SECTION 112423 – WINDOW WASHING SYSTEM

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes: Layout, design, supply, and certification of tie-back anchors, rigging sleeves, and davits used for window washing suspension systems and fall protection systems.

B. Related Sections:
   a. Section 03300 – Cast-In-Place Concrete
   b. Section 03400 – Pre-Cast Concrete
   c. Section 05100 – Structural Metal Framing
   d. Section 05400 – Cold Formed Metal Framing
   e. Section 05310 – Metal Decking
   f. Section 06100 – Rough Carpentry
   g. Section 07510 – Built-Up Roofing
   h. Section 07700 – Roof Specialties and Accessories

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM)
B. American National Standard Institute / International Window Cleaning Association / American Society of Safety Engineers (ANSI/IWCA/ASSE)
   b. ANSI/ASSE Z359.1-2007 – Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components
   c. ANSI/ASSE Z359.6-2009 – Specifications and Design Requirements for Active Fall Protection Systems
C. Occupational Health And Safety Administration (OSHA)
   a. OSHA 1926.502 – Fall Prevention Systems Criteria and Practices

1.03 SYSTEM DESCRIPTION

A. Anchor Design Requirements:
   a. Tie-back anchors shall be designed to meet the requirements of OSHA, ANSI, IWCA, and other applicable regulatory codes regarding fall protection and suspended maintenance operations, including the references of Section 1.02.
   b. Each area of suspension shall be supplied with two independent anchors designated for suspension and fall protection.
   c. Structural Design Requirements:
      i. Anchors used for fall protection and designated for suspension shall be designed to sustain a 5,000 pound ultimate load without fracture or failure.
      ii. Anchors designated for suspension shall be designed to sustain a proof load of 2,500 pounds in any direction the load may be applied without permanent deformation.
      iii. Anchors designated for suspension shall be designed with a design working load of 1,250 pounds.
   d. Tie-back Anchors shall be placed where areas of the building exterior are to be maintained. Placement shall be made so as not to extend the working reach of an employee further than six feet in each direction from the point of suspension.
e. These anchor design requirements are applicable to Rope Descent Systems only and shall not be applied to powered platform/equipment design.

B. Rigging Sleeve Design Requirements:
   a. Locate rigging sleeves to accommodate suspended maintenance with swing stage operations. The spacing of the rigging sleeves shall remain consistent over the roof to match the standard length of the powered platform to be used. Exact locations and spacing to be coordinated with owner based on powered platforms to be used.
   b. Locate independent anchors for personal fall protection in accordance with Section 1.03 A.
   c. Structural Design Requirements:
      i. Rigging Sleeves shall be designed with a design working load of 1,250 pounds.
      ii. Rigging Sleeves shall be designed to withstand proof loads and ultimate loads as specified in applicable regulatory standards and as specified in Section 1.02.

C. Davit Design Requirements:
   a. Locate davit bases to accommodate suspended maintenance with swing stage operations. The spacing of the davit bases shall remain consistent over the roof to match the standard length of the powered platform to be used. Exact locations and spacing to be coordinated with owner based on powered platforms to be used.
   b. Davit system to be designed for ground-rigged or roof-rigged applications as determined by Owner.
   c. Locate independent anchors for personal fall protection in accordance with Section 1.03 A.
   d. Structural Design Requirements:
      i. Davits shall be designed with a design working load of 1,000 pounds.
      ii. Davits shall be designed to withstand proof loads and ultimate loads as specified in applicable regulatory standards and as specified in Section 1.02.

1.04 SUBMITTALS

A. Product Data: For each type of device specified, including manufacturer’s standard fabrication details and installation instructions.
B. Shop Drawings: Show layout, profiles, and details. Layout shall indicate dimensioned details as well as the points on the roof edge to be accessed by suspension. Corresponding fall protection anchors at each drop area shall be shown to be within 15 degrees of perpendicular to the roof edge where applicable. Shop drawings & calculations to be stamped by a Professional Engineer registered in the State in which the project is located.
C. Operation & Maintenance Data: Written instructions for maintenance of system to be included in the operation and maintenance manual. Include procedures necessary for proper installation of each product, all pertinent user equipment notes, and standard inspection requirements.
D. Close-out Documents: Include maintenance data with the requirements for proper inspection, re-certification, and servicing of all equipment. Submit a log book with the initial inspection and testing of the fall protection & suspension equipment. Testing shall be performed by a qualified person under the supervision of a Professional Engineer.
E. In-house Test Reports: Indicate anchor fabrication compliance with performance requirements.
F. Signage: Provide laminated sign showing system layout and usage notes, to be installed at roof access locations.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Firm having at least 10 years continuous experience in manufacturing fall safety equipment similar to systems specified and exhibiting records of successful in-service acceptability and performance. Firm must employ personnel dedicated to provide regularly scheduled Authorized and
Competent Person Training courses as mandated by OSHA 1926 and 1910 for owner’s authorized safety personnel.

B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the jurisdiction where the Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of roof anchors that are similar to those indicated for this Project in material, design and extent.

C. OSHA Standards: Comply with Occupational Safety and Health Administration Standards for the Construction Industry 29 CFR § 1926.500 Subpart M (Fall Protection), and with applicable State Administrative Code safety standards for Fall Restraint and Fall Arrest.

D. Manufacturer and installer shall have specific liability insurance in an amount not less than $4,000,000.

E. Source Limitations: Obtain all roof anchors through one source from a single manufacturer.

F. Testing: Perform quality control tests for each system per manufacturer’s requirements.

1.06 COORDINATION

A. Contractor to coordinate installation of structural deck to meet requirements of system manufacturer. All structural decks must be approved by manufacturer.

B. Contractor to coordinate installation of structural deck reinforcements and anchorages to system components to withstand the design loads.

C. Contractor to coordinate placement of roofing system, insulation and flashing to ensure water-tight integrity to roof.

1.07 WARRANTY

A. Provide manufacturer’s standard warranty to guarantee products will be free from defects for a period of 12 months. Warranty period shall become effective on date of substantial completion.

PART 2 – PRODUCTS

2.01 MANUFACTURER

A. Provide system manufactured by Guardian Fall Protection Inc., 6305 South 231st Street Kent, WA, phone 800-466-6385, fax 800-670-7892, or equal.

2.02 MATERIALS

A. S-Series Anchors:
   a. Steel Plates: Galvanized A36 steel, or as determined by manufacturer. Size as necessary for proper installation. Contractor to coordinate manufacturer size requirements & recommendations with structural requirements for receiving the anchors and for providing reinforcement.
   b. Pipes: Galvanized A53 steel, or as determined by manufacturer. Size as necessary for height. Contractor to coordinate manufacturer height requirements & recommendations with architectural requirements for insulation and flashing.
   c. U-bar: Galvanized steel or type 304 stainless steel; 3/4" diameter.

B. Rigging Sleeves:
   a. Steel Plates: Galvanized A36 steel, or as determined by manufacturer. Size as necessary for proper installation. Contractor to coordinate manufacturer size requirements & recommendations with structural requirements for receiving the Rigging Sleeves and for providing reinforcement.
b. Pipes: Galvanized A53 steel, or as determined by manufacturer. Size as necessary for height. Contractor to coordinate manufacturer height requirements & recommendations with architectural requirements for insulation and flashing.

c. Cap: As recommended by manufacturer.

d. Point of attachment: Type 304 stainless steel or as recommended by manufacturer.

C. Davit Bases:
   a. Steel Plates: Galvanized steel, or as determined by manufacturer. Size as necessary for proper installation. Contractor to coordinate manufacturer size requirements & recommendations with structural requirements for receiving the Davit Bases and for providing reinforcement.
   b. Pipes: Galvanized steel, or as determined by manufacturer. Size as necessary for height. Contractor to coordinate manufacturer height requirements & recommendations with architectural requirements for insulation and flashing.
   c. Shall be designed to receive Davit Socket Housing.

D. Davit Socket Housing:
   a. Galvanized steel, or as determined by manufacturer. Shall be capable of moving between davit bases. Shall be compatible with the Davit Bases as well as the Davit Arms to be used.

E. Davit Arms:
   a. Structural aluminum and stainless steel as determined by manufacturer and in compliance with the codes referenced in Section 1.02. Shall be capable of moving between davit bases. Shall be compatible with the Davit Socket Housing to be used. Shall be designed for ground-rigged or roof-rigged applications as determined by Owner.

2.03 FABRICATION

A. Fabricate work true to dimension, square, plumb, level, and free from distortions or defects detrimental to appearance and performance.

B. Prepare, treat and coat galvanized metal to comply with manufacturer's written instructions. Prepare galvanized metal by removing grease, dirt, oil, flux, and other foreign matter.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine framing and substrate and verify conditions comply with structural requirements for proper system performance.

B. Proceed with installation of system only after verifying conditions are satisfactory.

3.02 INSTALLATION

A. General: Installation of system to be performed by contractor according to manufacturer’s instructions and recommendations.

3.03 FIELD QUALITY CONTROL

A. Perform quality control tests for each system per manufacturer’s requirements. Testing shall be performed by a qualified person under the supervision of a Professional Engineer.
3.04  ADJUSTMENT AND INSPECTION

A. Ensure all manufactured systems have been installed in accordance with the manufacturer’s engineering documentation and specifications.
B. Provide plan drawings with any deviations in system locations as installed.