD	0.028	0.121	-9.708E-05
7	0.	RL	0.	0.	0.
7	820.46	RL	0.	0.	0.
7	1640.92	RL	0.	0.	0.
7	0.	EQY	-1.320E-03	1.984E-04	3.310E-04
7	820.46	EQY	-1.320E-03	1.984E-04	3.310E-04
7	1640.92	EQY	-1.320E-03	1.984E-04	3.310E-04
7	0.	WIX+	0.	0.	0.
7	820.46	WIX+	0.	0.	0.
7	1640.92	WIX+	0.	0.	0.
7	0.	W2X+	0.	0.	0.
7	820.46	W2X+	0.	0.	0.
7	1640.92	W2X+	0.	0.	0.
7	0.	W3X+	0.	0.	0.
7	820.46	W3X+	0.	0.	0.
7	1640.92	W3X+	0.	0.	0.
7	0.	W3X-	0.	0.	0.
7	820.46	W3X-	0.	0.	0.
7	1640.92	W3X-	0.	0.	0.
7	0.	W1X-	-0.305	0.721	7.688E-04
7	820.46	W1X-	-0.305	2.245E-03	7.688E-04
7	1640.92	W1X-	-0.305	-0.716	7.688E-04
7	0.	W2X-	0.	0.	0.
7	820.46	W2X-	0.	0.	0.
7	1640.92	W2X-	0.	0.	0.
7	0.	W1X+	0.	0.	0.
7	820.46	W1X+	0.	0.	0.
7	1640.92	W1X+	0.	0.	0.
7	0.	Wlong+	0.	0.	0.
7	820.46	Wlong+	0.	0.	0.
7	1640.92	Wlong+	0.	0.	0.
7	0.	Wlong-	0.	0.	0.
7	820.46	Wlong-	0.	0.	0.
7	1640.92	Wlong-	0.	0.	0.
8	0.	EQX	6.754E-04	-1.810E-04	-1.775E-19
8	325.08	EQX	6.754E-04	-1.810E-04	-1.775E-19
8	650.16	EQX	6.754E-04	-1.810E-04	-1.775E-19
8	0.	DEAD	-0.026	-0.097	-4.321E-17
8	325.08	DEAD	-0.013	-0.048	-4.321E-17
8	650.16	DEAD	1.043E-15	-7.606E-16	-4.321E-17
8	0.	RL	0.	0.	0.
8	325.08	RL	0.	0.	0.
8	650.16	RL	0.	0.	0.
8	0.	EQY	3.951E-18	-1.482E-18	-6.993E-04
8	325.08	EQY	3.951E-18	-1.482E-18	-6.993E-04
8	650.16	EQY	3.951E-18	-1.482E-18	-6.993E-04
8	0.	WIX+	0.	0.	0.
8	325.08	WIX+	0.	0.	0.
8	650.16	WIX+	0.	0.	0.
8	0.	W2X+	0.	0.	0.
8	325.08	W2X+	0.	0.	0.
8	650.16	W2X+	0.	0.	0.
8	0.	W3X+	0.	0.	0.
8	325.08	W3X+	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 24: Element Forces - Frames, Part 1 of 2

Frame	Station mm	OutputCase	P KN	V2 KN	V3 KN
8	650.16	W3X+	0.	0.	0.
8	0.	W3X-	0.	0.	0.
8	325.08	W3X-	0.	0.	0.
8	650.16	W3X-	0.	0.	0.
8	0.	W1X-	-1.669E-14	0.569	1.442E-16
8	325.08	W1X-	-1.669E-14	0.285	1.442E-16
8	650.16	W1X-	-1.669E-14	4.863E-15	1.442E-16
8	0.	W2X-	0.	0.	0.
8	325.08	W2X-	0.	0.	0.
8	650.16	W2X-	0.	0.	0.
8	0.	W1X+	0.	0.	0.
8	325.08	W1X+	0.	0.	0.
8	650.16	W1X+	0.	0.	0.
8	0.	Wlong+	0.	0.	0.
8	325.08	Wlong+	0.	0.	0.
8	650.16	Wlong+	0.	0.	0.
8	0.	Wlong-	0.	0.	0.
8	325.08	Wlong-	0.	0.	0.
8	650.16	Wlong-	0.	0.	0.
21	0.	EQX	-8.333E-04	1.819E-04	3.900E-06
21	212.36	EQX	-8.333E-04	1.819E-04	3.900E-06
21	424.72	EQX	-8.333E-04	1.819E-04	3.900E-06
21	0.	DEAD	-0.224	-4.672E-03	-9.708E-05
21	212.36	DEAD	-0.227	-4.672E-03	-9.708E-05
21	424.72	DEAD	-0.23	-4.672E-03	-9.708E-05
21	0.	RL	0.	0.	0.
21	212.36	RL	0.	0.	0.
21	424.72	RL	0.	0.	0.
21	0.	EQY	1.500E-04	-1.326E-03	3.101E-03
21	212.36	EQY	1.500E-04	-1.326E-03	3.101E-03
21	424.72	EQY	1.500E-04	-1.326E-03	3.101E-03
21	0.	WIX+	0.	0.	0.
21	212.36	WIX+	0.	0.	0.
21	424.72	WIX+	0.	0.	0.
21	0.	W2X+	0.	0.	0.
21	212.36	W2X+	0.	0.	0.
21	424.72	W2X+	0.	0.	0.
21	0.	W3X+	0.	0.	0.
21	212.36	W3X+	0.	0.	0.
21	424.72	W3X+	0.	0.	0.
21	0.	W3X-	0.	0.	0.
21	212.36	W3X-	0.	0.	0.
21	424.72	W3X-	0.	0.	0.
21	0.	W1X-	1.321	0.038	7.688E-04
21	212.36	W1X-	1.321	0.038	7.688E-04
21	424.72	W1X-	1.321	0.038	7.688E-04
21	0.	W2X-	0.	0.	0.
21	212.36	W2X-	0.	0.	0.
21	424.72	W2X-	0.	0.	0.
21	0.	W1X+	0.	0.	0.
21	212.36	W1X+	0.	0.	0.
21	424.72	W1X+	0.	0.	0.
21	0.	Wlong+	0.	0.	0.
21	212.36	Wlong+	0.	0.	0.
21	424.72	Wlong+	0.	0.	0.
21	0.	Wlong-	0.	0.	0.
21	212.36	Wlong-	0.	0.	0.
21	424.72	Wlong-	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 24: Element Forces - Frames, Part 2 of 2

Table 24: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		KN-mm	KN-mm	KN-mm
3	0.	EQX	2.593E-05	1.914E-03	7.228E-02
3	212.36	EQX	2.593E-05	1.086E-03	3.366E-02
3	424.72	EQX	2.593E-05	2.582E-04	-4.956E-03
3	0.	DEAD	-6.454E-04	-3.860E-02	-1.35
3	212.36	DEAD	-6.454E-04	-1.799E-02	-0.36
3	424.72	DEAD	-6.454E-04	2.627E-03	0.64
3	0.	RL	0.	0.	0.
3	212.36	RL	0.	0.	0.
3	424.72	RL	0.	0.	0.
3	0.	EQY	2.534E-03	-2.984E-03	-0.19
3	212.36	EQY	2.534E-03	-0.66	8.787E-02
3	424.72	EQY	2.534E-03	-1.32	0.37
3	0.	WIX+	0.	0.	0.
3	212.36	WIX+	0.	0.	0.
3	424.72	WIX+	0.	0.	0.
3	0.	W2X+	0.	0.	0.
3	212.36	W2X+	0.	0.	0.
3	424.72	W2X+	0.	0.	0.
3	0.	W3X+	0.	0.	0.
3	212.36	W3X+	0.	0.	0.
3	424.72	W3X+	0.	0.	0.
3	0.	W3X-	0.	0.	0.
3	212.36	W3X-	0.	0.	0.
3	424.72	W3X-	0.	0.	0.
3	0.	W1X-	5.112E-03	0.26	9.16
3	212.36	W1X-	5.112E-03	9.871E-02	1.16
3	424.72	W1X-	5.112E-03	-6.456E-02	-6.85
3	0.	W2X-	0.	0.	0.
3	212.36	W2X-	0.	0.	0.
3	424.72	W2X-	0.	0.	0.
3	0.	W1X+	0.	0.	0.
3	212.36	W1X+	0.	0.	0.
3	424.72	W1X+	0.	0.	0.
3	0.	Wlong+	0.	0.	0.
3	212.36	Wlong+	0.	0.	0.
3	424.72	Wlong+	0.	0.	0.
3	0.	Wlong-	0.	0.	0.
3	212.36	Wlong-	0.	0.	0.
3	424.72	Wlong-	0.	0.	0.
5	0.	EQX	3.672E-06	2.188E-03	2.163E-02
5	820.46	EQX	3.672E-06	-1.012E-03	-1.188E-02
5	1640.92	EQX	3.672E-06	-4.211E-03	-4.539E-02
5	0.	DEAD	-2.56	-5.383E-02	-33.64
5	820.46	DEAD	-7.633E-05	2.582E-02	16.78
5	1640.92	DEAD	2.56	0.11	-32.72
5	0.	RL	0.	0.	0.
5	820.46	RL	0.	0.	0.
5	1640.92	RL	0.	0.	0.
5	0.	EQY	-9.205E-04	0.12	0.13
5	820.46	EQY	-9.205E-04	-0.15	-3.101E-02
5	1640.92	EQY	-9.205E-04	-0.42	-0.19
5	0.	WIX+	0.	0.	0.
5	820.46	WIX+	0.	0.	0.
5	1640.92	WIX+	0.	0.	0.
5	0.	W2X+	0.	0.	0.
5	820.46	W2X+	0.	0.	0.
5	1640.92	W2X+	0.	0.	0.
5	0.	W3X+	0.	0.	0.
5	820.46	W3X+	0.	0.	0.
5	1640.92	W3X+	0.	0.	0.
5	0.	W3X-	0.	0.	0.
5	820.46	W3X-	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 24: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		KN-mm	KN-mm	KN-mm
5	1640.92	W3X-	0.	0.	0.
5	0.	W1X-	15.08	0.42	197.91
5	820.46	W1X-	5.316E-04	-0.21	-98.65
5	1640.92	W1X-	-15.08	-0.84	194.23
5	0.	W2X-	0.	0.	0.
5	820.46	W2X-	0.	0.	0.
5	1640.92	W2X-	0.	0.	0.
5	0.	W1X+	0.	0.	0.
5	820.46	W1X+	0.	0.	0.
5	1640.92	W1X+	0.	0.	0.
5	0.	Wlong+	0.	0.	0.
5	820.46	Wlong+	0.	0.	0.
5	1640.92	Wlong+	0.	0.	0.
5	0.	Wlong-	0.	0.	0.
5	820.46	Wlong-	0.	0.	0.
5	1640.92	Wlong-	0.	0.	0.
6	0.	EQX	-3.799E-03	-1.341E-16	-0.12
6	325.08	EQX	-3.799E-03	-7.637E-17	-5.884E-02
6	650.16	EQX	-3.799E-03	-1.867E-17	-7.806E-17
6	0.	DEAD	-2.03	-2.536E-14	-31.37
6	325.08	DEAD	-1.01	-1.132E-14	-7.84
6	650.16	DEAD	-1.247E-14	2.731E-15	2.031E-14
6	0.	RL	0.	0.	0.
6	325.08	RL	0.	0.	0.
6	650.16	RL	0.	0.	0.
6	0.	EQY	-1.064E-16	-0.45	-1.204E-15
6	325.08	EQY	-1.064E-16	-0.23	-7.226E-16
6	650.16	EQY	-1.064E-16	4.573E-16	-2.410E-16
6	0.	WIX+	0.	0.	0.
6	325.08	WIX+	0.	0.	0.
6	650.16	WIX+	0.	0.	0.
6	0.	W2X+	0.	0.	0.
6	325.08	W2X+	0.	0.	0.
6	650.16	W2X+	0.	0.	0.
6	0.	W3X+	0.	0.	0.
6	325.08	W3X+	0.	0.	0.
6	650.16	W3X+	0.	0.	0.
6	0.	W3X-	0.	0.	0.
6	325.08	W3X-	0.	0.	0.
6	650.16	W3X-	0.	0.	0.
6	0.	W1X-	11.95	1.427E-13	185.07
6	325.08	W1X-	5.97	9.582E-14	46.27
6	650.16	W1X-	8.316E-14	4.894E-14	-1.387E-13
6	0.	W2X-	0.	0.	0.
6	325.08	W2X-	0.	0.	0.
6	650.16	W2X-	0.	0.	0.
6	0.	W1X+	0.	0.	0.
6	325.08	W1X+	0.	0.	0.
6	650.16	W1X+	0.	0.	0.
6	0.	Wlong+	0.	0.	0.
6	325.08	Wlong+	0.	0.	0.
6	650.16	Wlong+	0.	0.	0.
6	0.	Wlong-	0.	0.	0.
6	325.08	Wlong-	0.	0.	0.
6	650.16	Wlong-	0.	0.	0.
7	0.	EQX	3.672E-06	2.188E-03	2.163E-02
7	820.46	EQX	3.672E-06	-1.012E-03	-1.188E-02
7	1640.92	EQX	3.672E-06	-4.211E-03	-4.539E-02
7	0.	DEAD	-2.56	-5.383E-02	-33.64
7	820.46	DEAD	-7.633E-05	2.582E-02	16.78
7	1640.92	DEAD	2.56	0.11	-32.72
7	0.	RL	0.	0.	0.
7	820.46	RL	0.	0.	0.
7	1640.92	RL	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 24: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		KN-mm	KN-mm	KN-mm
7	0.	EQY	-9.205E-04	0.12	0.13
7	820.46	EQY	-9.205E-04	-0.15	-3.101E-02
7	1640.92	EQY	-9.205E-04	-0.42	-0.19
7	0.	WIX+	0.	0.	0.
7	820.46	WIX+	0.	0.	0.
7	1640.92	WIX+	0.	0.	0.
7	0.	W2X+	0.	0.	0.
7	820.46	W2X+	0.	0.	0.
7	1640.92	W2X+	0.	0.	0.
7	0.	W3X+	0.	0.	0.
7	820.46	W3X+	0.	0.	0.
7	1640.92	W3X+	0.	0.	0.
7	0.	W3X-	0.	0.	0.
7	820.46	W3X-	0.	0.	0.
7	1640.92	W3X-	0.	0.	0.
7	0.	W1X-	15.08	0.42	197.91
7	820.46	W1X-	5.316E-04	-0.21	-98.65
7	1640.92	W1X-	-15.08	-0.84	194.23
7	0.	W2X-	0.	0.	0.
7	820.46	W2X-	0.	0.	0.
7	1640.92	W2X-	0.	0.	0.
7	0.	W1X+	0.	0.	0.
7	820.46	W1X+	0.	0.	0.
7	1640.92	W1X+	0.	0.	0.
7	0.	Wlong+	0.	0.	0.
7	820.46	Wlong+	0.	0.	0.
7	1640.92	Wlong+	0.	0.	0.
7	0.	Wlong-	0.	0.	0.
7	820.46	Wlong-	0.	0.	0.
7	1640.92	Wlong-	0.	0.	0.
8	0.	EQX	-3.799E-03	-1.341E-16	-0.12
8	325.08	EQX	-3.799E-03	-7.637E-17	-5.884E-02
8	650.16	EQX	-3.799E-03	-1.867E-17	-7.806E-17
8	0.	DEAD	-2.03	-2.536E-14	-31.37
8	325.08	DEAD	-1.01	-1.132E-14	-7.84
8	650.16	DEAD	-1.247E-14	2.731E-15	2.031E-14
8	0.	RL	0.	0.	0.
8	325.08	RL	0.	0.	0.
8	650.16	RL	0.	0.	0.
8	0.	EQY	-1.064E-16	-0.45	-1.204E-15
8	325.08	EQY	-1.064E-16	-0.23	-7.226E-16
8	650.16	EQY	-1.064E-16	4.573E-16	-2.410E-16
8	0.	WIX+	0.	0.	0.
8	325.08	WIX+	0.	0.	0.
8	650.16	WIX+	0.	0.	0.
8	0.	W2X+	0.	0.	0.
8	325.08	W2X+	0.	0.	0.
8	650.16	W2X+	0.	0.	0.
8	0.	W3X+	0.	0.	0.
8	325.08	W3X+	0.	0.	0.
8	650.16	W3X+	0.	0.	0.
8	0.	W3X-	0.	0.	0.
8	325.08	W3X-	0.	0.	0.
8	650.16	W3X-	0.	0.	0.
8	0.	W1X-	11.95	1.427E-13	185.07
8	325.08	W1X-	5.97	9.582E-14	46.27
8	650.16	W1X-	8.316E-14	4.894E-14	-1.387E-13
8	0.	W2X-	0.	0.	0.
8	325.08	W2X-	0.	0.	0.
8	650.16	W2X-	0.	0.	0.
8	0.	W1X+	0.	0.	0.
8	325.08	W1X+	0.	0.	0.
8	650.16	W1X+	0.	0.	0.
8	0.	Wlong+	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 24: Element Forces - Frames, Part 2 of 2

Frame	Station	OutputCase	T	M2	M3
	mm		KN-mm	KN-mm	KN-mm
8	325.08	Wlong+	0.	0.	0.
8	650.16	Wlong+	0.	0.	0.
8	0.	Wlong-	0.	0.	0.
8	325.08	Wlong-	0.	0.	0.
8	650.16	Wlong-	0.	0.	0.
21	0.	EQX	2.593E-05	1.914E-03	7.228E-02
21	212.36	EQX	2.593E-05	1.086E-03	3.366E-02
21	424.72	EQX	2.593E-05	2.582E-04	-4.956E-03
21	0.	DEAD	-6.454E-04	-3.860E-02	-1.35
21	212.36	DEAD	-6.454E-04	-1.799E-02	-0.36
21	424.72	DEAD	-6.454E-04	2.627E-03	0.64
21	0.	RL	0.	0.	0.
21	212.36	RL	0.	0.	0.
21	424.72	RL	0.	0.	0.
21	0.	EQY	2.534E-03	-2.984E-03	-0.19
21	212.36	EQY	2.534E-03	-0.66	8.787E-02
21	424.72	EQY	2.534E-03	-1.32	0.37
21	0.	WIX+	0.	0.	0.
21	212.36	WIX+	0.	0.	0.
21	424.72	WIX+	0.	0.	0.
21	0.	W2X+	0.	0.	0.
21	212.36	W2X+	0.	0.	0.
21	424.72	W2X+	0.	0.	0.
21	0.	W3X+	0.	0.	0.
21	212.36	W3X+	0.	0.	0.
21	424.72	W3X+	0.	0.	0.
21	0.	W3X-	0.	0.	0.
21	212.36	W3X-	0.	0.	0.
21	424.72	W3X-	0.	0.	0.
21	0.	W1X-	5.112E-03	0.26	9.16
21	212.36	W1X-	5.112E-03	9.871E-02	1.16
21	424.72	W1X-	5.112E-03	-6.456E-02	-6.85
21	0.	W2X-	0.	0.	0.
21	212.36	W2X-	0.	0.	0.
21	424.72	W2X-	0.	0.	0.
21	0.	W1X+	0.	0.	0.
21	212.36	W1X+	0.	0.	0.
21	424.72	W1X+	0.	0.	0.
21	0.	Wlong+	0.	0.	0.
21	212.36	Wlong+	0.	0.	0.
21	424.72	Wlong+	0.	0.	0.
21	0.	Wlong-	0.	0.	0.
21	212.36	Wlong-	0.	0.	0.
21	424.72	Wlong-	0.	0.	0.

10. Material take-off

This section provides a material take-off.

Table 25: Material List 2 - By Section Property

Table 25: Material List 2 - By Section Property

Section	ObjectType	NumPieces	TotalLength	TotalWeight
			mm	KN
Purlin	Frame	4	4582.15	0.062
Column	Frame	2	849.44	0.011

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

11. Design preferences

This section provides the design preferences for each type of design, which typically include material reduction factors, framing type, stress ratio limit, deflection limits, and other code specific items.

11.1. Steel design

Table 26: Preferences - Steel Design - AISC 360-16, Part 1 of 4

Table 26: Preferences - Steel Design - AISC 360-16, Part 1 of 4

THDesign	FrameType	PatLLF	SRatioLimit	MaxIter	SDC	SeisCode	SeisLoad	ImpFactor
Envelopes	OMF	0.75	1.	1	B	No	No	1.

Table 26: Preferences - Steel Design - AISC 360-16, Part 2 of 4

Table 26: Preferences - Steel Design - AISC 360-16, Part 2 of 4

SystemRho	SystemSds	SystemR	SystemCd	Omega0	Provision	AMethod	SOMethod	SRMethod
1.	0.5	8.	5.5	3.	LRFD	Direct Analysis	General 2nd Order	Tau-b Fixed

Table 26: Preferences - Steel Design - AISC 360-16, Part 3 of 4

Table 26: Preferences - Steel Design - AISC 360-16, Part 3 of 4

NLCoeff	PhiB	PhiC	PhiTY	PhiTF	PhiV	PhiVRolledI	PhiVT	PlugWeld
0.002	0.9	0.85	0.9	0.75	0.9	1.	0.75	Yes

Table 26: Preferences - Steel Design - AISC 360-16, Part 4 of 4

Table 26: Preferences - Steel Design - AISC 360-16, Part 4 of 4

HSSWelding	HSSReduceT	CheckDefl	DLRat	SDLAndLLRat	LLRat	TotalRat	NetRat
ERW	No	Yes	180.	180.	180.	180.	180.

11.2. Concrete design

Table 27: Preferences - Concrete Design - ACI 318-08/IBC2009, Part 1 of 2

Table 27: Preferences - Concrete Design - ACI 318-08/IBC2009, Part 1 of 2

MinEccen	BCCDesign	PatLLF	CTorsion	UFLimit	SeisCat
Yes		0.75		0.95	D

Table 27: Preferences - Concrete Design - ACI 318-08/IBC2009, Part 2 of 2

Table 27: Preferences - Concrete Design - ACI 318-08/IBC2009, Part 2 of 2

Rho	Sds	PhiT	PhiCTied	PhiCSpiral	PhiV	PhiVSeismic	PhiVJoint	TanTheta
1.	0.5	0.9	0.65	0.7	0.75	0.6	0.85	1.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 28: Preferences - Concrete Shell Design - Eurocode 2-2004

Table 28: Preferences - Concrete Shell Design - Eurocode 2-2004

Country	GammaS	GammaC	AlphaCC
CEN Default	1.15	1.5	1.

11.3. Aluminum design

Table 29: Preferences - Aluminum Design - AA 2015, Part 1 of 2

Table 29: Preferences - Aluminum Design - AA 2015, Part 1 of 2

THDesign	SRatioLimit	Provision	LatFact	UseLatFact	Bridge	OmegaTy	OmegaTr	OmegaC
Envelopes	1.	ASD	1.333333	No	No	1.65	1.95	1.65

Table 29: Preferences - Aluminum Design - AA 2015, Part 2 of 2

Table 29: Preferences - Aluminum Design - AA 2015, Part 2 of 2

OmegaBo	OmegaBr	OmegaVo	OmegaVr
1.65	1.95	1.65	1.95

11.4. Cold formed design

Table 30: Preferences - Cold Formed Design - AISI-ASD96

Table 30: Preferences - Cold Formed Design - AISI-ASD96

FrameType	SRatioLimit	OegaBS	OegaBUS	CegaBLTB	CmegaVS	OmegaVNS	OmegaT	OmegaC
Braced Frame	1.	1.67	1.67	1.67	1.67	1.5	1.67	1.8

12. Design overwrites

This section provides the design overwrites for each type of design, which are assigned to individual members of the structure.

12.1. Steel design

Table 31: Overwrites - Steel Design - AISC 360-16, Part 1 of 7

Table 31: Overwrites - Steel Design - AISC 360-16, Part 1 of 7

Frame	DesignSect	FrameType	Fy KN/mm2	RLLF	AreaRatio	XLMajor
21	Program Determined	Program Determined	0.	0.	0.	0.
3	Program Determined	Program Determined	0.	0.	0.	0.
5	Program Determined	Program Determined	0.	0.	0.	0.
6	Program Determined	Program Determined	0.	0.	0.	0.
7	Program Determined	Program Determined	0.	0.	0.	0.
8	Program Determined	Program Determined	0.	0.	0.	0.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Table 31: Overwrites - Steel Design - AISC 360-16, Part 2 of 7

Table 31: Overwrites - Steel Design - AISC 360-16, Part 2 of 7

Frame	XLMinor	XLLTB	K1Major	K1Minor	K2Major	K2Minor	KLTB
21	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
7	0.	0.	0.	0.	0.	0.	0.
8	0.	0.	0.	0.	0.	0.	0.

Table 31: Overwrites - Steel Design - AISC 360-16, Part 3 of 7

Table 31: Overwrites - Steel Design - AISC 360-16, Part 3 of 7

Frame	CmMajor	CmMinor	Cb	B1Major	B1Minor	B2Major	B2Minor
21	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
7	0.	0.	0.	0.	0.	0.	0.
8	0.	0.	0.	0.	0.	0.	0.

Table 31: Overwrites - Steel Design - AISC 360-16, Part 4 of 7

Table 31: Overwrites - Steel Design - AISC 360-16, Part 4 of 7

Frame	HSSReduceT	HSSWelding	Omega0	Ry	Pnc KN	Pnt KN	Mn3 KN-mm
21	Program Determined	Program Determined	0.	0.	0.	0.	0.
3	Program Determined	Program Determined	0.	0.	0.	0.	0.
5	Program Determined	Program Determined	0.	0.	0.	0.	0.
6	Program Determined	Program Determined	0.	0.	0.	0.	0.
7	Program Determined	Program Determined	0.	0.	0.	0.	0.
8	Program Determined	Program Determined	0.	0.	0.	0.	0.

Table 31: Overwrites - Steel Design - AISC 360-16, Part 5 of 7

Table 31: Overwrites - Steel Design - AISC 360-16, Part 5 of 7

Frame	Mn2 KN-mm	Vn2 KN	Vn3 KN	CheckDefl	DeflType	DLRat	SDLAndLLRat
21	0.	0.	0.	Program Determined	Program Determined	0.	0.
3	0.	0.	0.	Program Determined	Program Determined	0.	0.
5	0.	0.	0.	Program Determined	Program Determined	0.	0.
6	0.	0.	0.	Program Determined	Program Determined	0.	0.
7	0.	0.	0.	Program Determined	Program Determined	0.	0.
8	0.	0.	0.	Program	Program Determined	0.	0.

Table 31: Overwrites - Steel Design - AISC 360-16, Part 6 of 7

Table 31: Overwrites - Steel Design - AISC 360-16, Part 6 of 7

Frame	LLRat	TotalRat	NetRat	DLAbs	SDLAndLLAbs	LLAbs	TotalAbs
				mm	mm	mm	mm
21	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
7	0.	0.	0.	0.	0.	0.	0.
8	0.	0.	0.	0.	0.	0.	0.

Table 31: Overwrites - Steel Design - AISC 360-16, Part 7 of 7

Table 31: Overwrites - Steel Design - AISC 360-16, Part 7 of 7

Frame	NetAbs	SpecCamber	DCLimit
	mm	mm	
21	0.	0.	0.
3	0.	0.	0.
5	0.	0.	0.
6	0.	0.	0.
7	0.	0.	0.
8	0.	0.	0.

13. Design summary

This section provides the design summary for each type of design, which highlights the controlling demand/capacity ratio and it's associated combination and location in each member.

13.1. Steel design

Table 32: Steel Design 1 - Summary Data - AISC 360-16, Part 1 of 2

Table 32: Steel Design 1 - Summary Data - AISC 360-16, Part 1 of 2

Frame	DesignSect	DesignType	Status	Ratio	RatioType
21	Column	Column	No Messages	0.063668	PMM
3	Column	Column	No Messages	0.063668	PMM
5	Purlin	Brace	No Messages	0.462794	PMM
6	Purlin	Brace	No Messages	0.425699	PMM
7	Purlin	Brace	No Messages	0.462794	PMM
8	Purlin	Brace	No Messages	0.425699	PMM

Table 32: Steel Design 1 - Summary Data - AISC 360-16, Part 2 of 2

Table 32: Steel Design 1 - Summary Data - AISC 360-16, Part 2 of 2

Frame	Combo	Location	ErrMsg	WarnMsg
		mm		
21	UDSTL9	0.	No Messages	No Messages
3	UDSTL9	0.	No Messages	No Messages
5	UDSTL9	0.	No Messages	No Messages
6	UDSTL9	0.	No Messages	No Messages
7	UDSTL9	0.	No Messages	No Messages
8	UDSTL9	0.	No Messages	No Messages

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

DIAGRAN#20: Vetted Design of Parking shed. (Attached as a separate file)

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

SPECIFICATIONS

The following are the minimum technical specifications of the equipment being parts of the Solar PV System that shall be installed at the premises.

1. PV Modules

Solar PV modules shall be of Tier-1 manufacturer as per latest Bloomberg New Energy Finance (BNEF) list (for Q1 or Q2 of the year 2026). The PV technology shall be half-cut N-type or better to maximize the yield against the available area and minimize the losses against partial shading. Each module shall have atleast IP 68 rated Junction Boxes which shall be dust and vermin proof having copper bus bar terminals, EPDM rubber gasket, MOVs and reverse blocking Diodes and IEC 62790 compliant.

a) Performance and Rating Requirements:

The power rating for each PV module shall be more than 700Wp under STC conditions with positive power tolerance only. Each PV module must have efficiency of equal to or greater than 23%. The proposed PV module must exhibit efficiency of more than 96% of the STC efficiency at 200 W/m^2 (i.e. low lighting conditions). The module Temperature Coefficient at Pmax shall be 0.3% / ^0C or better in performance.

b) Certification Requirements:

The PV Module must be Type Tested based on IEC standard 61215 (Terrestrial PV Modules- Design qualification and type approval) and IEC 61730 (Photovoltaic module safety qualification) based insulation of Safety Class II. Modules must be free of Potential Induced Degradation (PID) and Light Induced Degradation (LID). The module shall be S.R.O 604 (or equivalent) compliant issued by Government of Pakistan. The Flash Test report, module Test report as per IEC standards 61215 and 61730 along with pre-shipment inspection certificate shall be provided at the time of delivery of modules at site.

c) Warranty and Replacement:

Each module(panel) shall have minimum 12 years' material and replacement warranty and 25 years' performance warranty. The Power output of each PV module shall be greater than 85% after 25 Years.

d) Product Identification:

Each PV module shall have a unique barcode identification tag issued by the manufacturer. The same shall be confirmed from the manufacturer prior to verification of equipment delivery at site by the third party.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

2. Inverters:

a) Performance and Rating Requirements:

The inverter shall be three phase grid tied with IP66 protection having CEC efficiency of not less than 98.5 % and output frequency of 50 to 60 Hz. The cumulative capacity of inverter shall be according to the total solar PV capacity to be installed and inverter's minimum input voltage shall be as per array specific design. Under all scenarios, the DC to AC ratio of the inverter shall not be more than 1.1.

The inverters shall have multiple MPPT inputs for 3-phase inverters. The Total Harmonic Distortion shall be less than 3%. The ambient operating temperature range of Inverter shall be between -25°C to 60°C. Three phase inverter must have Diesel Generator Synchronization module for seamless integration with Generators.

(b) Protection and Safety Requirements:

The inverter shall have AC overcurrent protection, residual current monitoring, DC reverse polarity protection, DC insulation resistance detection, PV array string fault monitoring, anti- islanding protection and Type-2 or better DC and AC SPDs. The inverter must have anti PID module to limit the harmful effects of Potential Induced Degradation of PV Modules. Inverter shall have a built-in data logger; communication interface protections and remote monitoring capability. It shall be compliant with UL 1741, IEC 62109-1/2 for safety design.

Warranty Requirements:

The inverters shall have minimum 12 years of replacement warranty.

3. PV Balance of system:

a) Mounting Structure:

The mounting structure shall be UV resistant and shall have hot dip galvanized steel frame of gauge 12 with 120 micron or thicker zinc coating. The structure shall have galvanic isolation and shall withstand wind speed of 150 km/h. complete civil work (including PCC (1:2:4) of 3,000 psi strength) for mounting structure installation shall be performed as per drawing attached.

Design requirements for mounting structure:

The supporting structure including PV modules shall be capable of handling the maximum 3 sec- gust wind speed of up to 150 km/h. The EPC contractor shall provide a system design that meets this requirement as well as any additional requirement related to the site-specific snow load (if applicable). Ballasting/concrete block sizing calculations are typically made by the use of professional design software and shall be made available for the installation and plant documentation.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

All components of the mounting system and all connecting materials shall be made of corrosion- proof material. All fastening structures shall be verified for durability and resistance to environmental degradation for 25 years, the lifetime requirement of the complete structure. The structural elements shall consist of anodized aluminum, galvanized steel as per ASTM A123/A 123M, or materials with equivalent if not better properties. The applicable building code / construction codes shall be used as well.

The mounting structures shall be earthed for maximum short-circuit current and lightning protection. A racking design that removes the need of PV module to PV module grounding by using the common rail / PV module clips for the grounding is recommended.

Dismantling of existing sheds and site preparatory works and back fillings shall be performed to the satisfaction of Client.

a) DC Cables, AC Cables, Earthing wires, Conduits, Connectors, Cable Trays etc.

Copper cables with purity of 99.9% or more with XLPO double insulation and rated for 1,500 V shall be used. Cables shall be low smoke Halogen free along with compliance with BS 6004, BS 7644 and UL 4703 standards. Minimum size for DC cables shall be 6 mm^2 , 16mm sq or 25 mm sq or as per size of PV Module Output cable (whichever is higher or given in the Bills of Quantities). Under all conditions, for DC cables, voltage drop shall be less than 0.5% at STC and for AC cables voltage drop shall be less than 1% at STC. 6 mm^2 earth wires for equipotential bonding shall be used. Separate DC and AC earthing each with 3 ohm or lesser resistance shall be achieved using the earthing arrangement. All DC, AC cables should be of at least of following brands, Pakistan Cables, FAST Cables, GM Cables, Newage cables or equivalent.

Perforated cable trays of 16 gauge or thicker and UPVC/corrugated PVC pipes shall be installed with seamless terminations. The cable tray shall not be physically accessible for routine works. Flexible pipes, glands, conduits, cables ducts shall be installed as per Employer Design. Conduits shall have 30% or higher spare capacity. Labeling of all cables shall be performed in compliance with IEC Standard 62491.

b) Breakers, Surge Arrester, LV Panel etc.

Circuit breaker, Protection devices and Non-Isolated Lightning Arrestors shall be installed as per Employer Design. MCB/MCCB Circuit breaker for each string shall be rated for more than 1.5 times the STC current rating of the string. Under all circumstances circuit breaker rating must be less than the fuse rating of PV Module.

In case of installation of LV panel, the panel shall be IP54 rated of galvanized material with at least 16 gauge. The panel shall have protection scheme compliant with IEC Standard 62548, input and output circuit breakers as per IEC Standards, bus bar current bearing capacity as per requirement, and isolators for bus bars and AC grounding bus bar. The panel shall have digital Ammeter and Voltmeter, RYB indicator with breather vents on both sides of cabinets with RAL Color: 6021.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

c) Monitoring and Control System:

Online and real time monitoring shall be provided with following parameters;

1. Energy generation (kWh)
2. Power production (kW)
3. String-level monitoring of Voltage and Current
4. Storage and monitoring data for at least 3 years
5. TV Screen of size mentioned in BoQ

d) Net Metering Application and Installation of Bidirectional Meter

The Contractor shall comply with all prevailing regulations set forth by NEPRA for net metering purposes including load flow studies on requisite software. Preparation and processing of application for net metering along with requisite clarifications shall be arranged by the Contractor in the Project timelines. Furthermore, in cases where the technical feasibility study is required for purposes of approval of net-metering application, the Contractor shall also carry out the requisite feasibility study and make arrangement for its approval from the relevant DISCO.

e) Operation Manual:

An Operation, Instruction and Maintenance Manual, in English shall be provided with the Solar PV System. The detailed diagram(s) of wiring and connection diagrams shall also be provided with the manual.

Note:

- Various components of Solar PV System shall additionally be conformed to the relevant national/international Electrical Safety Standards wherever applicable.

4. Operation and Maintenance

Following the successful Taking Over of the Project, the EPC Contractor shall provide PV Module Cleaning services on each Saturday/Sunday and submit monthly electricity generation reports of PV System for duration of 06 months.

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

SPECIFIC SYSTEM DATA CHECKLIST

The specific System data checklist to be filled by the Bidders is given below for Bidders to confirm:

Specific Plant Data for Solarization of Blocks A, B, C, D, Architecture and Parking Lot behind H-Block at CUI Lahore Campus (990 KWp)		
EQUIPMENT	**SPECIFICATIONS**	**Yes/No**
Solar PV Modules	IEC 61215 Certified	
	Application/ Safety Class II as per IEC 61730	
	N-Type Half Cut Cell or better	
	Tier 1 Manufacturer as per the most recent Bloomberg list, AAA or AA rated as per PV Module-Tech Ratings	
	700 W or higher with positive tolerance only	
	24% or higher module efficiency	
	25 Year Linear Performance Warranty	
	Anti-Reflective Coating	
	12 minimum Year Material and replacement warranty of panel	
	Power Output after 25 Years $\geq$ 85%	
	Potential Induced Discharge (PID) Resistant	
	Light Induced Degradation (LID) equal to 0.7%	
	Module Temperature Coefficient at P_{max} of -0.30%/^{o}C or better	
	Operating Temperature Range -40 to 85 ^{o}C	
	Barcode Identification	
	Efficiency at 200 W/m^2 $\geq$ 96% of STC	
	Report of Real Power at STC measured with AAA Class Sun Simulator at the factory to be provided	
	Compliance with S.R.O 604 defined Pre-shipment inspection requirements as per Govt of Pakistan	
Solar PV Mounting Structure	UV resistant, Hot Dip Galvanized Steel frame of Gauge 12 with 120 micron or thicker zinc coating or better (More details under the drawing attached)	
	Tilt 25^{o} to 33^{o} Degrees, Azimuth 290 w.r.t North to be determined from shadow analysis	
	Shall withstand wind speeds of 150 km/h	
	Galvanic Isolation	
	PV module fastening: As per module manufacturer guidelines	
	Rawal bolts: Stainless Steel (Grade-304) accompanied with epoxy resin backfilling for water proofing	
	Supply and installation of solar panel structure of suitable type with minimum 2.5 mm with minimum size of 2 x 1 inch aluminum material.	

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

	Mounting structure should be pure aluminum and shall be as per SAA type II. All bolts, nuts, fasteners shall be stainless steel. Double washers should be used.	
	Civil works for mounting structure shall be done to ensure the required strength as defined (More details under the drawing attached	

Specific Plant Data for Solarization of Blocks A, B, C, D, Architecture and Parking Lot behind H-Block at CUI Lahore Campus (990 KWp)

EQUIPMENT	SPECIFICATIONS	Yes/No
Inverters & String Formation	Three Phase Grid Tied	
	String Inverter	
	Strings formation priority: 1.Same Row,2.Adjacent Row	
	String Voc: Must be within MPPT range at -10 to + 80 Degree Celsius cell temperature	
	Anti-Potential Induced Degradation Module (PID)	
	Sheds and enclosures for outdoor installation	
	50 to 60 Hz Frequency Output	
	CEC Efficiency of 95.5% or above	
	IP66 rated	
	12 Year Plus Warranty	
	THD < 3%	
	IEC 62109/UL1741 Compliant Safety Design	
	Transformer-less modular Design	
	Ambient Operating Temperature Range: -25 ºC to 60 ºC	
	Multiple MPPT Trackers	
	DC/AC ratio not more than 1.1	
	Residual Current Monitoring	
	DC Insulation Resistance Detection	
	Generator Synchronization module	
	AC and DC Surge Arrestors: Type II or better or certified per IEC 61643-11 or 20 KA for AC and DC or equivalents	
	AC Overcurrent Protection	
	DC reverse polarity protection	
	PV Array String Fault Monitoring	
	Anti-Islanding Protection	
	WiFi and Cloud Communication	
	USB, Modbus, RS485	
	S.R.O 604 Compliant	
	Copper Cables with purity of 99.99%	
	UL 4703 compliant Low Smoke Halogen Free	
	DC cable size : 06 mm2 from array of panel to DB DC cable size : 16 mm2 from array DB to Main DB AC cable size : As per attached Drawing	

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

AC,DC Cables, Earthing wires &Cable Trays	XLPO Cables for operation under elevated temperatures rated for 1500 V	
	Conduits shall have 30% or higher spare capacity	
	Preparation of Site and all Civil Works	
	Seamless Terminations	
	Perforated Cable Trays of 16 Gauge or thicker	
	Avoid Direct Sunlight and Direct Clamping of Cables	

Specific Plant Data for Solarization of Blocks A, B, C, D, Architecture and Parking Lot behind H-Block at CUI Lahore Campus (990 KWp)

EQUIPMENT	SPECIFICATIONS	Yes/No
	Cables should not be physically accessible for routine works	
	Labeling of all strings/equipment shall be mandatory	
	06 mm^2 earth wire for equipotential bonding	
	Cables to be laid in UPVC/corrugated PVC pipes and cable trays	
System Design and Installation/As Built Drawings	Energy Yield Assessment	
	Module Layout Drawings as per the drawings attached and Referred	
	Cable Layout Plans	
	As built Drawings	
Breakers, Surge Arrester & LV Panel	Circuit Breakers	
	Changeover Switches	
	Class-II Surge protection separate for AC & DC sides	
	Separate DC and AC Earthing each with 5 Ohms or lesser resistance	
	Non-Isolated Lightning Arrestors	
	Protection against lightning currents of 31 kA or higher	
	In case of LV panel installation, the panel shall be IP65 rated with galvanized material of at least 16 gauge with protection Scheme as per IEC Standard 62548, having Input and Output Circuit Breakers as per IEC Standards, Bus Bar Current Bearing Capacity as per requirement, Isolators for Bus Bars and AC Grounding Bus Bar.	
	The panel shall have Digital Ammeter and Voltmeter, RYB indicator with Breather Vents on both Sides of cabinets with RAL Color: 6021	
	Centralized Monitoring and Logging of array level input, System Output	

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

Monitoring and Control System	Communication through the following: 1. RS485/RS232/TTL/USB or Modbus for onsite data collection/monitoring 2. GPRS/4G for real-time data transfer to Client's defined server (subscription of GPRS/4G to be paid by the Contractor) 3. Wifi/Bluetooth Module for localized wireless communication 4. Alarm Messages (SMS & Email) for Fault/ Grid Outage / Generator Outage / Inverter Outage etc. 5. Daily Generation data 6. Each Inverter data 7. Monthly production data 8. Yearly production data 9. Total production data	
Net Metering Application and Installation of Bidirectional Meter	Compliance with all prevailing regulations set forth by NEPRA/LESCO/Punjab Energy Department for net metering and safety purposes	
	Load flow studies	
	Preparation and submission of application for net metering	

Specific Plant Data for Solarization of Blocks A, B, C, D, Architecture and Parking Lot behind H-Block at CUI Lahore Campus (990 KWp)

EQUIPMENT	SPECIFICATIONS	Yes/No
Inverter Data Logger Collection of Data	Operating status	
	Vdc	
	Vac	
	Pdc	
	Pac	
	Grid Status	
	Generator Status (from Genset Sync. Module)	
	Fault Detection	
	Daily Energy Supplied by PV System	
	Total Energy Supplied by PV System	
	Plant Performance Data Check: Every 15 Seconds or lesser	
	Total Energy Supplied by Genset (from Genset Sync. Module)	
Synchronization Modules for GENSETS AND INVERTERS	GENSETS syncing modules Compatible with Diesel generators and Proposed Inverters	

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

e-Pak Acquisition and Disposal System (EPADS) generated document | © 2026

ENGINEER'S ESTIMATE

Solarization of Blocks A, B, C, D, Architecture and Parking Lot behind H-Block at CUI Lahore Campus (990 KWp)						
No.	**ITEM(s)**	**Description**	**Unit**	**Quantity**	**Rate**	**Amount**
A. SUPPLY OF GOODS for Solarization of Blocks A, B, C, D, Architecture and Parking Lot behind H-Block at CUI Lahore Campus (990 KWp)						
1	PV module	Type and Half Cut PV modules minimum 700 W per panel	Sum	990 kW	47	46,530,000
2	Inverter (Number and capacities will be proposed by the bidder making a total of 990KWp for the campus)	3 phase On grid Inverters with Remote Monitoring	Sum	990 kW	13	12,870,000
3	PFI Panels	To cover 990 KW power produced by PV solar plant for the offered load, assuming 0.8 present power factor, which needs to be improved to 0.95	No.	10	200,000	2,000,000
4	Inverter Room	Inverter room for Parking lot raised structure	No.	1	5,833	699,960
		Online System for Data Logger, monitoring, control,		(2Nos.)		

PUBLIC PROCUREMENT REGULATORY AUTHORITY PPRA EPADS

5	Communication System	complete in all respect as per international standard or NPERA/LESCO. Including LED display units 50” each (2 Nos.) and Computers (2 Nos)	No.	As per inverter configuration	2,000,000	2,000,000
6	Genset Synchronization Module	Genset Auto Synchronization Hybrid Genet Controller/Solar-Diesel Integration Controller compatible with Inverter and Generator, factory fabricated as approved by the Engineer.	Nos.	4	800,000	3,200,000
7	PV Mount Structure for rooftops of A, B, C, D and Architecture Block and Raised structure for Parking behind H-Block	• Site preparation works including clearance and dismantling of wall/shed/holes. • Wind speed = 150km/h, azimuth as per site. (UV resistant, 120 micron of zinc coating), 12 SWG or as per drawing given in Employer’s Design. complete in all respect.	Sum	990 kW	21	20,790,000
	Lightning	Copper rod height 2 m to				

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

8	Arrester	be fixed on these six Sites on required height with poles complete in all respect. Design of Lightening arresters for parking lot is given in the design. Rooftop PV installations will be done as per international standard safety or NPERA/LESCO.	Nos.	14	50,000	700,000
		Pits for earthing are inclusive.				
Sub Total A						88,789,960

9	0.4kV LV Panel (One each for every inverter)	**Details of breakers and SPD to be in housed in cabinet: for AC and DC System**	No.	10	130,000	1,300,000
		As given in AC & DC BoQ and drawings attached				
10	DC Distribution Box	IP65 GI DB for each inverter for placing DC strings	Nos.	10	30,000	300,000
		Expected size but not limited to W*H*D = 3*1*0.75(16SWG) wall mount, single door with lock and with complete fitting scheme/ railing for DC				
		Breakers				

CURRENT REGULATORY AUTHORITY (PPRA) EPADS

11	DC Breakers and SPD for DC DB	As per string configuration and PV Module fuse ratings, as per NEPRA and International Standard or complete in all respect.	Sets	10	300,000	3,000,000
12	DC wire for PV	6 mm Sq. DC flexible wire 1500V DC Copper conductor, Cu XLPO for array to DB(Double Insulated)	m	18000	376	6,768,000
13	DC wire for PV	25 mm Sq. DC flexible wire 1500V DC Copper conductor, Cu XLPO from array DB to Main DB(Double Insulated)	m	620	1,200	744,000
14	DC wire for PV	16 mm Sq. DC flexible wire 1500V DC Copper conductor, Cu XLPO from array DB to Main DB(Double Insulated)	m	620	950	589,000
15	AC wire from LV panel to Inverter	Cu, XLPE/PVC 0.6/1 kV, 4*120 mm Sq. AC stranded(Double Insulated)	m	500	7,000	3,500,000

PPRA EPADS PROCUREMENT REGULATORY AUTHORITY

16	AC wire for inverter grounding	Cu, PVC 0.6/1 kV, 1*70 mm Sq. AC flexible wire stranded	m	550	1,000	550,000
17	DC wire for PV panel and PV frames to grounding point	PVC 1*16 mm Sq. AC standard Wire	m	1500	950	1,425,000
18	Copper Bare Conductor	25 mm Sq	m	250	500	125,000
19	Cable Tray	16 SWG Galvanized iron with flat cover, perforated downside, complete fitting accessories i.e nut bolts, supporting angle iron etc, size (W*D) inch 8*4 for laying string wires or as per International Standard or complete in all respect.	m	250	1,700	425,000
20	UPVC pipe	50mm dia pipe for laying string wires PV area to inverters including sockets	m	600	300	180,000
21	UPVC pipe	25mm including bends and sockets	m	1000	200	200,000
22	MC4 connectors	IP67/IP68 for PV Stringing as per International Standard complete in all respect.	Nos.	500	350	175,000
23	Bi-directional Meter for Net Metering	Delivery of Bi-directional Meter in line with NEPRA / LESCO requirements	No.	1	2,278,000	2,278,000
		Bore Type Earthing for				

24	DC Earthing	DC Components as Per NEPRA or international Standard of safety (Maximum 5 ohm earth resistance)	No.	12	100,000	1,200,000
25	AC Earthing	Bore Type Earthing for AC Components as Per NEPRA Standard or international Standard of safety (Maximum 5 ohm earth resistance)	No.	6	100,000	600,000
26	Washing System for Panels (High Efficiency Nozzle and Pressure Pumps)		No.	6	1,300,000	7,800,000
27	MISC ITEMS	• Cable ties, rawal bolts, pvc tapes, steel and PVC clamps, pvc pipes, glands different sizes, thimbles, connectors, warning labels etc. • 2 x insulated glove pairs, shoe pairs, hats for site inspection and maintenance activities • PV module O&M Toolkit 1 x 55 inch 4K TV Screen for monitoring of generation data from all inverters complete in all respect.	No.	1	1,000,000	1,000,000
Sub Total B						32,159,000

C. Installation, Testing, Commissioning, O&M Services and Training

28	Installation, Testing and Commissioning	Complete project installation and commissioning till handover of the Project to Employer	Job	1	2,000,000	2,000,000
29	Net metering services	Net metering services complete in all aspects including NEPRA license and load flow studies required by the distribution company.	Job	1	1,000,000	1,000,000
30	Operation and Maintenance Services	• Cleaning of all PV Modules on each Saturday / Sunday for 06 months. • Monitoring of System Performance and submission of monthly electricity generation reports	(Complete plant) Job	1	300,000	1,800,000
31	O&M Training	1 week O & M training of 5 personnel of the Employer	persons	1	50,000	250,000
Sub Total C						5,050,000
	D. Total Bid Price in PKR (D = A + B+C)					**125,998,960**
		PGST	**16%**			**23,999,802**
GRAND TOTAL						**149,998,762**

Eligibility/ Mandatory Requirements for the bidder

This is the minimum eligibility criteria for the bidder to participate, failing to meet in a single clause shall cause the bidder to stand disqualified. The documentary evidence mentioned against each must be attached with the bid. CUI reserves to right to verify any submitted documents or require further documentary evidence.

S#	**Mandatory Criteria**	**Required Documents**
1.	Registration with Pakistan Engineering Council (PEC) in C3 or above Category with specialized codes e.g. (EE03, EE09, EE11, CE10)	Valid Registration Certificate with Pakistan Engineering Council (PEC).
2.	Active Registration with AEDB in C-1 category.	Valid Registration Certificate/ relevant document
3.	Registrations with the Securities and Exchange Commission of Pakistan (SECP)	Valid Registration Certificate/ relevant document
4.	Registration with Tax Authorities/ Departments Registered with relevant Tax Authorities / Departments.	Valid Registration Certificate/ relevant document
5.	Establishment of Firm Minimum 3 years of establishment of entity (Age of firm shall be determined from the date of incorporation/ registration with SECP, Registrar of Firms, or equivalent registering authority	Valid Registration Certificate/ relevant document
6.	Undertaking – Not Blacklisted Submission of undertaking on legal valid and attested stamp paper in name of COMSATS University Islamabad, Lahore Campus that the firm is not blacklisted by any of Provincial or Federal Government Department, Agency, Organization or autonomous body or Private Sector Organization anywhere in Pakistan.	Undertaking on legal paper.

Technical Evaluation *Criteria*

Total Marks: 100 **Qualifying Marks: 70**

The documentary evidence mentioned against each must be attached with the bid. CUI reserves to right to verify any submitted documents or require further documentary evidence.

The detailed qualification criteria for Technical Evaluation is provided as follows:

Sr. No.	Category	Weightage/Marks
1.	Company Profile and Experience	10
2.	General Experience	10
3.	Similar Experience (Solar)	40
5.	Financial Capabilities	25
6.	Equipment Capabilities	05
7.	Personnel Capabilities	10
Total:		**100**

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

CATEGORY-1: Company Profile **(10)**

Establishment of firm — Max Marks: **05**

> 7 years = 5 marks

> 5 – 7 years = 3 marks

Min 3-5 years = 2 marks

Documentary Evidence: Age of firm shall be determined from the date of incorporation/ registration with SECP, Registrar of Firms, or equivalent registering authority

List of permanent staff — Max Marks: **05**

For more than 15 Employee = 05

For employees > 10 to 15 = 04

For employees between 05 to 10 = 03

For employees less than 05 = 0

Documentary Evidence: Attach list of staff and soft copies of CVs

CATEGORY-2: EXPERIENCE **(50)**

General Experience — Max Marks:10

5 marks for each completed project of general nature minimum150 million worth

Documentary Evidence: Work orders, Contract agreement and completion certificate must be attached, otherwise, no marks shall be awarded (Government Department only).

Similar Experience (Solar) — Max Marks: 40

10 marks against each completed project of minimum 100 M PKR each or 800 kw each

Documentary Evidence: Purchase orders / supply orders / completion certificates must be attached, otherwise, no marks shall be awarded. (experience of projects executed for registered corporate entities in the private sector shall also be accepted)

CATEGORY-3: FINANCIAL CAPABILITIES (25)

Average Annual Turnover (last 03 years) — Max Marks: 10

> PKR 300 *million* = 10 marks

200 million to PKR 300 *million* = 05 marks

less than 200 million = 0 marks

Documentary Evidence: Audit statement, FBR returns must be attached, otherwise, no marks shall be awarded (Construction work/receipt only)

Available Cash and Credit Limit (Liquidity) Max Marks: 15

- equal to or more than 150 % value of the estimated cost of the tender as mentioned in the bidding documents 15 marks
- equal to or more than 100 % value of the estimated cost of the tender as mentioned in the bidding documents 10 marks
- equal to or more than 75 % value of the estimated cost of the tender as mentioned in the bidding documents 05 marks
- Less than the 75% value of the estimated cost of the tender as mentioned in the bidding documents 0 marks

Documentary Evidence: Verifiable Banking documents issued by any schedule bank of Pakistan (The document shall issue date prior to the bid submission not old more than 10 days

CATEGORY-4: EQUIPMENT CAPABILITIES (05)

1. Surveying Equipment (Total Station) (01 Set) 1
2. Megger / Earth Resistance Tester 1
3. AC/DC Clamp Meter 1
4. Generator (50/100 KVA, 01 No) 1
5. Reciprocating saw / Jig saw, Right angle drill, Conduit bender, Large crimpers 1

Documentary Evidence: Relevant document must be attached

CATEGORY-5: PERSONNEL CAPABILITIES (10)

Engineers in employment of the contractor & Registered with PEC

a) Number of Electrical Engineers (Min 1) 06
b) Experience of Electrical Engineer (Minimum 05 years) 02
c) Number of Sub Engineers having Diploma in Associate Engineering (Min 1-No Electrical) 01
d) Experience of Sub-Engineers in number of Years (Minimum 05 - years) 01

Documentary Evidence: along with the affidavit stating the availability of Engineers for the project)

Pre-Bid Meeting Minutes

4841-82708-Design, Supply, Installation, Testing, Commissioning and Operation & Maintenance of 990KWp On-grid Solar PV System at CUI Lahore campus (Works)

National

Single Stage-Two Envelope

November 12, 2026 05:46 PM

Comsats University, Islamabad (Lahore Campus) (Comsats University, Islamabad),Additional Registrar
Comsats University Islamabad, Defence Road, Lahore.
Phone: +92-321-432-3437, Email: miqureshi@cuilahore.edu.pk

Meeting Details

Date & Time	Friday, November 6, 2026 11:00 AM
Location	Comsats University Islamabad, Defence Road, Lahore.

Minutes of Meeting

Minutes of the Pre-Bid Meeting dated November 06, 2026

The queries raised by the prospective bidders were discussed in detail, and the following clarifications and decisions were made by the Committee:

1. Eligibility Criteria – Experience of Private Sector Projects

Query: The participants sought clarification regarding whether only experience gained through government tenders would be considered for eligibility. They requested that experience of projects executed for private-sector organizations should also be accepted for eligibility and evaluation purposes.

Decision: The Committee decided that experience of projects executed for registered corporate entities in the private sector shall also be accepted for similar (Solarization) projects, subject to the submission of relevant Purchase Orders (POs), Work Orders (WOs), and completion certificates as documentary evidence.

2. Warranty Period for Inverters

Query: The participants pointed out that the standard warranty period generally offered for inverters is 10 years, whereas the bidding document requires a warranty of 12 years. They requested that the warranty period be reduced to 10 years.

Decision: The Committee decided that the warranty period for **inverters** shall be at minimum 10 years replacement warranty and for solar panels, it will be minimum 12 years (Replacement warranty). Overall system warranty which includes labor, materials and replacement of parts for repair etc. will be for one year after the commissioning/operationalization of complete system including net-billing. Performance warranty of panels (25 years), inverters, PFI plants, synchronizers/zero-export devices, remote monitoring etc. will stay as mentioned in the SBD.

3. Solar Panel-to-Inverter Down-Sizing Ratio

Query: The participants requested that the permissible solar panel-to-inverter sizing ratio be increased up to 1:1.6.

Decision: The Committee clarified that solar panel-to-inverter sizing ratio must be 1:1.

4. Project Completion Period

Query: The participants pointed out that the stipulated project completion period of 90 days, as mentioned in the bidding document, was insufficient and requested that it be extended to four (04) months.

Decision: The project completion period shall be 90 days. However, CUI may grant an extension of time, subject to the vendor providing a valid justification and supporting documentary evidence, to the satisfaction of the competent authority.

5. Structural Stability and Wind Load Requirement

Query: The participants requested that the requirement for the structural stability of the solar panel mounting structure to withstand wind speeds of 150 km/h be reduced to 120 km/h, arguing that the latter would be sufficient.

Decision: The Committee clarified that the requirement for the mounting structure to withstand wind speeds of 150 km/h shall remain unchanged. This requirement is necessary in view of the occurrence of high wind speeds in Lahore, particularly during certain periods of the year.

6. Revision of Payment Schedule

Query: The participants expressed concerns regarding the existing payment schedule, particularly the initial payment milestone of 20%, and requested that the payment terms be revised.

Decision: After deliberation, the Committee agreed to revise the payment schedule as follows:

Sr. No.	Payment Milestone	Payment
1.	Completion of design, site survey, civil works, etc.	10%
2.	Supply of all materials, including PV mounting structures, solar panels, inverters, PFI plants, cables, etc.	40%
3.	Completion of installation and commissioning of the solar system.	40%
4.	Commissioning of the bi-directional meter.	10%
	Total	**100%**

5% retention money will be deducted from all payments and will be released one year after the completion of complete system including net metering/net-billing.

7. Availability of Rooftop Space

Query: Some participants expressed concerns that the available rooftop space might be insufficient to accommodate the required solar power generation capacity.

Decision: The Committee clarified that, in case of insufficient space on the initially identified rooftops, alternative rooftop spaces on other campus buildings shall be allocated to accommodate the required solar capacity. Approximately 300 KWp (as per actual space availability) is for parking shed, which is mandatory.

8. Flexibility in Design Submission

Query: The participating bidders sought clarification as to whether they would be allowed to propose their own technical designs, which might differ from the design provided in the bidding document.

Decision: The Committee clarified that bidders shall be allowed to submit their own proposed designs, provided that the proposed designs are technically sound, adequately justified, and meet the project requirements.

9. Schedule for site visit and survey

Vendors can visit for site visit and survey 13th and 16th November 2026 (Please coordinate with the Head Works (Mr. Mian Yasser 0333-4705224).

10. Bank Statement Requirement:

Query: The requirement for submission of bank statements for the last three years, as specified in the evaluation criteria, is proposed to be removed.

Decision: This requirement is removed

11. Retention Money and Performance Guarantee:

Query: Some of the prospective bidders asked for clarification regarding performance guarantee, retention money etc.

Decision: Earnest Money, Performance Guarantee, and Retention Money shall be obtained from the bidder, as applicable. The Earnest Money shall be released upon receipt of the Performance Guarantee. The Performance Guarantee shall be released upon successful completion of the project, subject to fulfillment of all contractual obligations, whereas the Retention Money shall be released upon successful completion of the warranty period i.e. 1 year after the commissioning of the complete system including net-billing.

12. Extension in Bid Submission Date:

Query: Various bidders requested an extension in the bid submission deadline.

Decision: Bid submission date is extended till **Friday, 20 November 2026**. A corrigendum in newspapers and EPADS shall also be issued.

13. Inclusion of All Costs in Quoted Rates:

Decision: The rates quoted by bidders on EPADS shall be deemed inclusive of all costs, including any additional material required for RFT, SFT or other applicable specifications. Bidders must, therefore, undertake a site visit and assess the complete material requirements before submitting their rates.

14. Preferred Brands for Solar PV Modules and Inverters

Following are the preferred brands of Solar PV modules and inverters:

Solar PV Modules: Jinko Solar, JA Solar, Trina Solar, Canadian Solar or Equivalent

Solar PV Inverters: Huawei, Sungrow or Equivalent

CUI Lahore will not compromise on quality and vender will be required to submit an equivalence certificate by relevant authority in case of quoting other than CUI preferred brands, given above.

15. It was also decided that JV is not allowed as per decision in the committee meeting.

FINANCIAL SUBMISSION
4841-82708-Design, Supply, Installation, Testing, Commissioning and Operation & Maintenance of 990KWp On-grid Solar PV System for CUI-Lahore Campus

Sr. #	Description of Items / Jobs	Unit	Qty	Quoted Model / Brands	Unit Price	Total Amount
1	PV moduleN Type and Half Cut PV modules minimum 700 W per panel or better	Watt	990000			
2	Inverter (Number and capacities will be proposed by the bidder making a total of 990KWp for the campus)3 phase On grid Inverters with Remote Monitoring	Watt	990000			
3	PFI PanelsTo cover 990 KW power produced by PV solar plant for the offered load, assuming 0.8 present power factor, which needs to be improved to 0.95	Nos.	10			
4	Inverter RoomInverter room for Parking lot raised structure	Sq ft	120			
5	Communication SystemOnline System for Data Logger, monitoring, control complete in all respect as per international standard or NPERA/LESCO. Including LED display units 50” each (2 Nos.) and Computers (2 Nos)	Nos.	1			
6	Genset Synchronization ModuleGenset Auto Synchronization Hybrid Genet Controller/Solar-Diesel Integration Controller compatible with Inverter and Generator, factory fabricated as approved by the Engineer	Nos.	4			
7	PV Mount Structure for rooftops of A, B, C, D and Architecture Block and Raised structure for Parking behind H-BlockSite preparation works including clearance and dismantling of wall/shed/holes. Wind speed = 150km/h, azimuth as per site. (UV resistant, 120 micron of zinc coating), 12 SWG complete in all respects or as per drawing given in Employer’s Design	Watt	990000			

8	Lightning ArresterCopper rod height 2 m to be fixed on these six Sites on required height with poles complete in all respect. Design of Lightening arresters for parking lot is given in the design. Rooftop PV installations will be done as per international standard safety or NPERA/LESCO. Pits for earthing are inclusive	Nos.	14			
9	0.4kV LV Panel (One each for every inverter)Details of breakers and SPD to be in housed in cabinet: for AC and DC System. As given in AC & DC BoQ and drawings attached	Nos.	10			
10	DC Distribution BoxIP65 GI DB for each inverter for placing DC strings Expected size but not limited to W*H*D = 3*1*0.75(16SWG) wall mount, single door with lock and with complete fitting scheme/ railing for DC breakers	Nos.	10			
11	DC Breakers and SPD for DC DBAs per string configuration and PV Module fuse ratings, as per NEPRA and International Standard or complete in all respect.	Sets	10			
12	DC wire for PV6 mm Sq. DC flexible wire 1500V DC Copper conductor, Cu XLPO for array to DB(Double Insulated)	Meter	18000			
13	DC wire for PV25 mm Sq. DC flexible wire 1500V DC Copper conductor, Cu XLPO from array DB to Main DB(Double Insulated)	Meter	620			
14	DC wire for PV16 mm Sq. DC flexible wire 1500V DC Copper conductor, Cu XLPO from array DB to Main DB(Double Insulated)	Meter	620			
15	AC wire from LV panel to inverterCu, XLPE/PVC 0.6/1 kV, 4*120 mm Sq. AC stranded(Double Insulated)	Meter	500			
16	AC wire for inverter groundingCu, PVC 0.6/1 kV, 1*70 mm Sq. AC flexible wire stranded	Meter	550			
17	DC wire for PV panel and PV frames to grounding pointPVC 1*16 mm Sq. AC standard wire	Meter	1500			
18	Copper Bare Conductor25 mm sq	Meter	250			

19	Cable Tray16 SWG Galvanized iron with flat cover, perforated downside, complete fitting accessories i.e nut bolts, supporting angle iron etc, size (W*D) inch 8*4 for laying string wires or as per International Standard or complete in all respect.	Meter	250			
20	UPVC pipe50mm dia pipe for laying string wires PV area to inverters including sockets	Meter	600			
21	UPVC pipe25mm including bends and sockets	Meter	1000			
22	MC4 connectorsIP67/IP68 for PV Stringing as per International Standard complete in all respect.	Nos.	500			
23	Bi-directional Meter for Net MeteringDelivery of Bi-directional Meter in line with NEPRA/ LESCO requirements	Nos.	1			
24	DC EarthingBore Type Earthing for DC Components as Per NEPRA or international Standard of safety (Maximum 5 ohm earth resistance)	Nos.	12			
25	AC EarthingBore Type Earthing for AC Components as Per NEPRA Standard or international Standard of safety (Maximum 5 ohm earth resistance)	Nos.	6			
26	Washing System for Panels (High Efficiency Nozzle and Pressure Pumps)	Nos.	6			
27	MISC ITEMSCable ties, rawal bolts, pvc tapes, steel and PVC clamps, pvc pipes, glands different sizes, thimbles, connectors, warning labels etc. 2 x insulated glove pairs, shoe pairs, hats for site inspection and maintenance activities. PV module O&M Toolkit. 1 x 55 inch 4K TV Screen for monitoring of generation data from all inverters complete in all respect	Nos.	1			
28	Installation, Testing and CommissioningComplete project installation and commissioning till handover of the project to Employer	Job	1			
29	Net metering servicesNet metering services complete in all aspects including NEPRA license and load flow studies required by the distribution company	Job	1			

30	Operation and Maintenance Services· Cleaning of all PV Modules on each Saturday / Sunday for 06 months. Monitoring of system performance and submission of monthly electricity generation reports	(Complete plant) job	6			
31	O&M Training1 week O & M training of 5 personnel of the Employer	persons	5			

Special Notes/Conditions:

1	Vendors are required to upload a file (on letterhead) at Annexture (duly signed/stamped) by mentioning quoted model / brands (where required) and Unit rates of items / job, failing which the bid may be rejected. In case of discrepancy found in grand total amount mentioned in the company letter head with that of mentioned over EPADS tab, CUI Lahore reserves the right to either accept the price quoted over EPADS tab or reject the offer.
2	The rates quoted by bidders on EPADS shall be deemed inclusive of all taxes and costs, including any additional material required on RFT, SFT basis or other applicable specifications. Bidders must, therefore, undertake a site visit and assess the complete material requirements before submitting their rates
3	Brand name and model must be mentioned by vendor against each item(s) where required failing which the bid may be rejected. Please refer to the pre-bid minutes of meeting for preferred brands of CUI Lahore.
4	Prebid meeting minutes have already been uploaded over EPADS and attached in SBD. In the event of any inconsistency or conflict between the provisions of the Pre-Bid Meeting Minutes and those contained elsewhere in the SBD, the clarifications, decisions and conditions recorded in the approved Pre-Bid Meeting Minutes shall prevail
5	Warranty period for inverters shall be at minimum 10 years replacement warranty and for solar panels, it will be minimum 12 years (Replacement warranty). Overall system warranty which includes labor, materials and replacement of parts for repair etc. will be for one year after the commissioning/operationalization of complete system including net-billing. Performance warranty of panels (25 years), inverters, PFI plants, synchronizers/zero-export devices, remote monitoring etc. will stay as mentioned in the SBD.
6	The CDR / earnest money shall be issued in favor of “COMSATS University Islamabad, Lahore Campus.” The CDR / earnest money Instrument must be received at the Purchase Office on or before the bid opening date/time. The Tax-Free No / NTN of CUI-Lahore is 9013701-9.

Payment Schedule

Sr. No.	Payment Milestone	Payment
1.	Completion of design, site survey, civil works, etc.	10%
2.	Supply of all materials, including PV mounting structures, solar panels, inverters, PFI plants, cables, etc.	40%
3.	Completion of installation and commissioning of the solar system.	40%
4.	Commissioning of the bi-directional meter.	10%
	Total	**100%**

Note: 5% retention money will be deducted from all payments and will be released one year after the completion of complete system including net metering/net-billing.

Earnest Money, Performance Guarantee, and Retention Money shall be obtained from the bidder, as applicable. The Earnest Money shall be released upon receipt of the Performance Guarantee. The Performance Guarantee shall be released upon successful completion of the project, subject to fulfillment of all contractual obligations, whereas the Retention Money shall be released upon successful completion of the warranty period i.e. 1 year after the commissioning of the complete system including net-billing.

CONSTRUCTION EXPERIENCE

Form EXP - 4.1
General Construction Experience

Bidder's Name: _____
Date: _____
JV Member's Name_____
Bid Reference No. (if any) and title: _____
Page _____of _____pages

Starting Year	Ending Year	Contract Identification	Role of Bidder
		Contract name: _____ Brief Description of the Works performed by the Bidder: _____ Amount of contract: _____ Name of EMPLOYER: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Bidder: _____ Amount of contract: _____ Name of EMPLOYER: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Bidder: _____ Amount of contract: _____ Name of EMPLOYER: _____ Address: _____	

Form EXP - 4.2(a)

Specific Construction and Contract Management Experience

Bidder's Name: _____
Date: _____
JV Member's Name_____
Bid Reference No. (if any) and title: _____
Page _____of _____pages

Similar Contract No.	**Information**			
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor ☐	Member in JV ☐	Management Contractor ☐	Sub-contractor ☐
Total Contract Amount			PKR equivalent	
If member in a JV or sub-contractor, specify participation in total Contract amount				
EMPLOYER's Name:				
Address: Telephone/fax number E-mail:				

Form EXP - 4.2(a) (cont.)
Specific Construction and Contract Management Experience (cont.)

Similar Contract No.	**Information**
Description of the similarity in accordance with Sub-Factor 4.2(a) of Section III:	
1. Amount	
2. Physical size of required works items	
3. Complexity	
4. Methods/Technology	
5. Construction rate for key activities	
6. Other Characteristics	

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Form EXP - 4.2(b)
Construction Experience in Key Activities

Bidder's Name: _____
Date: _____
Bidder's JV Member Name: _____
Sub-contractor's Name (if any): _____
Bid Reference No. (if any) and title: _____

Page _____of _____pages

All Sub-contractors for key activities must complete the information and Qualification Criteria and Requirements, Sub-Factor 4.2.

1. Key Activity No One: _____

	Information			
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor ☐	Member in JV ☐	Management Contractor ☐	Sub-contractor ☐
Total Contract Amount			PKR equivalent	
Quantity (Volume, number or rate of production, as applicable) performed under the contract per year or part of the year	Total quantity in the contract (i)	Percentage participation (ii)		Actual Quantity Performed (i) x (ii)
Year 1				
Year 2				
Year 3				
Year 4				
EMPLOYER's Name:				
Address: Telephone/fax number				

	Information
E-mail:	

2. Activity No. Two

3. ……

	Information
Description of the key activities in accordance with Section III:	

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Form EXP - 4.2 (c)
Specific Experience in Managing ES aspects

[The following table shall be filled in for contracts performed by the Bidder, and each member of a Joint Venture]

Bidder's Name: *[insert full name]*
Date: *[insert day, month, year]*
Joint Venture Member Name: *[insertfull name]*
Bid Reference No. (if any) and title: *[insert ICB/NCB number and title]*
Page *[insert page number]* of *[insert total number]* pages

1. Key Requirement no 1 in accordance with 4.2 (c): _____

Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor ☐	Member in JV ☐	Management Contractor ☐	Subcontractor ☐
Total Contract Amount			PKR	
Details of relevant experience				

2. Key Requirement no 2 in accordance with 4.2 (c): _____

3. Key Requirement no 3 in accordance with 4.2 (c): _____

4. [PA define key requirements]

Contractor's Representative and Key Personnel Schedule

Bidders should provide the names and details of the suitably qualified Contractor's Representative and Key Personnel to perform the Contract. The data on their experience should be supplied using the Form PER-2 below for each candidate.

Contractor' Representative and Key Personnel

1.	**Title of position:**	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]
2.	**Title of position:**	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]
3.	**Title of position:**	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]
4.	**Title of position:**	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]

	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]
5.	**Title of position:**	
	Name of candidate	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]
6.	**Title of position:** *[insert title]*	
	Name of candidate	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]

Form PER-2:
Resume and Declaration
Contractor's Representative and Key Personnel

Name of Bidder

Position [*#1*]: [*title of position from Form PER-1*]		
Personnel information	**Name:**	**Date of birth:**
	Address:	**E-mail:**
	Professional qualifications:	
	Academic qualifications:	
	Language proficiency:*[language and levels of speaking, reading and writing skills]*	
details		
	Address of Employer:	
	Telephone:	**Contact (manager / personnel officer):**
	Fax:	
	Job title:	**Years with present Employer:**

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

Project	**Role**	**Duration of involvement**	**Relevant experience**
[main project details]	*[role and responsibilities on the project]*	*[time in role]*	*[describe the experience relevant to this position]*

Declaration

I, the undersigned *[insert either "Contractor's Representative" or "Key Personnel" as applicable]* , certify that to the best of my knowledge and belief, the information contained in this Form PER-2 correctly describes myself, my qualifications and my experience.

I confirm that I am available as certified in the following table and throughout the expected time schedule for this position as provided in the Bid:

Commitment	**Details**
Commitment to duration of contract:	*[insert period (start and end dates) for which this Contractor's Representative orKey Personnel is available to work on this contract]*
Time commitment:	*[insert period (start and end dates) for which this Contractor's Representative orKey Personnel is available to work on this contract]*

I understand that any misrepresentation or omission in this Form may:

(a) be taken into consideration during Bid evaluation;

(b) result in my disqualification from participating in the Bid;

(c) result in my dismissal from the contract.

Name of Contractor's Representative or **Key Personnel: [*insert name*]**

Signature: _____

Date: (day month year): _____

Countersignature of authorized representative of the Bidder:

Signature: _____

Date: (day/month/year): _____

Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as specified in Eligibility and Qualification Criteria.

No.	**Source of financing**	**Amount (Eq. PKR)**
1		
2		
3		

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Past Experience / Contracts

Contracts over *[insert amount]* during the last three years:				
Procuring Agency	Value	Year	Goods/Services Supplied	Country of Destination

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Historical Contract Non-Performance, and Pending Litigation and Litigation History

[The following table shall be filled in for the Applicant and for each member of a Joint Venture]

Applicant's Name: *[insert full name]*
Date: *[insert day, month, year]*
Joint Venture Member Name: *[insert full name]*
IFP No. and title: *[insert IFP number and title]*
Page *[insert page number]* of *[insert total number]* pages

☐ Not debarred due to deviation from commitment of Bid Securing Declaration-☐ Not debarred due to non-performance			
Year	**Non-performed portion of contract**	**Contract Identification**	**Total Contract Amount (current value, currency, exchange rate and PKR equivalent)**
[insert year]	*[insert amount and percentage]*	Contract Identification: *[indicate complete contract name/ number, and any other identification]* Name of Procuring Agency: *[insert full name]* Address of Procuring Agency: *[insert street/city/country]* Reason(s) for nonperformance: *[indicate main reason(s)]*	*[insert amount]*
Pending Litigation, in accordance with Section III, Qualification Criteria and Requirements			
☐ Pending litigation in accordance with Section III, Qualification Criteria and Requirements, Sub-Factor 2.3 as indicated below.			

Year of dispute	**Amount in dispute (currency)**	**Contract Identification**	**Total Contract Amount (currency), ~~US$~~ PKR Equivalent (exchange rate)**

[insert year]	*[insert amount]*	Contract Identification: [indicate complete contract name, number, and any other identification] Name of Procuring Agency: *[insert full name]* Address of Procuring Agency: *[insert street/city/country]* Matter in dispute: *[indicate main issues in dispute]* Party who initiated the dispute: *[indicate "Procuring Agency" or "Supplier"]* Status of dispute: *[Indicate if it is being treated by the Adjudicator, under Arbitration or being dealt with by the Judiciary]*	*[insert amount]*

☐ No consistent history of court/arbitral award decisions in accordance with Section III, Qualification Criteria and Requirements, Sub-Factor 2.4.

☐ Consistent history of court/arbitral award decisions in accordance with Section III, Qualification Criteria and Requirements, Sub-Factor 2.4 as indicated below.

Year of award	**Outcome as percentage of Net Worth**	**Contract Identification**	**Total Contract Amount (currency), PKR Equivalent (exchange rate)**
[insert year]	*[insert percentage]*	Contract Identification: [indicate complete contract name, number, and any other identification] Name of Procuring Agency: *[insert full name]* Address of Procuring Agency: *[insert street/city/country]* Matter in dispute: *[indicate main issues in dispute]* Party who initiated the dispute: *[indicate "Procuring Agency" or "Supplier"]* Court/ arbitral award decision: *[Indicate if the award decision was against the Applicant or any member of a joint venture.]y]*	*[insert amount]*

Current Contract Commitments / Works in Progress

Bidders and each member to a JV should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Current Contract Commitments					
No.	Name of Contract	**Employer's Contact Address, Tel, Fax**	**Value of Outstanding Work [Current Eq. PKR]**	**Estimated Completion Date**	**Average Monthly Invoicing Over Last Six Months [Eq. PKR/month)]**
1					
2					
3					
4					
5					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Financial Situation and Performance

[The following table shall be filled in for the Applicant and for each member of a Joint Venture]

Applicant's Name: *[insert full name]*
Date: *[insert day, month, year]*
Joint Venture Member Name: *[insert full name]*
IFP No. and title: *[insert IFP number and title]*
Page *[insert page number]* of *[insert total number]* pages

1. Financial data

Type of Financial information in (currency)	**Historic information for previous _[insert number] years, [insert in words] (amount in currency, currency, exchange rate*, PKR equivalent)**				
	Year 1	Year 2	Year 3		
Statement of Financial Position (Information from Balance Sheet)					
Total Assets (TA)					
Total Liabilities (TL)					
Total Equity/Net Worth (NW)					
Current Assets (CA)					
Current Liabilities (CL)					
Working Capital (WC)					
Information from Income Statement					
Total Revenue (TR)					
Profits Before Taxes (PBT)					
Cash Flow Information					
Cash Flow from Operating Activities					

* Refer ITA 14 for the exchange rate

3. Financial documents

The Applicant and in case of JV, members of JV shall provide copies of financial statements for *[number]* years pursuant Section III, Qualifications Criteria and Requirements. The financial statements shall:

(a) reflect the financial situation of the Applicant or in case of JV member, and not an affiliated entity (such as parent company or group member).

(b) be independently audited or certified in accordance with local legislation.

(c) be complete, including all notes to the financial statements.

(d) correspond to accounting periods already completed and audited.

☐ Attached are copies of financial statements[1] for the *[number]* years required above; and complying with the requirements.

[1] If the most recent set of financial statements is for a period earlier than 12 months from the date of Application, the reason for this should be justified.

Average Annual Turnover (Annual Sales Value)

[The following table shall be filled in for the Applicant and for each member of a Joint Venture]

Applicant's Name: *[insert full name]*
Date: *[insert day, month, year]*
Joint Venture Member Name: *[insert full name]*
IFP No. and title: *[insert IFP number and title]*
Page *[insert page number]* of *[insert total number]* pages

Annual Turnover Data			
Year	**Amount** **Currency**	**Exchange rate*** **(If applicable)**	**PKR equivalent**
[indicate calendar year]	*[insert amount and indicate currency]*		
		Average Annual Turnover **	

* Refer ITA for date and source of exchange rate.

** Total PKR equivalent for all years divided by the total number of years. See Section III, Qualification Criteria and Requirements, ITA.

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS