

PART 1 GENERAL**1.1 RELATED DOCUMENTS**

- A. The requirements of the General Conditions, Supplementary Conditions and the following Specification sections apply to all Work herein:
1. Section 23 00 10 - General Requirements
 2. Section 23 00 20 - HVAC Scope of Work
 3. Section 23 05 07 - Design Conditions
 4. Section 23 05 93 - Testing, Balancing, and Adjusting
 5. Section 23 21 13 - Pipes, Valves, Fittings, and Accessories
 6. Section 23 21 23 - Pumps
 7. Section 23 34 00 - Exhaust and Ventilating Fans
 8. Section 23 64 16 - Centrifugal Water Chilling Units
 9. Section 23 65 13 - Modular Factory Assembled Cooling Towers
 10. Section 23 73 23 - Custom Factory-Built Air Handling Units
 11. Section 23 73 63 - Custom Factory-Built Tri-Path Multi-Zone Air Handling Units

1.2 SUMMARY

- A. Furnish and install foundation vibration isolation, and associated equipment for piping, rotating equipment, etc., as specified herein.
- B. The Divisions 23 HVAC Subcontractor shall assume complete responsibility for the anchoring of the equipment, piping systems, etc., specified hereinafter to the concrete foundation pads, to the concrete inertia bases and to the supporting structural steel and concrete beams.
- C. Coordinate piping supports for use in the parking garage structure.
- D. The Divisions 23 HVAC Subcontractor shall provide all miscellaneous steel for support of equipment, piping systems and ductwork systems.

1.3 REFERENCE STANDARDS

- A. All vibration isolation devices and components shall be designed, manufactured and tested in accordance with the latest applicable standards including the following:
1. ANSI R211
- B. All equipment and material to be furnished and installed on this Project shall be in accordance with the requirements of the authorities having jurisdiction, and suitable for its intended use on this Project.
- C. ASCE – American Society of Civil Engineers
1. ASCE 7-05, 2006 Revised 2007 – Minimum Design Loads for Buildings and Other Structures
- D. OSHPD – Office of Statewide Health Planning and Development (California Health and Human Services Agency)

1.4 SUBMITTALS

- A. The following submittal data shall be furnished according to the General Conditions and Section 23 00 10 and shall include, but not be limited to:
1. Vibration Isolation* including calculations, Drawings, etc. Submittal data shall include size, type, load and deflection of each isolator selected and shall clearly outline procedures for setting and adjusting all isolation devices.
 2. Pipe Risers including pipe riser diagrams and loads imposed upon the structure at support points.
 3. Complete installation instructions including details and sizing of anchor devices or plates required shall be furnished by the manufacturer.

4. The HVAC Subcontractor shall submit isolation Shop Drawings for all horizontal and vertical piping, equipment inertia bases, mechanical equipment and cooling towers to the Structural Engineer, Architect and Engineer prior to fabrication and installation of any of the isolation and restraint equipment or systems. Submittal data shall include certification by the vibration isolation manufacturer that all chilled water, condenser water, and heating hot water systems (horizontal and vertical) have been examined for excessive stresses and that none will exist in the design proposed. See Section 23 00 10 for certification requirements.
 5. Piping Shop Drawing Stress Analysis* shall indicate the anticipated thermal expansion and contraction at each support point, creep and/or compression of the building structural frame, initial and final loads on the building structure, spring deflection changes, construction loading, normal operating condition loading and the structural loading which will occur during normal operation of each piping system expansion and contraction. All calculations shall be included with the Shop Drawings and shall be of a similar format to facilitate review.
 6. Each isolator shall have a permanently attached identification tag, which is cross referenced to the Shop Drawings by location and service (not just model numbers or serial numbers).
 7. Stress Analysis listing stress, movement and forces to the structure must be submitted for the standby generator exhaust piping vibration isolation system to insure the integrity of the entire system after expansion. The computer program must use accepted principles of finite element analysis. Maximum stress must comply with ANSI R211 code. Details for any pipe guides, anchors or special support details required to control generator exhaust pipe movement. Submit stress analysis to the Engineer for review.
 8. Shop Drawings shall be submitted to the Project Structural Engineer for review of loads exceeding 500 lb. imposed on the building structure. The Shop Drawing shall be submitted to the Engineer for review after review by the Project Structural Engineer
 9. Seismic restraint calculations stamped by a California State licensed structural or civil engineer, confirming compliance with ASCE 7-05.
 10. Product data and current OSHPD certification OPA number verifying that the system is currently pre-approved by OSHPD or provide calculations to demonstrate compliance with the requirements of regulatory agencies.
 11. Note compliance with seismic code regulations and the project specification on the submittals.
 12. Number and location of seismic restraints and anchors for each piece of equipment including but not limited to bolted or welded connections between cooling tower and support beams, vertical pipe risers, bolt sizing and embedment depth, and seismic cable strength and diameters.
 13. Specific details of restraints including anchor bolts for mounting and maximum loading at each location.
 14. Certificate of compliance for each component mounting system and anchorage as required by CBC Section 1708.5.
 15. Written statement of responsibility as required by CBC Section 1706.
 - 16.
 17. Shop Drawings shall also be submitted to the Project Acoustical Consultant for review.
 18. Factory Test Reports
 19. Proposed test procedures, recording forms, test equipment, and list of personnel and qualifications for all tests proposed. Refer to Section 22 05 93 titled "Testing, Balancing, and Adjusting" for additional requirements.
 20. Field Test Reports
 21. Manufacturer's factory trained technician written certification that all vibration isolation has been installed properly in accordance with the manufacturer's recommendations.
- B. All items or equipment listed above with asterisks (*) shall be certified by the manufacturer using Manufacturer Certification "MCA" as set forth in Section 23 00 10. See Section 23 00 10 for certification requirements.
- 1.5 WARRANTY**
- A. Comply with the requirements of the General Conditions and Section 23 00 10.

PART 2 PRODUCTS**2.1 ACCEPTABLE MANUFACTURERS**

- A. If it complies with these Specifications, one of the following vibration isolation manufacturers will be acceptable:
1. Amber/Booth Company (The VMC Group)
 2. Grinnell Corporation
 3. Korfund Dynamics Corporation (The VMC Group)
 4. Mason Industries, Inc.
 5. Peabody Kinetics
 6. Vibration Eliminator Company
 7. Vibration Mounting and Controls, Inc. (The VMC Group)
 8. Vibrex Vibration Control Systems (Sausse)
 9. Vibro-Acoustics
 10. Victaulic Corporation
- B. Unless otherwise noted, the vibration isolation devices described herein are products of the Amber/Booth Company.

2.2 GENERAL

- A. All vibration isolators shall be furnished with zinc electroplated hardware to prevent corrosion and bolt freeze up and to maintain attractive appearance. To prevent corrosion, steel or cast iron housing shall be treated by phosphating and painting while aluminum housing shall be etched in Chromi Coat solution and painted. Isolators exposed to weather shall have the springs fully PVC coated or enamel powder coated. Housings shall be of cast aluminum, or hot dipped galvanized steel after fabrication.
- B. Isolators for equipment subject to wind loading shall be provided with uplift restraints.
- C. Isolators for fans shall include thrust restraints to minimize movement to 1/4" if required due to the total developed static pressure.
- D. The isolation devices for all piping systems and channel frames shall be products of a single vibration isolation manufacturer. The isolation manufacturer's local representative shall maintain an adequate stock of springs and isolators of the type used so that any changes required during construction and checking can be accomplished promptly. Complete installation instructions including details and sizing of anchor devices or plates required shall be furnished by the manufacturer.
- E. The Subcontractor shall coordinate the vibration isolation supports with the manufacturers of the equipment to be isolated. See the Paragraph titled "Coordination Drawings" in Section 23 00 10 for additional requirements.
- F. Seismic restraints and anchorage shall be designed for the lateral and vertical forces required by the Building Code for the specific project type and site. Confirm lateral and vertical forces and site-specific design criteria with the project Structural Engineer.

2.3 VIBRATION ISOLATION FOR PUMPS

- A. Pumps for the service listed below shall be installed on concrete inertia pads with minimum thickness as specified below and designed for support of the pump and pump elbows and shall be formed of concrete poured with a structural steel frame with reinforcing as required as listed hereinbefore. Isolation shall consist of Type PSW-2 spring isolators embedded in the inertia pad with ribbed neoprene pads and removable cover plate. The spring shall be sized for 2" deflection and shall be cast in the concrete inertia block. Prior to startup, clean out all foreign material between the inertia block and the concrete base. The following pumps require this type of installation:
1. Chilled water pumps
 2. Condenser water pumps
 3. Heating hot water pumps

- B. Minimum Thickness of Concrete Pad or Inertia Base shall be:

Total Motor HP	Minimum Thickness (Inches)
5-15	6
20-50	8
60-75	10
100-250	12

2.4 VIBRATION ISOLATION FOR AIR HANDLING UNITS AND VENTILATING FANS

- A. Install floor mounted units without internal spring isolation on open spring type vibration isolators equal to Type SW-1 or SW-2 isolators. Spring shall be designed for a minimum K_x/K_y (horizontal-to-vertical spring rate) of 1.0 and a minimum diameter of 0.8 of the loaded operating height and shall be welded to both the spring mounting baseplate and compression plate for stability. Baseplate shall be bonded to a neoprene sound absorbing pad. Nuts, adjusting bolts and washers shall be zinc electroplated to prevent corrosion. Suspended units shall be installed with Type BS or BSW-2 spring hangers. Springs shall be sized for 1" static deflection when motor horsepower's are less than ten (10) horsepower and 2" static deflection when motor horsepower is ten (10) or greater. Provide integral fan and motor base steel rails for floor mounted centrifugal fans.
- B. Install floor mounted units with internal isolation on 1" or 2" thick NRC ribbed neoprene pads to shim and level or slope these units between the floor slab and the supporting channels or structural floor of the unit and provide 1/4" static deflection. Ribbed neoprene pads shall be located in accordance with the air handling unit manufacturer's recommendations. Pads shall be sized such that deflections do not exceed fifteen (15%) percent of pad thickness. Slope all floor mounted air handling units for complete condensate drainage of all the internal drain pans upon unit shutdown.

2.5 VIBRATION ISOLATION FOR PIPING

- A. All piping for the systems listed below shall be isolated by means of spring type vibration isolation hangers as may be required to create the effect of a completely floating mechanical system. It shall be the responsibility of the vibration isolation manufacturer to coordinate the selection of piping supports with equipment supports to provide for a carefully engineered system designed to accommodate expansion and contraction without creating excessive stresses in any portion of the piping system or stress at any equipment connections in excess of that allowed by the equipment manufacturers. Consideration shall be given to the movement of piping through sleeves with fire safing. Refer to Section 23 00 10 for additional requirements. Piping for the following systems shall be isolated:
1. All piping 4" in diameter and larger for chilled, condenser and heating hot water systems.
 2. Standby generator engine exhaust piping.
 3. All piping where exposed on the roof.
 4. All piping 2-1/2" and over located in all mechanical equipment rooms, and for a minimum of 50' or 100 pipe diameters, whichever is greater, from connection to vibrating or rotating mechanical equipment.
- B. Isolation hangers for horizontal piping shall be installed at regular intervals as per the hanger schedule specified in Section 23 21 13 titled "Pipe, Valves, Fittings and Accessories". The first two (2) piping supports away from any given piece of equipment to which piping is connected shall be selected for an operating spring deflection not less than that specified for the equipment isolators.
- C. Pipe risers shall be supported at the intervals listed below for each piping system.
1. Isolator supports for pipe risers shall have deflection capability at least four (4) times the anticipated thermal expansion to minimize the transfer of piping weight from floor to floor as pipe risers expand and contract during normal operation.
 2. Isolator supports for pipe risers shall have deflection capacity to account for structural creep in concrete frame buildings and structural compression in steel frame buildings that will occur during the first four years after construction, in addition to the anticipated thermal expansion and contraction. Refer to structural drawings and specifications to determine anticipated creep and compression values.
 3. Stagger the support points as necessary so the load points do not occur on the same level. The isolation device manufacturer shall provide written detailed instructions for loading the isolators and putting system in service. Isolator supports for piping risers shall be located at the following intervals:
 - a. Condenser Water: Every second floor, not to exceed 30'.

- b. Chilled Water: Every third floor, not to exceed 45'.
 - c. Heating Hot Water: Every second floor, not to exceed 30'.
- D. Standby generator exhaust piping shall be supported with spring isolators as specified for water piping with the exception that riser supports shall have deflection capability of at least two (2) times the expansion encountered. Design expansion shall be based on an initial operating temperature of 50°F and a final operating temperature of 1500°F. Care is to be taken in the selection of both vertical and horizontal isolators that the isolator will accommodate the expansion and continue to support the pipe without grounding out due to pipe expansion. Springs shall be designed to support the riser without imposing any excessive stress in the exhaust stack. The vibration isolation manufacturer shall furnish details to the Subcontractor for any pipe guides, anchors or special support details required to control pipe movement. Hangers for the piping within 50'-0" of the standby generator shall be Type BSWR-2 spring and rubber isolators providing at least 2" deflection.
- E. Temporary anchors, where required, shall be installed to permit preadjustment procedure to control direction of pipe movement. Final operating deflection of the springs shall be detailed in the submittal data.
- F. Vibration isolators for the piping systems shall be of the following types:
- 1. The first two (2) hangers (or more, as determined by stress analysis) for suspended horizontal piping at equipment and at the riser connection of horizontal piping serving each air handling unit room shall be Type PBS positioning type spring hangers with load transfer plate to hold piping at a fixed elevation during installation and to permit transfer of the load to the spring after installation. The remaining hangers for suspended horizontal piping shall be Type BS. Hangers in main mechanical equipment room shall be Type BSRA, combination spring and rubber angularity hangers.
 - 2. Hangers for horizontal piping at riser connections shall be sized to accommodate anticipated vertical riser movement due to thermal expansion and contraction, plus anticipated structural creep or compression described herein above.
 - 3. The first two (2) isolators for floor supported piping and isolators for floor mounted equipment shall be Type XL or CT. The remaining floor supports shall be Type SW.
 - 4. Riser supports shall be Type SWP precompressed spring supports, preset by the vibration isolation manufacturer to the proper initial load as determined by the computer printout of riser support/expansion analysis. Individual spring designation shall be identified on the Shop Drawings and securely attached to the spring isolator. Riser supports shall be floor mounted and the pipe clamp or support shall mount directly on the isolator. Refer to the detail on the Drawings for riser supports. No extensions will be allowed to connect to the pipe clamp.

2.6 VIBRATION ISOLATION FOR WATER CHILLING UNITS

- A. Water chilling units shall be installed on Type CT spring isolators providing at least 2" deflection with ribbed rubber sound absorbing pads on the base plate.
- B. Provide a "Z" type mounting brackets at each support point to minimize water chilling unit mounting height. Coordinate "Z" clip attachment with selected water chilling unit manufacturer.

2.7 VIBRATION ISOLATION FOR COOLING TOWER

- A. Cooling tower shall be installed on special Type CT cooling tower isolators installed between structural support columns or beams and the secondary steel grillage supporting the tower. All springs shall be stable and selected for a minimum of 4" static deflection.
- B. All hardware shall be Grade 8 stainless steel and housing shall be hot dipped galvanized and provided with limit stop to prevent tower from rising when empty of water and to provide wind restraint. Spring package shall be fully PVC coated or enamel powder coated and provided with Type NR Ampad on base plate and shall be of such design that it can be installed after tower is erected and removed in the future without disturbing the installation.
- C. Spring isolators shall be sized to accommodate the weight of the cooling tower sound attenuators if they are specified for the tower. Refer to Section 23 65 13 titled "Factory Assembled Cooling Towers".

2.8 VIBRATION ISOLATION FOR AXIAL FLOW AIR FANS

- A. Each floor mounted axial flow fan shall be installed with a spring type mounting, Type SW, designed for a minimum static deflection of 2".
- B. Each suspended axial fan shall be installed with Type BSW-2 spring hangers with springs designed for 2" static deflection.
- C. All axial fans shall be equipped with Type TRK spring and rubber isolated thrust resistors at fan discharge or suction, complete with springs, cups, washers and angle clips, all as indicated and detailed on the Drawings to limit horizontal motion to a maximum of 1/4" upon fan startup and shutdown.

2.9 VIBRATION ISOLATION FOR PROPELLER TYPE VENTILATION AND EXHAUST FANS

- A. Each suspended propeller type ventilation or exhaust fan shall be installed with Type BSWR spring hangers with springs designed for a minimum of 2" static deflection.
- B. Each floor mounted propeller type ventilation or exhaust fan shall be installed with Type SW isolators with springs designed for a minimum of 2" static deflection.
- C. Install ventilation and exhaust fans for the [garage, atrium exhaust and central plant makeup] in 16 gauge galvanized sheet metal sleeves with angle reinforcement as required to adequately support the fan. See details on the Drawings.
- D. Propeller fans with flexible connections shall be equipped with Type TRK (tension) or Type TDX (compression) thrust resistors at fan discharge or suction (two per fan) complete with springs, clips, washers, angle clips and as indicated on the Drawings to limit horizontal motion to a maximum of 1/4" upon fan startup and shutdown.

2.10 VIBRATION ISOLATION FOR STANDBY GENERATORS

- A. See Division 26. Furnished and installed by Division 26 Subcontractor.

2.11 SEISMIC RESTRAINTS

- A. Provide restrains capable of safely accepting forces specified and/or as required by the authorities having jurisdiction without failure, to maintain equipment, piping, duct, variable volume terminal units, fan coil units, fan powered terminal units in a captive position. Restraints must not short circuit vibration isolation systems or transmit objectionable vibration or noise. If required by the authorities having jurisdiction, submit calculations by Structural Engineer licensed and registered in the State of California to verify seismic restraint and sway cable capacities. Provide products with current OSHPD certification numbers or provide calculations demonstrating compliance with regulatory requirements.
 - 1. Spring Seismic Restraint, Type 1: Comply with general characteristics of Spring Isolators. Incorporate snubbing restraint in all directions. Restraint shall be capable of supporting equipment at a fixed elevation during equipment erection.
 - a. Type CT-LR.
 - 2. Seismic Restraint, Type II: Each corner or side seismic restraint shall incorporate minimum 5/8 inch thick pad limit stops. Restraints shall be made of plate, structural members or square metal tubing in a welded assembly incorporating resilient pads.
 - a. Type ER.
 - 3. Seismic Restraint, Type III: Cable type with approved end fastening devices (minimum of two per end) to equipment and structure. Cable to comply with Federal Specifications MIL-W-83420 military grade 7x19 galvanized steel.
 - a. Type SSB – Mason Industries, Inc.
- B. Provide diagonal thrust restraint consisting of hangers with the same deflection as specified for the spring mountings. Design the spring element so it can be preset for thrust and adjusted to allow for a maximum of 1/4 inch Type WB – Mason Industries, Inc.

PART 3 EXECUTION**3.1 INSTALLATION**

- A. The complete vibration isolation installation shall be in accordance with the manufacturer's recommendations and as indicated on the Drawings.
- B. Suspend the vibration isolators supporting piping and equipment from structural members.
- C. Provide a minimum of one-inch clearance between building structure and vibration isolated supports, ducts, pipes and equipment.
- D. Provide 2-inch minimum clearance under vibration isolated equipment and the top of the house keeping pad and/or steel equipment support frames.
- E. Subsequent to proper alignment, fasten all vibration isolators to the structure. Use bolts where holes are provided in the mounting flange; otherwise, adhere using structural adhesive. Where mounting flanges are steel, use neoprene grommets and washers to isolate anchor bolts from base plates.
- F. Do not use vibration isolation components to straighten or connect misaligned sections of piping or ductwork.
- G. Align spring isolation hanger rods to clear the hanger box under all operating conditions.
- H. Any bracing or supports from mechanical ductwork, piping and equipment shall not bridge or reduce the effectiveness of vibration isolators.
- I. Install flexible connectors at all connections to vibration-isolated equipment.

Level vibration isolated equipment under rated design operating conditions while maintaining the isolation criteria. Isolators shall be plumb and align during operation.

3.2 SEISMIC RESTRAINTS

- A. General:
 - 1. Cable restraints shall be installed slightly slack to avoid short circuiting the isolated suspended equipment, piping or ductwork. Cable restraints shall be installed taut on non-isolated systems. Seismic solid brace restraints may be used in lieu of cables on non-isolated rigidly attached systems only.
 - 2. Where cable or solid brace restraints are located, the equipment, ductwork or piping support rods shall be angle braced for compression loads.
 - 3. At all locations where cable or solid brace restraints are attached to pipe clevises, the clevis cross bolt shall be reinforced with cross braces or a pipe spacer placed over the clevis bolt.
 - 4. Provide drill-in concrete anchors for ceiling and wall installation and female wedge type for floor-mounted equipment.
- B. Seismic Restraint of Piping:
 - 1. Transverse piping restraints shall be at 40-foot maximum spacing for all pipe sizes, except where lesser spacing is required to limit anchorage loads.
 - 2. Longitudinal restraints shall be at 80-foot maximum spacing for all pipe sizes, except where lesser spacing is required to limit anchorage loads.
 - 3. Where thermal expansion is a consideration, guides and anchors may be used as transverse and longitudinal restraints provided they have a capacity equal to or greater than the restraint loads in addition to the loads induced by expansion or contraction.
 - 4. Cast iron piping transverse restraints must be at 20-foot maximum and longitudinal restraints at 40-foot maximum spacing.
 - 5. Transverse restraint for one pipe section may also act as a longitudinal restraint for a pipe section of the same size connected perpendicular to it if the restraint is installed within a specified distance (based on

engineered data) of the elbow or tee or combined stresses are within allowable limits at longer distances.

6. Hold-down clamps must be used to attach pipe to all trapeze members before applying restraints in a manner similar to clevis supports.
7. Branch lines may not be used to restrain main lines.

C. Seismic Restraint of Ductwork:

1. Transverse restraints shall occur at 30-foot intervals or at both ends of the duct run if less than the specified interval. Transverse restraints shall be installed at each duct turn and at each end of a duct run.
2. Longitudinal restraints shall occur at 60-foot intervals with at least one restraint per duct run. Transverse restraints for one duct section may also act as a longitudinal restraint for a duct section connected perpendicular to it if the restraints are installed within 4 feet of the intersection of the ducts and if the restraints are sized for the larger duct. Duct joints shall conform to SMACNA duct construction standards.
3. The ductwork must be reinforced at the restraint locations. Reinforcement shall consist of an additional angle on top of the ductwork that is attached to the support hanger rods. Ductwork is to be attached to both upper angle and lower trapeze.
4. A group of ducts may be combined in a larger frame so that the combined weights and dimensions of the ducts are less than or equal to the maximum weight and dimensions of the duct for which bracing details are selected.
5. Walls, including gypsum board non-bearing partitions, which have ducts running through them, may replace a typical transverse brace. Provide channel framing around ducts and solid blocking between the duct and frame.

D. Seismic Restraint of Equipment:

E. All mechanical equipment shall be vibration isolated and seismically restrained as scheduled using either inherently restrained vibration isolators or separate all-directional seismic snubbers as specified. Suspended equipment shall be restrained by cable restraints.

1. Seismic Restraint Exclusions (Flexible connectors are required between pipe or duct and equipment):
2. Piping:
 - a. For $I_p = 1.5$ projects or systems, all piping 1-inch nominal diameter and smaller, except cast iron piping, regardless of size.
 - b. For $I_p = 1.0$ projects, all steel and copper piping 3-inch diameter and smaller, except cast iron piping, regardless of size.
 - c. All piping suspended by individual hangers 12 inches or less as measured from the top of the pipe to the bottom of the support where the hanger is attached provided the hanger rod connection to the structure will not develop a moment. However, if the 12-inch limit is exceeded by any hanger in the run, seismic bracing is required for the run.
 - d. The 12-inch exemption applies for trapeze supported systems if the top of each item supported by the trapeze qualifies.
3. Ductwork (for Importance Factor 1.0):
 - a. Rectangular and square ducts that are less than 6 square feet in cross-sectional area.
 - b. Oval ducts that are less than 6 square feet in cross-sectional area based on nominal size.
 - c. Round duct less than 34 inches in diameter.
 - d. All duct suspended by hangers 12 inches or less in length as measured from the top of the duct to the point of attachment to the structure. Hangers must be attached within 2 inches of the top of the duct with a minimum of two #10 sheet metal screws. If the 12-inch limit is exceeded by any hanger in the run, seismic bracing is required for the run.
4. Suspended Equipment:
 - a. VAV boxes and fan-powered equipment weighing less than 75 pounds and rigidly connected to the supply side of the duct system and supported with a minimum of 4 hanger rods.

3.3 FACTORY TESTING

- A. All vibration isolation devices and components shall be tested in accordance with the latest applicable industry standards.

3.4 FIELD TESTING

- A. Prior to execution of field testing, submit test procedures, recording forms, and test equipment cut sheets to Engineer for review. Refer to Section 23 00 20 titled "Scope of Work" for "Scheduling Procedures".
- B. After installation and prior to "Substantial Completion", the isolation manufacturer's factory trained technician shall check all the various isolators and certify in writing to the Subcontractor and Owner that they have been installed properly and are in accordance with the manufacturer's recommendations.
- C. Refer to Section 23 05 93 for additional testing requirements for equipment installed with vibration isolation.

END OF SECTION