KINETICS SEISMIC INSTALLATION INSPECTION

Piping/Ductwork Deviation **Cable Restrained Ductwork/Piping**

Project: _____ P.O. Number: _____ Inspection Date: _____

Pipe/Duct Size: _____ Ref No: _____ Performed By: _____

1) What is the basic concern in the restraint at this location _____

_____

2) What is the observed Cable size and is it adequate? o Yes, o Comment

_____

_____

3) Is the restraint connection to the equipment consistent with that modeled in the analysis?
   o Yes, o Comment _____

_____

4) Is the restraint connection to the structure consistent with that modeled in the analysis?
   o Yes, o Comment _____

5) Is the mounting hole diameter 1/8" or less greater than the attachment hardware diameter or is it grouted to prevent lateral motion between the equipment, restraint component and structure?
   o Yes, o Comment _____

If Anchored to Concrete

Anchor Type and Manufacturer

o As specified in calculation, o Other _____

Is Embedment Consistent with analysis?

o Yes, o Comment _____

How was Embedment Determined? _____

If attached to beam or truss

Is connection secure and such that the beam or truss is not subjected to undesirable strain?

o Yes, o Comment _____

6) Is the Support strength adequate for the seismic load?
   o Yes – Based on _____
   o Not Determined – Must be verified by Equipment manufacturer

Comments _____

7) Is the localized building structure adequate for the seismic load?
   o Yes – Based on _____
   o Not Determined – Must be verified by the building structural engineer

Comments _____

8) Based on the above, recommendations to ensure that the equipment is restrained adequately to meet specified code requirements? o Yes, o No, o Not Determined, o Yes with conditions _____

_____

_____

_____

KINETICS SEISMIC INSTALLATION INSPECTION (PIPE/DUCT/CONDUIT)

RELEASE DATE: 4/05/04

KINETICS Noise Control
DUBLIN, OHIO, USA • MISSISSAUGA, ONTARIO, CANADA

Toll Free (USA only): 800-959-1229
International: 614-889-0480
Fax: 614-889-0540
World Wide Web: www.kineticsnoise.com
Email: sales@kineticsnoise.com

DOCUMENT:
A1.1
VISCMA MEMBER

GENERAL PIPING/DUCTWORK INSTALLATION REQUIREMENTS (IBC APPLICATIONS)

Because much of the detailed information required to make final decisions on the need for restraint on particular runs of piping or ductwork cannot be fully ascertained from the drawings provided, the drawings or marked prints provided by Kinetics are subject to the following:

1) Unless otherwise noted, it is assumed that all piping or ductwork falls into the "Medium Deformability" or better category. All restraints are sized based on "Medium Deformability" criteria. **Additional restraint requirements may be necessary for "Low Deformability" systems.** "Low Deformability" is defined as systems that will fail if deformed by a factor of 1.5 times the point at which the a permanent set begins to occur. Items such as glass lined piping or systems that are made of, or interface with components that are brittle in nature.

2) It is normally unknown whether or not piping/ductwork mounted within 12" of the structure, is considered to be "Highly Deformable", is fitted with non-moment generating connections and/or is free to swing without contacting structure, other piping, ductwork or equipment. (Refer also to the 12" rule in the Kinetics Seismic Design Manual section D7.4.1 (piping) and D8.4.1 (Ductwork) and non-moment generating connections as defined in section D7.5.5 (piping) or D8.5.5 (Ductwork)). As a result, all piping is assumed not to conform to the above and where the size is such that restraint may be required, it is so indicated on the drawings. In these areas, **if all of the above qualifications can be met for the full length of a run, restraints can be omitted on that run.** (Note: "High Deformability" systems are those which will not catastrophically fail, even if deformed by a factor of 3.5 times the point at which a permanent set begins to occur. Items like brazed tubing, welded steel piping, piping using threaded forged steel fittings or flanges and glued PVC piping typically fall into this category.)

3) **Small ducts are not shown as requiring restraint**, subject to item 4 below and in accordance with SMACNA as permitted by Section 1621.3.9 in the IBC, even if the importance factor for these systems is 1.5.

4) Some pipe and duct sizes can often be excluded based on size. These are shown as not restrained on the drawings provided by Kinetics. They do not require non-moment generating connections. However, in order for the exclusion to apply, there is a further requirement that these systems are sufficiently far away from other systems, structure, and/or equipment; that the motion likely to result from an earthquake will not result in contact between local components. If this is not the case, **these systems will require restraint in the same manner as the larger systems.**

KINETICS Noise Control
DUBLIN, OHIO, USA • MISSISSAUGA, ONTARIO, CANADA

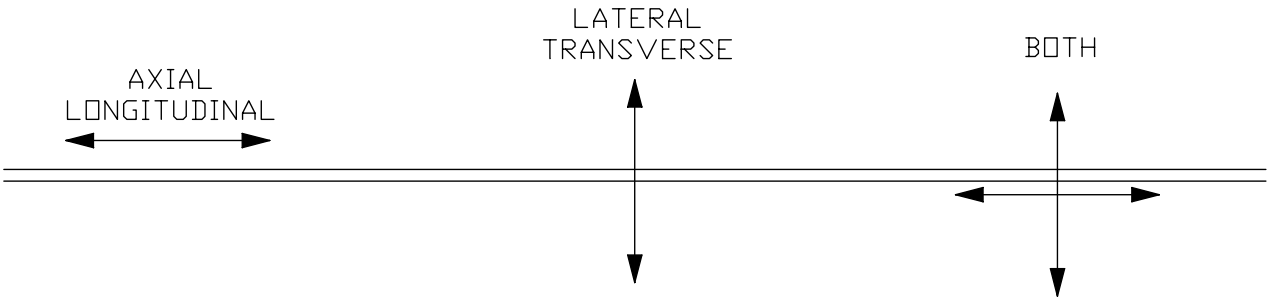
Toll Free (USA only): 800-959-1229
International: 614-889-0480
Fax: 614-889-0540
World Wide Web: www.kineticsnoise.com
Email: sales@kineticsnoise.com

5) **Where piping or ductwork is shown grouped and running together, it is assumed that these are on a common trapeze and restraints will be selected and sized accordingly.** If a sufficient quantity of smaller piping, conduit or duct is mounted on a single trapeze, the total operating weight of these components will be compared to the minimum size exemption to determine whether or not restraint will be indicated. Thus if 4 pieces of 1-1/2" pipe are trapezed together, their total weight exceeds that of a single 2" pipe (the exempted limit in some cases) and restraint wil be indicated based on their combined weight.

6) **All restraint locations shown are approximate**. The maximum allowed spacing cannot exceed the limits indicated on the supporting calculation document or comments provided on the marked drawing itself. Restraints located at corners or changes of direction in the pipe or duct system are assumed to be effective for both of the adjacent runs. (This means that they are intended to be located within 24" of the direction change centerline.)

7) No attempt has been made to ensure that adequate capacity exists in the structure to resist the forces generated by the restrained system. Exact design forces can be determined by prorating the provided analysis documents to the situation at hand. **It is the responsibility of the Project Structural Engineer or Engineer of Record to indicate potential suitable restraint locations that will handle these forces in the proximity of the locations indicated by Kinetics.**

8) Restraint locations are indicated on the drawings using double ended arrows as shown below. Arrows oriented with the axis of the pipe or duct indicate axial or longitudinal restraints. Arrows oriented at right angles to the axis of the pipe or duct indicate lateral or transverse restraints. Symbols showing arrow oriented both ways indicate both lateral and axial restraint.



GENERAL PIPE/DUCT INSTALLATION REQUIREMENTS

RELEASE DATE: 12/09/04

KINETICS Noise Control
DUBLIN, OHIO, USA • MISSISSAUGA, ONTARIO, CANADA

Toll Free (USA only): 800-959-1229
International: 614-889-0480
Fax: 614-889-0540
World Wide Web: www.kineticsnoise.com
Email: sales@kineticsnoise.com

DOCUMENT:
A1.1.1
VISCMA MEMBER

KINETICS SEISMIC INSTALLATION INSPECTION

Equipment Installation Inspection **Floor Mounted, Isolated or Hard Mounted**

Project: _____ P.O. Number: _____ Inspection Date: _____

Equip Type: _____ Tag: _____ Performed By: _____

1) Is the Equipment arrangement consistent with that modeled in the analysis? (Attach Copy)
   o Yes, o Comment _____

2) Are the attachment clips sizes and locations consistent with that modeled in the analysis?
   o Yes, o Comment _____

3) Is the restraint connection to the equipment consistent with that modeled in the analysis?
   o Yes, o Comment _____

4) Is the restraint connection to the structure consistent with that modeled in the analysis?
   o Yes, o Comment _____

5) Is the mounting hole diameter 1/8" or less greater than the attachment hardware diameter or is it grouted to prevent lateral motion between the equipment, restraint component and structure?
   o Yes, o Comment _____

If Anchored to Concrete

Anchor Type and Manufacturer

o As specified in calculation, o Other _____

Is Embedment Consistent with analysis?

o Yes, o Comment _____

How was Embedment Determined? _____

Is the concrete contiguous over the full length of the anchor?

o Yes, o Comment _____

6) Is the equipment strength adequate for the seismic load?
   o Yes – Based on _____
   o Not Determined – Must be verified by Equipment manufacturer
   Comments _____

7) Is the localized building structure adequate for the seismic load?
   o Yes – Based on _____
   o Not Determined – Must be verified by the building structural engineer
   Comments _____

8) Based on the above, recommendations to ensure that the equipment is restrained adequately to meet specified code requirements? o Yes, o No, o Not Determined, o Yes with conditions _____

KINETICS Noise Control

DUBLIN, OHIO, USA • MISSISSAUGA, ONTARIO, CANADA

Toll Free (USA only): 800-959-1229
International: 614-889-0480
Fax: 614-889-0540
World Wide Web: www.kineticsnoise.com
Email: sales@kineticsnoise.com

KINETICS SEISMIC INSTALLATION INSPECTION

Equipment Installation Inspection **Cable Restrained, Isolated or Hard Mounted**

Project: _____ P.O. Number: _____ Inspection Date: _____

Equip Type: _____ Tag: _____ Performed By: _____

1) Is the Equipment arrangement consistent with that modeled in the analysis? (Attach Copy)
   o Yes, o Comment _____

2) Is the cable size and location consistent with that modeled in the analysis? o Yes,
   o Comment _____

3) Is the restraint connection to the equipment consistent with that modeled in the analysis?
   o Yes, o Comment _____

4) Is the restraint connection to the structure consistent with that modeled in the analysis?
   o Yes, o Comment _____

5) Is the mounting hole diameter 1/8" or less greater than the attachment hardware diameter or is it grouted to prevent lateral motion between the equipment, restraint component and structure?
   o Yes, o Comment _____

If Anchored to Concrete

Anchor Type and Manufacturer
   o As specified in calculation, o Other _____

Is Embedment Consistent with analysis?
   o Yes, o Comment _____

How was Embedment Determined? _____

Is the concrete contiguous over the full length of the anchor?
   o Yes, o Comment _____

6) Is the equipment strength adequate for the seismic load?
   o Yes – Based on _____
   o Not Determined – Must be verified by Equipment manufacturer
   Comments _____

7) Is the localized building structure adequate for the seismic load?
   o Yes – Based on _____
   o Not Determined – Must be verified by the building structural engineer
   Comments _____

8) Based on the above, recommendations to ensure that the equipment is restrained adequately to meet specified code requirements? o Yes, o No, o Not Determined, o Yes with conditions _____

KINETICS Noise Control
DUBLIN, OHIO, USA • MISSISSAUGA, ONTARIO, CANADA

Toll Free (USA only): 800-959-1229
International: 614-889-0480
Fax: 614-889-0540
World Wide Web: www.kineticsnoise.com
Email: sales@kineticsnoise.com

KINETICS SEISMIC INSTALLATION CERTIFICATION

Equipment Installation Inspection **Curb Mounted Isolated or Non Isolated Equipment**

Project: _____ P.O. Number: _____ Inspection Date: _____
Equip Type: _____ Tag: _____ Performed By: _____

1) Is the equipment arrangement consistent with that modeled in the analysis (Attach Copy)?
☐ Yes, ☐ Comment _____

2) If Isolated, are the internal restraint components consistent in quantity and location with that modeled in the analysis?
☐ Yes, ☐ Comment _____

3) Is the connection between the curb and the structure consistent with that modeled in the analysis and in the KNC Seismic manual section D6.2.4 as appropriate? (Note weld size, screw size and quantity, blocking etc, depending on curb type).
☐ Yes, ☐ Comment _____

4) Is the restraint connection to the equipment consistent with that modeled in the analysis? (This may be direct to structure for hard mounted equipment but will be direct to the equipment rail if the equipment is isolated.)
☐ Yes, ☐ Comment _____

If Anchored to Concrete
Anchor Type and Manufacturer
☐ As specified in calculation, ☐ Other _____
Does the min Edge Distance Exceeds the Minimum listed in the KNC Seismic manual section P10.2.1?
☐ Yes, ☐ Comment _____
Is Embedment Consistent with analysis?
☐ Yes, ☐ Comment _____
How was Embedment Determined? _____
Is concrete contiguous over full length of anchor?
☐ Yes, ☐ Comment _____

5) Does the equipment strength appear adequate to resist the seismic load?
☐ Yes – Based on _____
☐ Not Determined – Must be verified by Equipment manufacturer
Comments _____

6) Is the localized building structure adequate for the seismic load?
☐ Yes – Based on _____
☐ Not Determined – Must be verified by the building structural engineer
Comments _____

7) Based on the above, is the equipment restrained adequately to meet specified code requirements? ☐ Yes, ☐ No, ☐ Not Determined, ☐ Yes with conditions

KINETICS Noise Control
DUBLIN, OHIO, USA • MISSISSAUGA, ONTARIO, CANADA
Toll Free (USA only): 800-959-1229
International: 614-889-0480
Fax: 614-889-0540
World Wide Web: www.kineticsnoise.com
Email: sales@kineticsnoise.com

DOCUMENT: A1.4

VISCMA MEMBER