SECTION 112400

TIE-BACK AND LIFELINE ANCHORS

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 RELATED DOCUMENTS

A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that relate directly to work of this Section include, but are not limited to:
   1. Section 051200, Structural Steel.
   2. Section 053000, Metal Decking.

1.3 DESCRIPTION OF WORK

A. Work of this Section includes, but is not limited to the following:
   1. Tie back and life line anchors for exterior maintenance applications.
   2. Fall Protection System.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's printed product data, installation instructions, use limitations and recommendations for accessories specified. Provide certifications stating that products comply with specified requirements.

B. Shop Drawings: Provide shop drawings for fabrication, layout, and configuration of the system, including all installation and erection of all parts of the work, and including all accessories. Shop drawings shall meet the relevant health and safety standards of all agencies having jurisdiction. Shop drawings shall identify necessary restrictive and non-restrictive working usage notes and general safety notes.
   1. Provide plans, elevations, and details of anchorages, connections and accessory items. Provide installation templates for work installed by others.
   2. Show the general arrangement of all components, clearances and principal dimensions, assemblies of safety equipment.
   3. Include weights of components and maximum loads and spacings.
   4. Include the seal of a qualified professional engineer licensed to practice in the State of Maine.

5. As part of shop drawings, include a safety inspection log book for yearly inspections.
6. Submit two copies of as-built shop drawings showing anchor locations and details. This drawing shall be posted near exits onto the roof.

C. Operation and Maintenance Manuals: Submit operation and maintenance data.

1.5 REGULATORY REQUIREMENTS

A. Strictly comply with applicable codes, regulations, and requirements of authorities having jurisdiction.

B. Comply with the requirements of OSHA 1910.66 Subpart I "Fall Protection".

C. Comply with the requirements of OSHA 1910.66 Subpart D, "Walking and Working Surfaces and Personal Protective Equipment (Fall Protection Systems).

D. Comply with the requirements of 29 CFR 1910 - Occupational Safety and Health Standards and 29 CFR 1910.306 - Specific Purpose Equipment and Installations.

E. Comply with AISC Specifications.

F. Comply with AWS D1.1.

1.6 DESIGN

A. The equipment supplier is responsible for the design and erection of equipment and anchors and for all coordination and proper relation of his work to the building structure and to the work of all trades. The equipment supplier shall verify all dimensions of the building that relate to fabrication of the equipment and shall notify the Architect of any discrepancy before the order for the equipment is finalized.

B. Design all anchor components to provide an adequate attachment means suited to current anchoring practices and compatible with industry standard equipment.

C. Ensure that all anchor components meet proper engineering principles and have been designed by a company qualified in the anchoring applications and safety.

D. Design fall protection anchors to allow workers to maintain lifeline protection when accessing roof areas not protected by guardrails. Include any hardware required to attach the components to the building structure.

E. Fall Arrest Safety Anchors: Designed to a maximum fall arresting force of typically 1800 lbs (8.0 kN) when wearing a body harness with a safety factor of 2 without any permanent deformation and to 5000 lbs (22.24 kN) against fracture or detachment.

F. Ensure design of primary support equipment is capable of sustaining without failure at least four times the maximum static working load applied or transmitted to the components, i.e. a 4 to 1 stability factor.

1.7 DELIVERY, STORAGE, AND PROTECTION

A. Deliver safety equipment and accessories in accordance with manufacturer's recommendation. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from damage.

PART 2 - PRODUCTS

2.1 PRODUCTS AND MANUFACTURERS

A. Provide products of one of the following manufacturers that meet or exceed specified requirements, or approved equal:
   1. Pro-Bel, The Safety Anchor Company; Pro-Bel Enterprises, Limited; 905-427-0616, fax 905-427-2545; or 800-461-0575.
   2. Kee Safety, Ltd.; 800-851-5181

B. Firm shall be specialized in the design, fabrication, and installation of permanent fall protection equipment.
   1. Equipment supplier/installer shall carry specific liability insurance, products and completed operations insurance, in an amount of not less than $2,000,000.00. This insurance shall cover the failure of the safety anchor itself.

C. Other manufacturers producing equipment meeting this specification may be submitted for Architect's review provided that proposed substitute supplier can demonstrate qualifications and experience and furnish evidence of insurance coverage.

2.2 EQUIPMENT

A. Provide equipment required to satisfy design requirements and proposed equipment layout.

B. Tieback Lifeline Anchors:
   1. System shall resist pullout with force of 5000 pounds in any direction.
   2. Safety anchoring eye, bolts and connecting hardware shall be fabricated of stainless steel.
   3. Steel bases shall be fabricated of hot-dipped galvanized mild steel.

C. Height Above Roof Membrane: As shown or, if not shown, 9 to 12 inches.

2.3 MATERIALS

A. Exposed structural components: Stainless steel, Type 304 with minimum yield strength of 42 ksi.

B. Cast In Place Inserts: Stainless steel, Type 304.

C. All nonexposed steel shall be hot dip galvanized steel conforming to ASTM A 36, Type 350W with 50 ksi yield strength for HSS and 43 ksi for plate and all other sections.

D. Cold Rolled Sections: ASTM A 500, yield strength 55 ksi, tensile strength 66 ksi.

2.4 FLASHINGS

A. All wall and roof anchors shall be properly flashed.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces and areas upon which the work of this section depends. Report to the Contractor in writing, defects of work prepared by other trades and other un-satisfactory site conditions which would cause defective installation of products, or cause latent defects in workmanship and function.

B. Verify site dimensions.

C. Commencement of work will imply acceptance of prepared work.

3.2 ERECTION AND INSTALLATION

A. Erect and install the fall protection equipment including tie-back and line anchor systems complete in accordance with the approved shop drawings and all applicable codes. and in accordance with manufacturer's recommendations.

B. Deform threads of tail end of anchor studs after nuts have been tightened to prevent accidental removal or vandalism.

C. Structural steel to receive safety anchors to have adequate bearing surface as indicated on shop drawings and/or to ensure 100% weld.

3.3 TESTING

A. All anchors relying upon chemical adhesive fasteners to be 100% tested on site using load cell test apparatus in accordance with manufacturer's recommendations.

3.4 ERECTION SERVICES

A. The fall protection equipment manufacturer shall provide supervisory erection services, including the services of a registered professional engineer to oversee installation of equipment.

END OF SECTION