SECTION 01 33 16 – FABRICATION ENGINEERING DESIGN DATA

PART 1 - GENERAL

1.1 SUMMARY

A. Provide the requirements of this Section in accordance with requirements of the Contract Documents.

B. Section Includes:

1. Fabrication Engineering and Design Data (Delegated Design Engineering Data).
2. Manufacturer's Field Reports.
3. Submittal Schedule.

C. Related Requirements:

1. Division 01. "Shop Drawings, Product Data, and Samples".

1.2 DEFINITIONS

A. Fabrication Engineering and Design: Known in various jurisdictions and professional licensing laws as "Delegated Design", refers to engagement of a professional engineer licensed to practice in the jurisdiction of the project, who is responsible for engineering and design of fabrications required to comply with design criteria and engineering performance requirements specified in technical sections of the specifications.

1.3 FABRICATION ENGINEERING DESIGN SUBMITTALS

A. Fabrication Engineering Data: Submit engineering of fabrication is required by technical sections of the Specifications, comprehensive engineering calculations demonstrating conformance to the requirements of the Contract Documents and comply with requirements of authorities having jurisdiction.

1. Calculations shall be legible and incorporate sufficient cross-references to shop drawings to make calculations readily understandable and reviewable.
2. At a minimum, engineering calculations shall contain:
    a. Analysis of design elements or component members.
    b. Section property computations for structural framing members.
    c. Analysis of anchors, including anchors embedded in concrete.
    d. Signature and seal of the qualified licensed professional engineer responsible for their preparation.
3. Test reports are not an acceptable substitute for calculations.
4. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Include energy calculations if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

1.4 QUALITY ASSURANCE

A. Engineering Professional: A Professional Engineer licensed to practice in the state of the project, shall be engaged by the Contractor to provide engineering of materials, components or assemblies defined in technical sections of the Specifications to require engineering, who is experienced in providing the engineering services required.

B. Except as otherwise identified in Technical Sections of the Specifications, the Professional Engineer shall have at least 5 consecutive years' experience providing fabrication engineering and design services on projects of comparable size and scope, including material, design complexity to this project, that has resulted in applications with a record of successful in-service performance.

PART 2 - PRODUCTS

2.1 FABRICATION ENGINEERING AND DESIGN SERVICES

A. Fabrication Engineering and Design: When identified in the Contract Documents, are required for components related to systems, materials or equipment to the Contractor.

1. The Architect/Engineer's Drawings may be diagrammatic, may not identify or imply solutions, but are intended to show the:

    a. Design intent, profiles and overall dimensions, shapes and forms,
    b. Materials and relationships between items,
    c. Location, identification of assemblies, components, accessories and other items,
    d. Schematic attachment details and diagrams of connections.

2. The Architect/Engineer's Specifications will identify performance criteria required.

    a. If performance criteria specified or indicated are insufficient to perform services, submit a written request for additional information to Architect/Engineer.

B. Contractor's Responsibility: Engage an engineering professional complying with requirements specified in the Quality Assurance Article to provide fabrication engineering and design services; including but not limited to, signed and sealed shop drawings, product data and calculations using the design criteria, performance requirements, and other requirements specified in the Contract Documents. Be responsible for the following:

1. Maintaining design intent, conforming to the design shown on the Drawings and the performance requirements in the Specifications.
2. Providing fabrication engineering and design of assemblies including materials, products, components, and accessories required for a complete design, whether such items are indicated on the Drawings or in the Specifications.
3. Providing anchors, attachments, inserts, fasteners, clips, bracing, framework, connections, and similar items required to comply with specified design performance requirements.
4. Securely attaching Work to adjacent supports, related adjoining work; whether such items are indicated on the Drawings or in the Specifications.

C. Deviations: In the interest of certain fabrication or erection methods, minor dimensional changes and detailing adjustments to the original design communicated in the Contract Documents may become necessary.

1. Identify proposed changes and deviations clearly in the Submittal, highlighting items and bringing deviations to the Architect/Engineer's attention for review.

D. Fabrication Engineer and Design Services Certification: In addition to Shop Drawings, Product Data and other required submittals, submit digitally signed and sealed PDF electronic Shop Drawings, Product Data, engineering and design calculation files and other required submittals, signed and sealed by the qualified Professional Engineer responsible for preparation of fabrication engineering and design services.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

E. Substituted Engineering: The Architect/Engineer has provided engineering design for elements of the Project based on design criteria, performance specifications, and other requirements as documented in the Contract Documents.

1. Where Contractor proposes to vary from the engineering design indicated in the Contract Documents, the Contractor shall engage a Professional Engineer licensed to practice in the project jurisdiction, to provide engineering and design and be the Engineer of record for those components that are substituted engineering design.
2. Submittals for substituted engineering shall comply with processes outlined in Division 01 Substitutions.
3. If performance criteria indicated are not sufficient to perform services, submit a written request for additional information to Architect/Engineer.

PART 3 - EXECUTION

3.1 ARCHITECT/ENGINEER'S AND DESIG-BUILDERS ACTION

A. Fabrication Engineering and Design Review: The Architect/Engineer is entitled to rely upon the adequacy, accuracy and completeness of engineering provided by the Contractor and the Contractor's Engineering Professional. The Architect/Engineer's review of these submittals shall be limited to verification that the Contractor's fabrication engineering documents:

1. Are in general conformance with the design intent, including design criteria, performance requirements contained in technical sections of the specifications, and other requirements of the Contract Documents
2. Are in general conformance with the overall Project Design, and
3. Can be integrated into the overall Project Design.

END OF SECTION