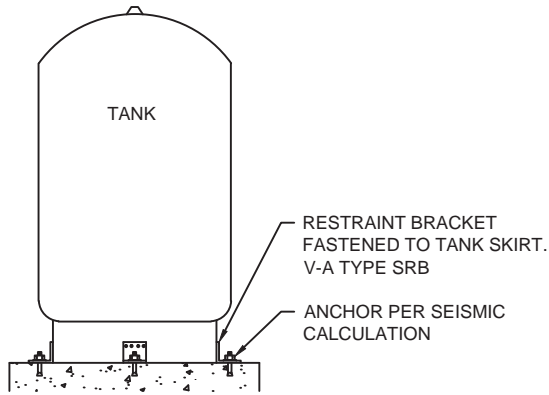


## VISR Standard Details: Table of Contents

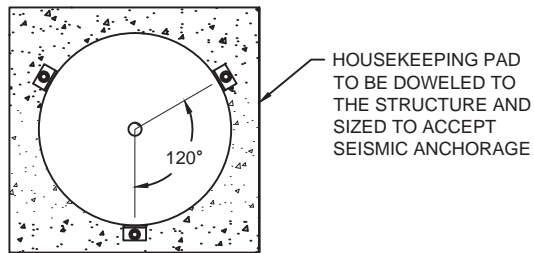
<b>Table of Contents .....</b>	<b>1, 2</b>
<b>(EF) Equipment-Floor .....</b>	
VISR-EF-101 - Tank .....	3
VISR-EF-102 – Water Heater .....	4
VISR-EF-103 - AHU .....	5
VISR-EF-104 - Chiller .....	6
VISR-EF-105 – End-Suction Pump .....	7
VISR-EF-106 – Inline Pump .....	8
VISR-EF-107 – Floor Mtd. Equip. (Generic) .....	9
VISR-EF-108 – Gen Set .....	10
VISR-EF-109 – Heat Exchanger .....	11
VISR-EF-110 – Cooling Tower .....	12
VISR-EF-111 – Air Compressor .....	13
VISR-EF-112 – Vacuum Pump .....	14
VISR-EF-113 - Transformer .....	15
VISR-EF-114 – Double Suction Pump .....	16
<b>(ER) Equipment-Roof .....</b>	
VISR-ER-101 – Cooling Tower .....	17
VISR-ER-102 – RTU with VCR .....	18
VISR-ER-103 – Fans .....	19
VISR-ER-104 – Air Cooled Chiller .....	20
VISR-ER-105 – Condensing Unit .....	21
<b>(ES) Equipment-Suspended .....</b>	
VISR-ES-101 – Suspended Equipment (Generic) .....	22
VISR-ES-102 – Inline Pump .....	23
VISR-ES-103 – Axial Fan .....	24
VISR-ES-104 – Air Separator .....	25
VISR-ES-105 – Chilled Beam .....	26
VISR-ES-106 – Unit Heater .....	27
VISR-ES-107 – Kitchen Hood .....	28
<b>(EW) Equipment-Wall .....</b>	

VISR Standard Details - TOC		VISR-SD
File No: T-VISR-SD-001	Date: 6-Mar-2014	
Supersedes: New	Date: New	

VISR-EW-101 – Panel Board .....	29
VISR-EW-102 – Exp. Tank (small) .....	30
<b>(PF) Pipe Floor .....</b>	
VISR-PF-101 – Pipe Riser (spring) .....	31
VISR-PF-102 – Pipe Riser (pad) .....	32
VISR-PF-103 – Pipe Riser (pad) .....	33
<b>(PR) Pipe Roof .....</b>	
VISR-PR-101 .....	34
<b>(DR) Duct Roof .....</b>	
VISR-DR-101 .....	35
<b>(PS) Pipe Suspended .....</b>	
VISR-PS-101 .....	36
<b>(DS) Duct-Suspended .....</b>	
VISR-DS-101 .....	37
<b>Disclaimers, Assumptions &amp; Directive Statements.....</b>	<b>38</b>



ELEVATION VIEW



PLAN VIEW

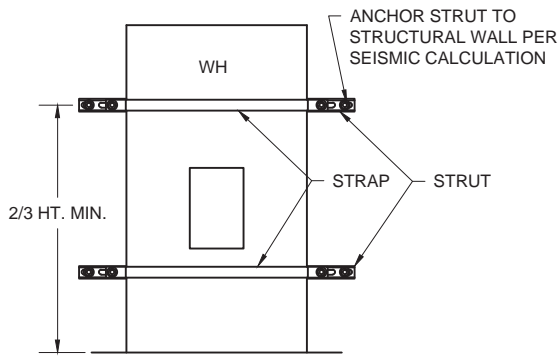
NOTES:

1. ALL PRODUCT SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

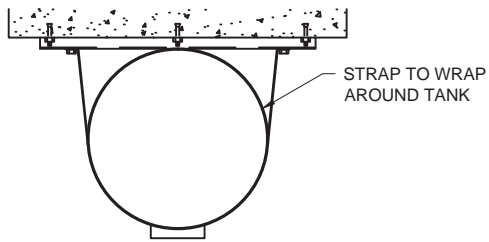
SEISMIC BRACING - FLOOR MOUNTED TANK

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A Swegon Group company

DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-EF-101	1

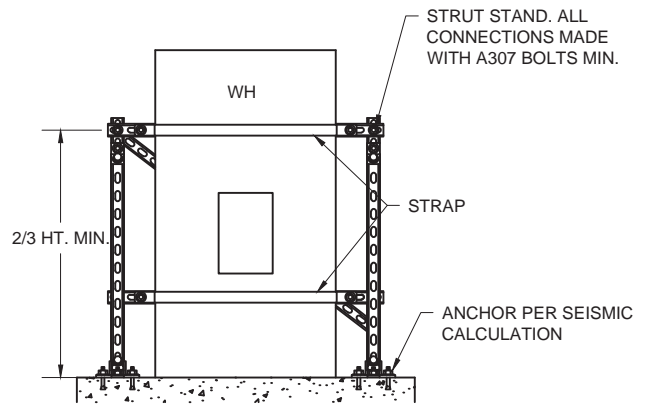


ELEVATION VIEW

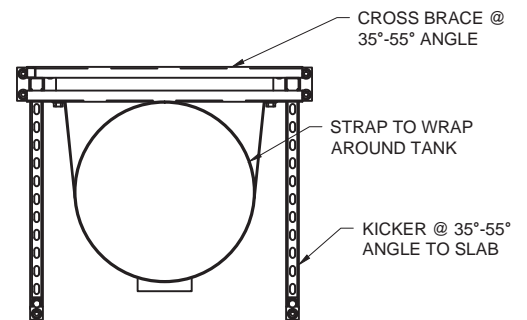


PLAN VIEW

OPTION #1 - WALL ATTACHMENT



ELEVATION VIEW



PLAN VIEW

OPTION #2 - STAND ATTACHMENT

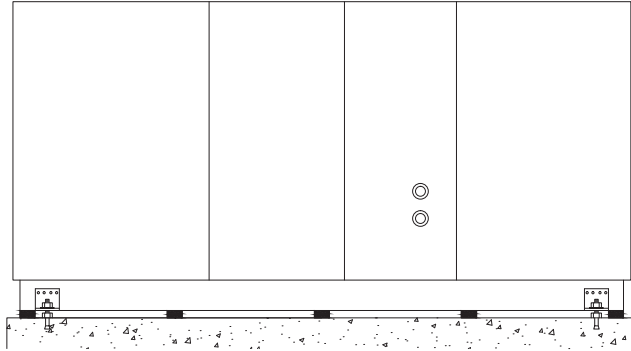
NOTES:

1. THESE OPTIONS MAY REQUIRE ADDITIONAL BRACING FOR SEISMIC FORCES ( $F_p$ ) GREATER THAN 500 LBS.
2. ALL PRODUCT SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
3. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

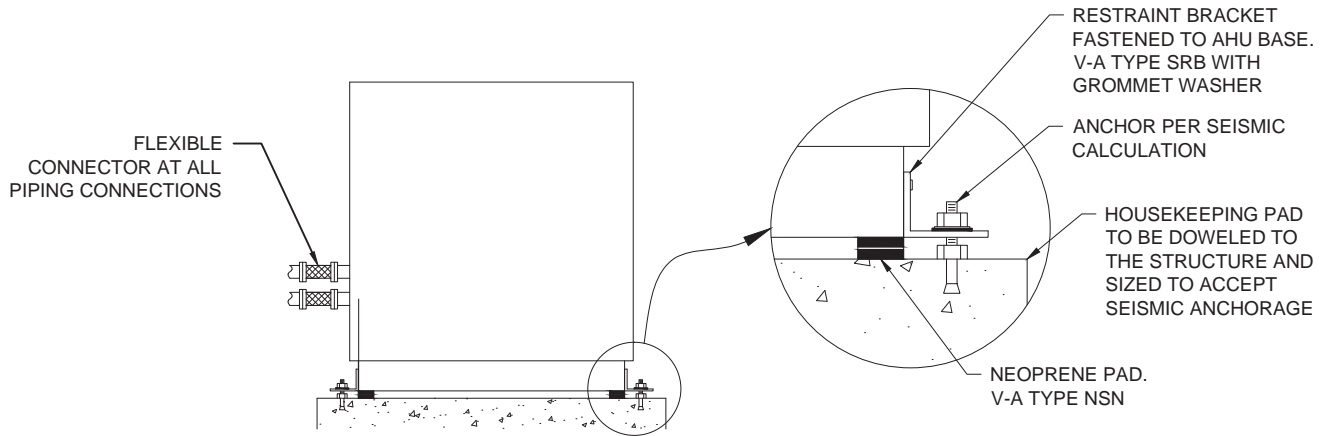
SEISMIC BRACING - FLOOR MOUNTED WATER HEATER

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DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-EF-102	1



ELEVATION VIEW



END VIEW

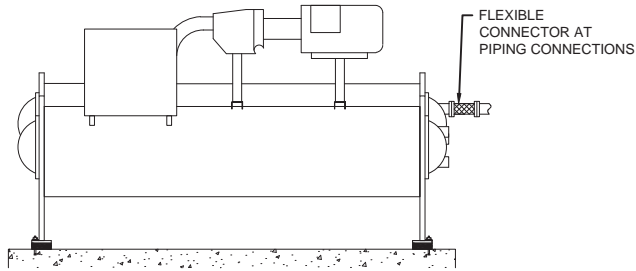
NOTES:

1. ALL PRODUCT QUANTITIES, SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

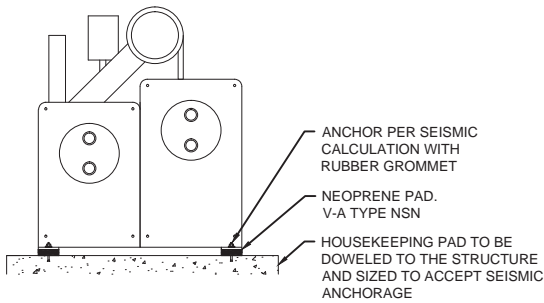
VIBRATION & SEISMIC CONTROL - FLOOR MOUNTED AHU

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DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-EF-103	1

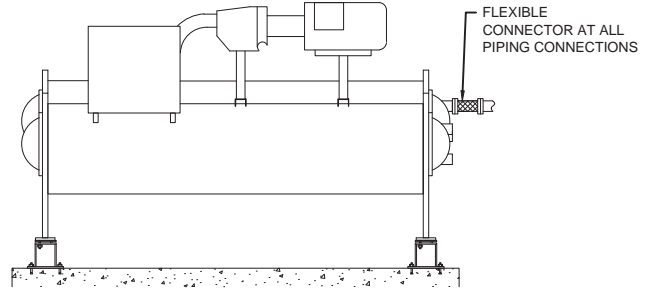


ELEVATION VIEW

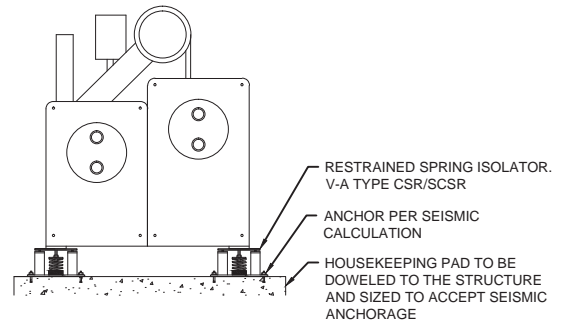


END VIEW

OPTION #1 - NEOPRENE PAD ISOLATORS (GRADE)



ELEVATION VIEW



END VIEW

OPTION #2 - SPRING ISOLATORS (UPPER FLOORS)

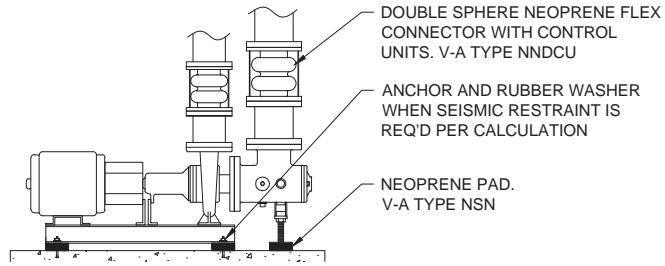
NOTES:

1. ALL PRODUCT QUANTITIES, SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

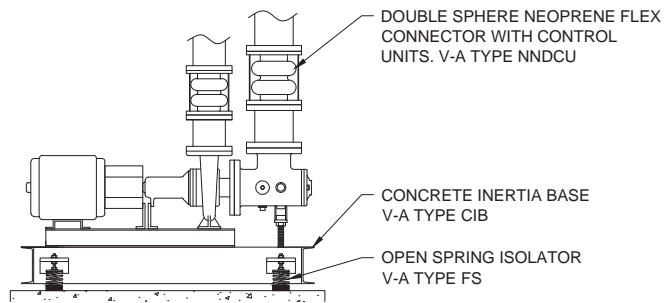
VIBRATION & SEISMIC CONTROL - FLOOR MOUNTED CHILLER

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A Swegon Group company

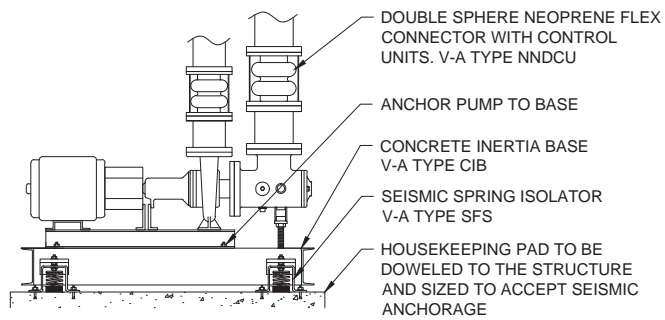
DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-EF-104	1



OPTION #1 - NEOPRENE PAD ISOLATORS (GRADE)



OPTION #2 - SPRING ISOLATORS (UPPER FLOORS)



OPTION #3 - SEISMIC SPRING ISOLATORS (UPPER FLOORS)

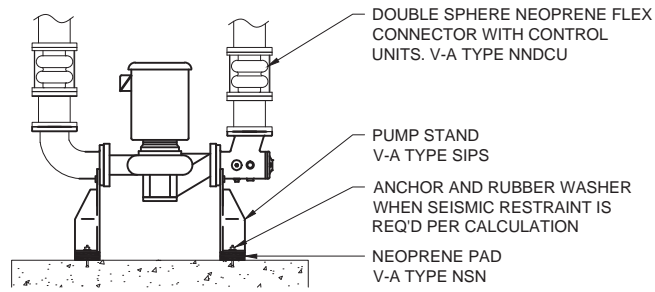
NOTES:

1. ALL PRODUCT QUANTITIES, SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

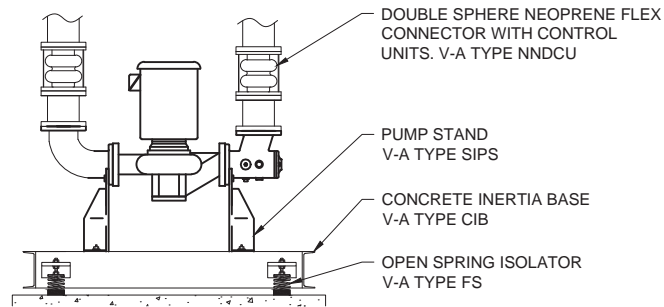
VIBRATION & SEISMIC CONTROL - END SUCTION PUMPS

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A Swegon Group company

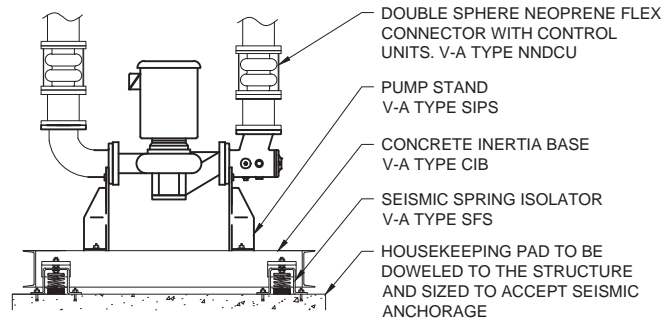
DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-EF-105	1



OPTION #1 - NEOPRENE PAD ISOLATORS (GRADE)



OPTION #2 - SPRING ISOLATORS (UPPER FLOORS)



OPTION #3 - SEISMIC SPRING ISOLATORS (UPPER FLOORS)

NOTES:

1. ALL PRODUCT QUANTITIES, SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

VIBRATION & SEISMIC CONTROL - INLINE PUMPS

**VIBRO-ACOUSTICS®**  
A Swegon Group company

DATE

4/29/2014

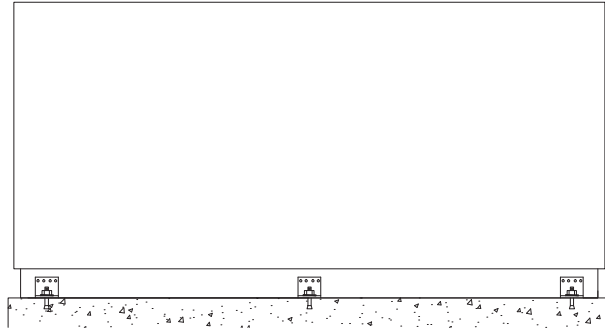
DRAWING NO.

VISR-EF-106

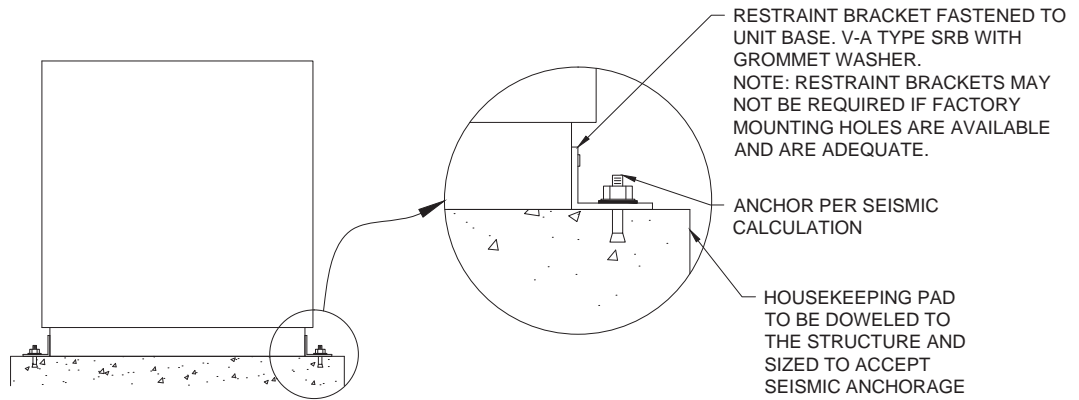
REV. NO.

1





ELEVATION VIEW



END VIEW

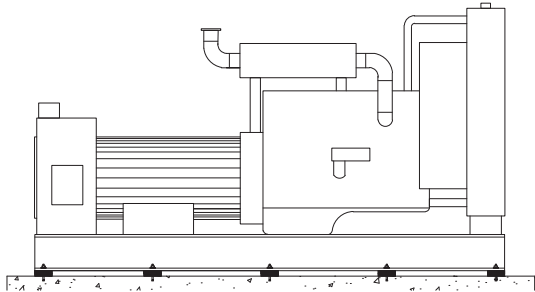
NOTES:

1. ALL PRODUCT QUANTITIES, SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

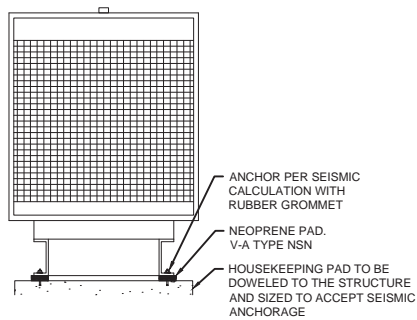
SEISMIC RESTRAINT - FLOOR MOUNTED EQUIPMENT

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A Swegon Group company

DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-EF-107	1



ELEVATION VIEW



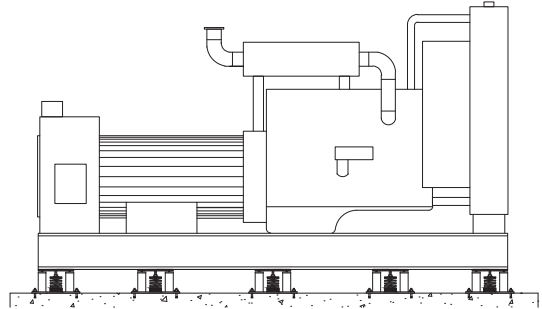
END VIEW

OPTION #1 - NEOPRENE PAD ISOLATORS (GRADE)

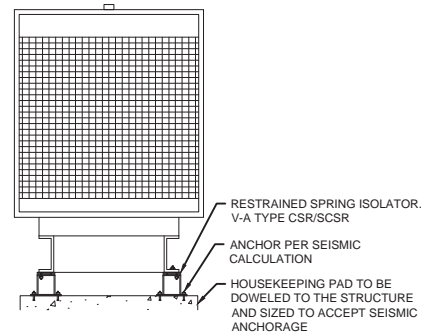
ANCHOR PER SEISMIC  
CALCULATION WITH  
RUBBER GROMMET

NEOPRENE PAD.  
V-A TYPE NSN

HOUSEKEEPING PAD TO BE  
DOWELED TO THE STRUCTURE  
AND SIZED TO ACCEPT SEISMIC  
ANCHORAGE



ELEVATION VIEW



END VIEW

OPTION #2 - SPRING ISOLATORS (ABOVE FLOORS)

RESTRAINED SPRING ISOLATOR.  
V-A TYPE CSR/SCSR

ANCHOR PER SEISMIC  
CALCULATION

HOUSEKEEPING PAD TO BE  
DOWELED TO THE STRUCTURE  
AND SIZED TO ACCEPT SEISMIC  
ANCHORAGE

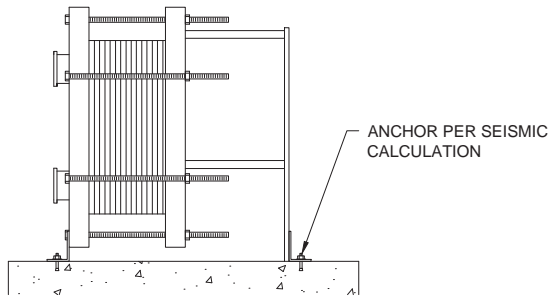
NOTES:

1. ALL PRODUCT QUANTITIES, SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

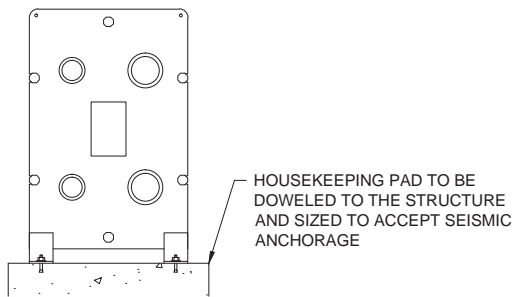
VIBRATION & SEISMIC CONTROL - GENSET

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A Swegon Group company

DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-EF-108	1

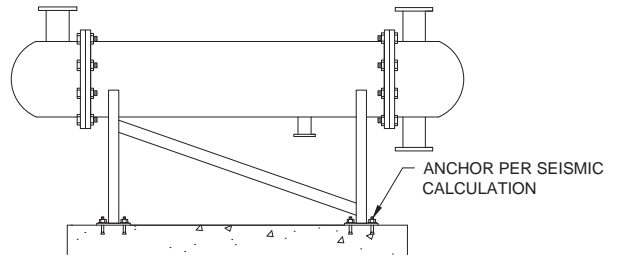


ELEVATION VIEW

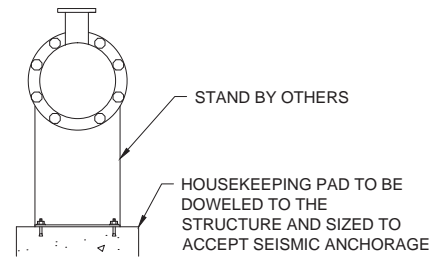


END VIEW

**PLATE & FRAME**



ELEVATION VIEW



END VIEW

**SHELL & TUBE**

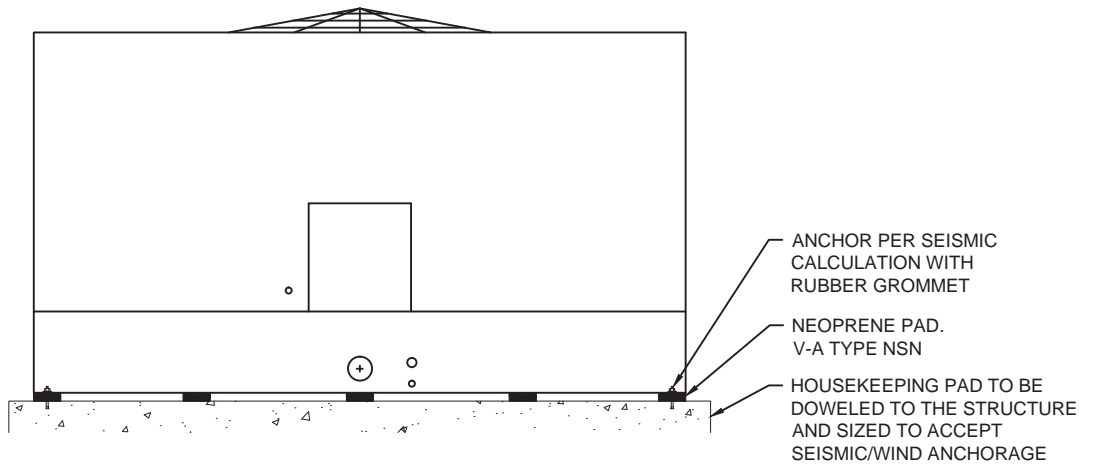
**NOTES:**

1. ALL PRODUCT QUANTITIES, SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

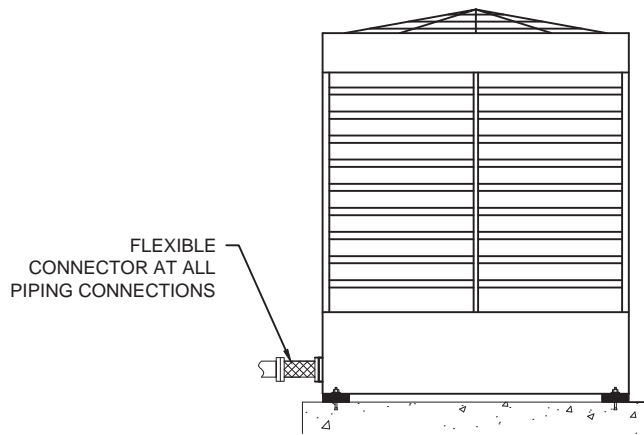
VIBRATION & SEISMIC CONTROL - HEAT EXCHANGER

**VIBRO-ACOUSTICS®**  
A Swegon Group company

DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-EF-109	1



ELEVATION VIEW



END VIEW

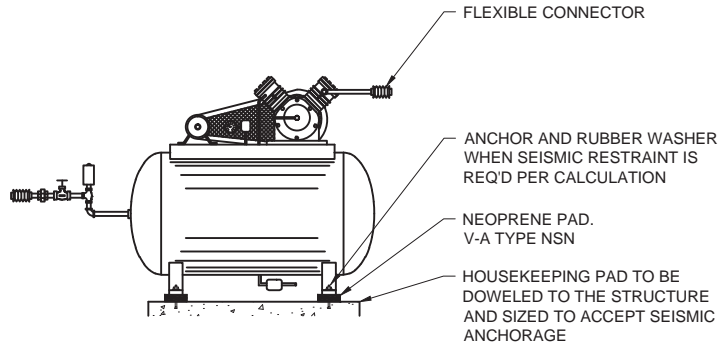
NOTES:

1. ALL PRODUCT QUANTITIES, SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

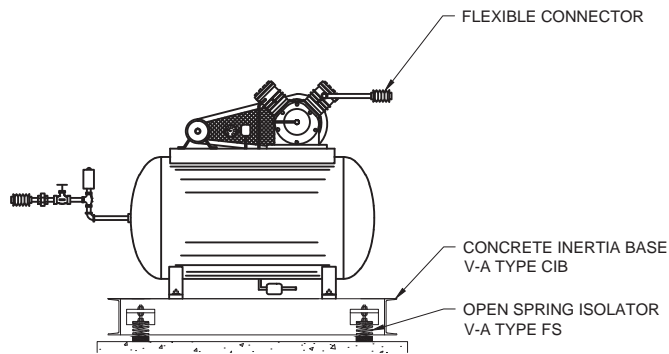
VIBRATION & SEISMIC CONTROL - COOLING TOWER

**VIBRO-ACOUSTICS®**  
A Swegon Group company

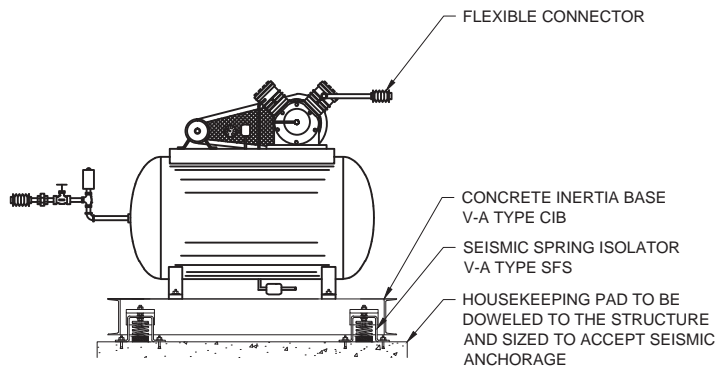
DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-EF-110	1



OPTION #1 - NEOPRENE PAD ISOLATORS (GRADE)



OPTION #2 - SPRING ISOLATORS (UPPER FLOORS)



OPTION #3 - SEISMIC SPRING ISOLATORS (UPPER FLOORS)

NOTES:

1. ALL PRODUCT SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.
3. ANY PIPING CONNECTIONS SHALL BE MADE WITH FLEXIBLE HOSES WITH SUFFICIENT CAPACITY FOR DIFFERENTIAL MOVEMENT.

VIBRATION & SEISMIC CONTROL - AIR COMPRESSOR

**VIBRO-ACOUSTICS®**  
A Swegon Group company

DATE

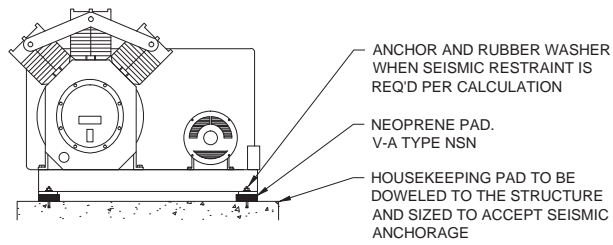
4/29/2014

DRAWING NO.

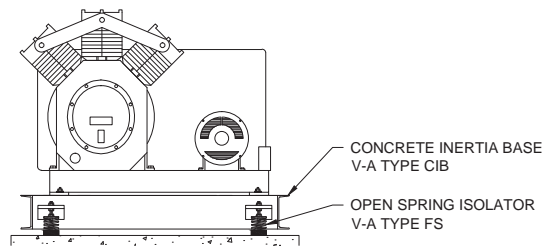
VISR-EF-111

REV. NO.

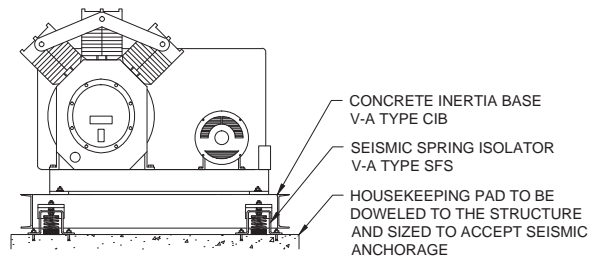
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OPTION #1 - NEOPRENE PAD ISOLATORS (GRADE)



OPTION #2 - SPRING ISOLATORS (UPPER FLOORS)



OPTION #3 - SEISMIC SPRING ISOLATORS (UPPER FLOORS)

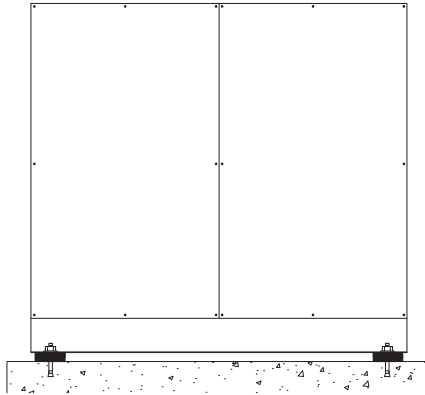
NOTES:

1. ALL PRODUCT SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.
3. ANY PIPING CONNECTIONS SHALL BE MADE WITH FLEXIBLE HOSES WITH SUFFICIENT CAPACITY FOR DIFFERENTIAL MOVEMENT.

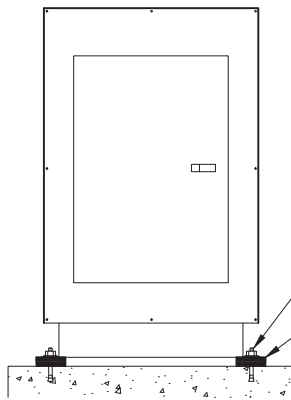
VIBRATION & SEISMIC CONTROL - VACUUM PUMP

VIBRO-ACOUSTICS®  
A Swegon Group company

DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-EF-112	1



ELEVATION VIEW



END VIEW

ANCHOR AND RUBBER WASHER  
WHEN SEISMIC RESTRAINT IS  
REQ'D PER CALCULATION

NEOPRENE PAD.  
V-A TYPE NSN

HOUSEKEEPING PAD TO BE  
DOWELED TO THE STRUCTURE  
AND SIZED TO ACCEPT SEISMIC  
ANCHORAGE

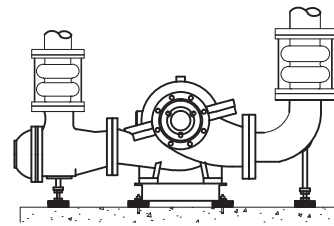
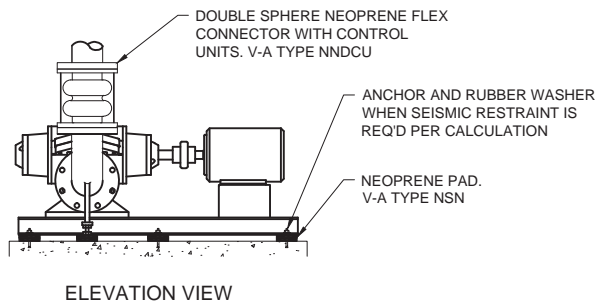
NOTES:

1. ALL PRODUCT SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.
3. ANY CONDUIT CONNECTIONS SHALL BE MADE WITH FLEXIBLE HOSES WITH SUFFICIENT CAPACITY FOR DIFFERENTIAL MOVEMENT.

VIBRATION & SEISMIC CONTROL - TRANSFORMER

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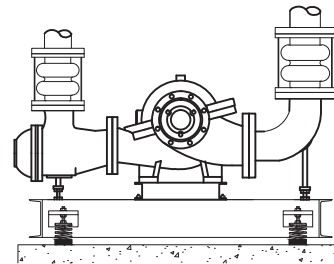
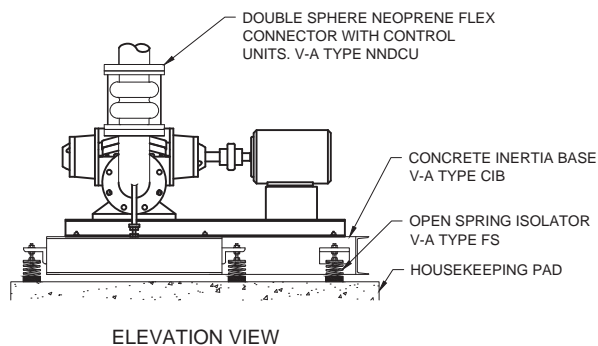
DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-EF-113	1



ELEVATION VIEW

END VIEW

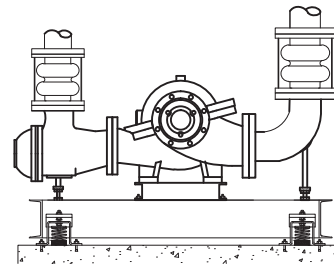
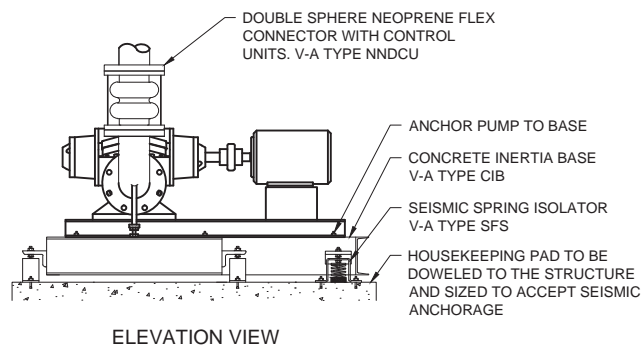
OPTION #1 - NEOPRENE PAD ISOLATORS (GRADE)



ELEVATION VIEW

END VIEW

OPTION #2 - SPRING ISOLATORS (UPPER FLOORS)



ELEVATION VIEW

END VIEW

OPTION #3 - SEISMIC SPRING ISOLATORS (UPPER FLOORS)

NOTES:

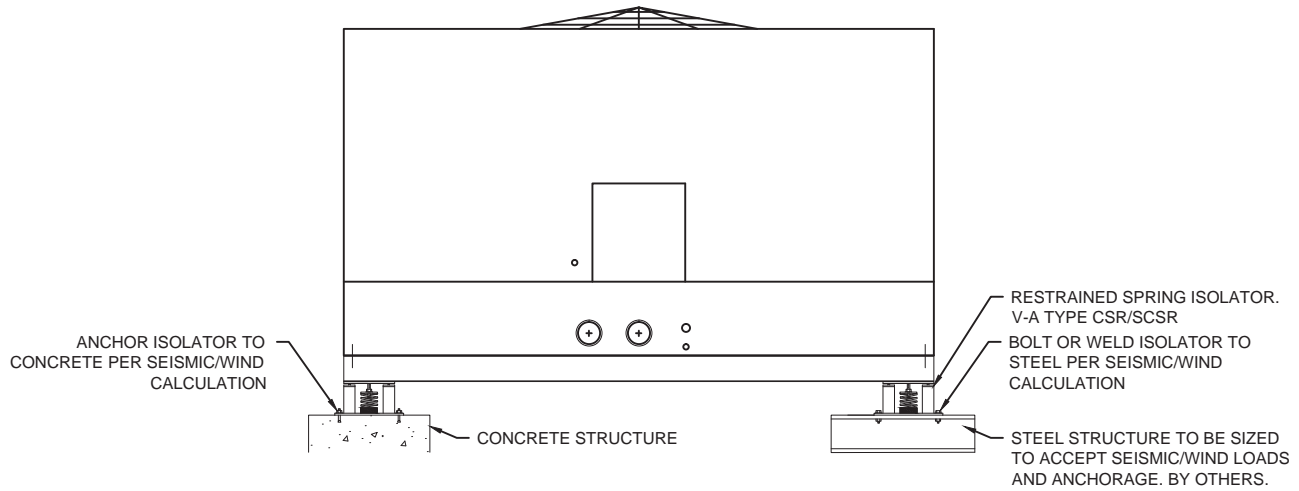
1. ALL PRODUCT QUANTITIES, SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

VIBRATION & SEISMIC CONTROL - DOUBLE SUCTION PUMPS

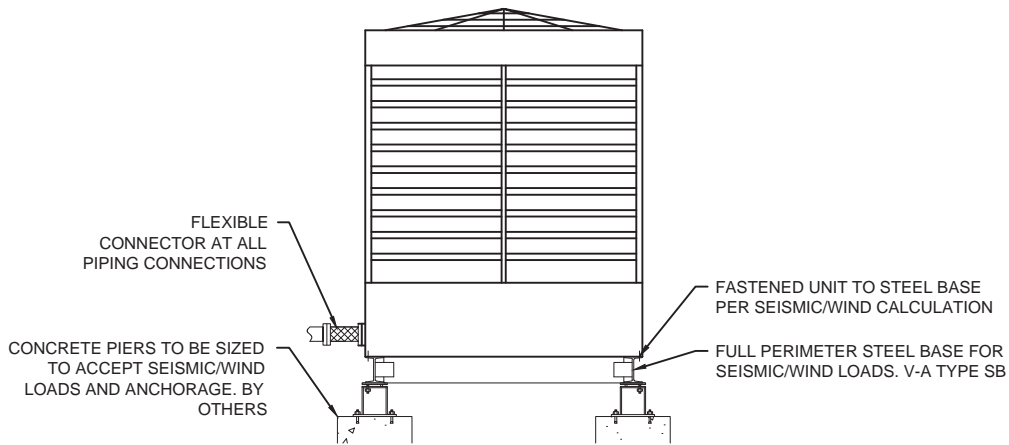
**VIBRO-ACOUSTICS®**  
A Swegon Group company

DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-EF-114	1





ELEVATION VIEW



END VIEW

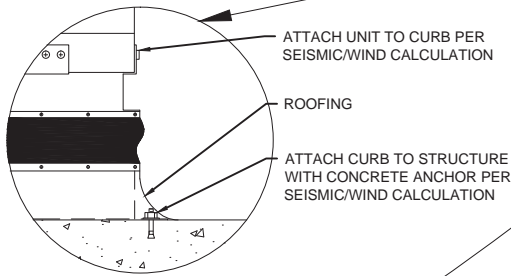
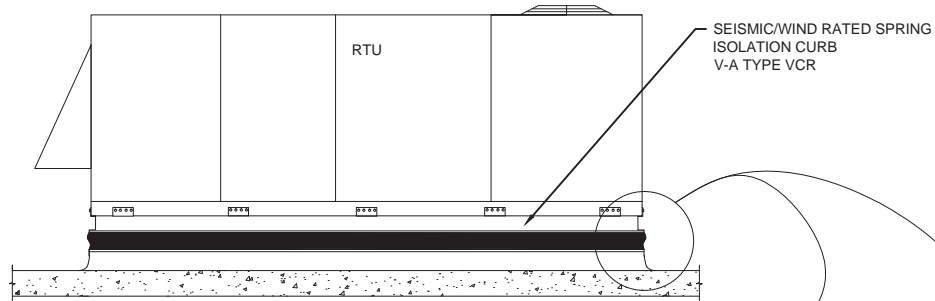
NOTES:

1. ALL PRODUCT QUANTITIES, SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.
3. FLEX CONNECTIONS ARE REQUIRED ON ATTACHED PIPING. NOT SHOWN.

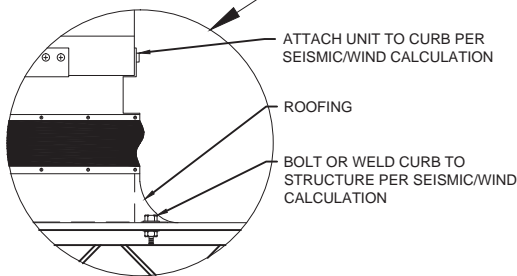
VIBRATION & SEISMIC CONTROL - COOLING TOWER

VIBRO-ACOUSTICS®  
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DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-ER-101	1



CONCRETE ATTACHMENT



STEEL ATTACHMENT

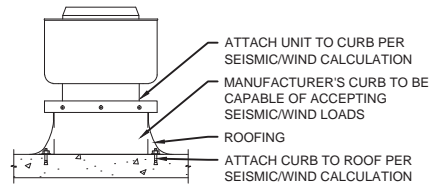
NOTES:

1. ALL PRODUCT SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.
3. ANY PIPING/DUCT CONNECTIONS SHALL BE MADE WITH FLEXIBLE CONNECTIONS WITH SUFFICIENT CAPACITY FOR DIFFERENTIAL MOVEMENT.

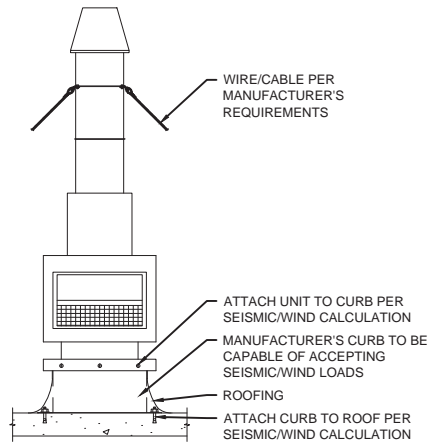
VIBRATION & SEISMIC CONTROL - RTU WITH VCR

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A Swegon Group company

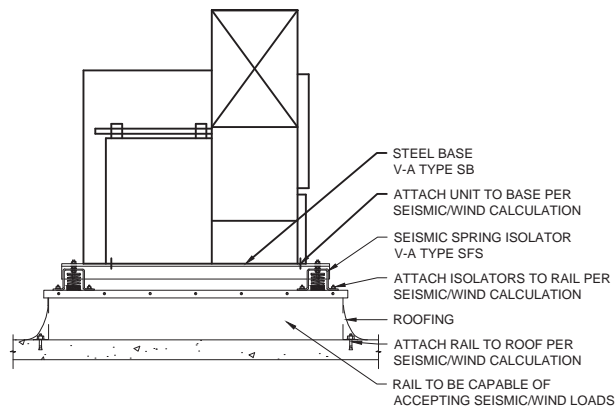
DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-ER-102	1



EXHAUST FAN



LAB EXHAUST FAN



CENTRIFUGAL FAN

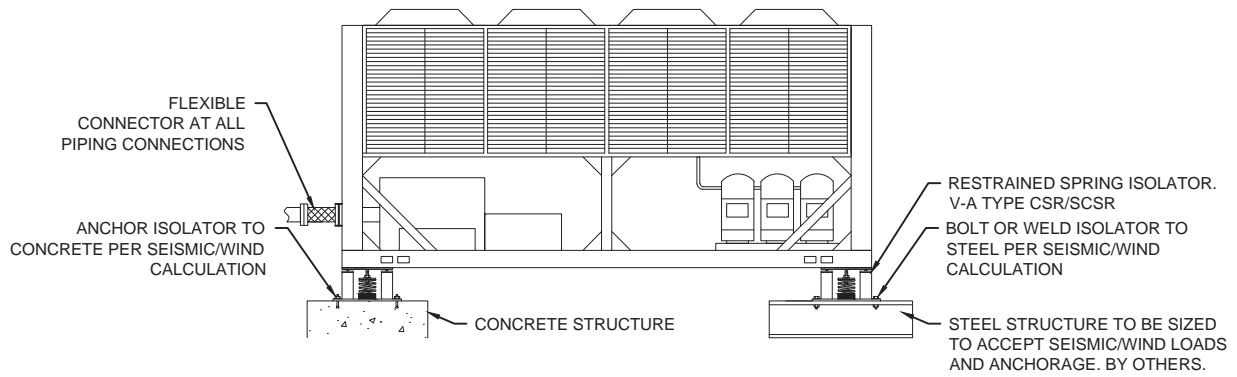
NOTES:

1. ALL PRODUCT SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.
3. ANY PIPING/DUCT CONNECTIONS SHALL BE MADE WITH FLEXIBLE CONNECTIONS WITH SUFFICIENT CAPACITY FOR DIFFERENTIAL MOVEMENT.

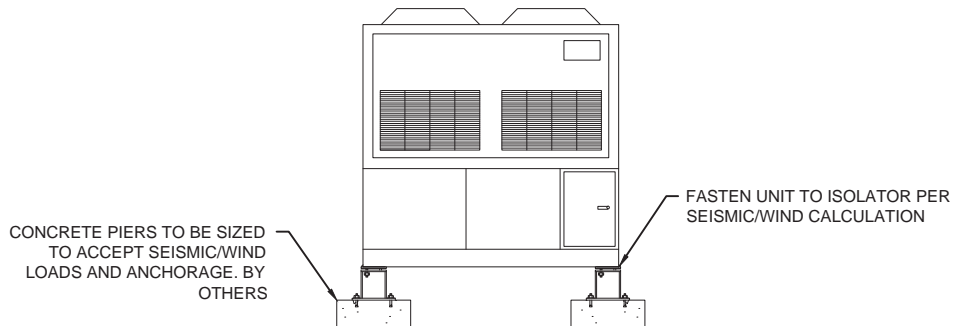
VIBRATION & SEISMIC CONTROL - ROOF MOUNTED FANS

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DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-ER-103	1



ELEVATION VIEW



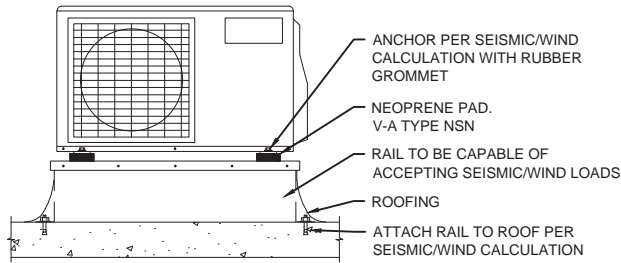
END VIEW

- NOTES:
1. ALL PRODUCT SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
  2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.
  3. ANY PIPING CONNECTIONS SHALL BE MADE WITH FLEXIBLE CONNECTORS.
  4. UNIT MANUFACTURER TO DETERMINE IF THE UNIT IS CAPABLE OF BEING POINT LOADED BY ISOLATORS. OTHERWISE A STEEL BASE MAY BE REQUIRED BETWEEN THE UNIT AND THE ISOLATORS.

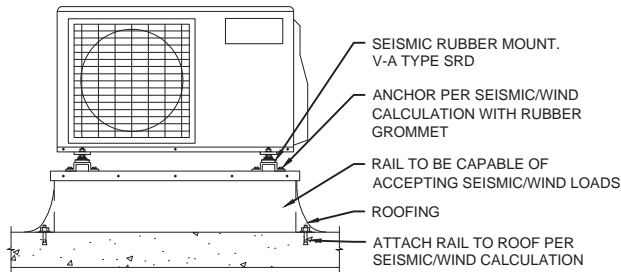
VIBRATION & SEISMIC CONTROL - AIR COOLED CHILLER

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DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-ER-104	1



OPTION #1 - NEOPRENE PAD ISOLATORS



OPTION #2 - SEISMIC RUBBER MOUNT

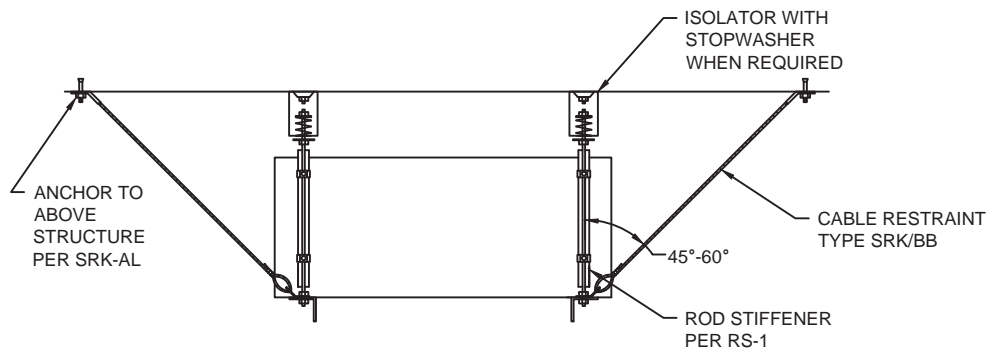
NOTES:

1. ALL PRODUCT SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.
3. ANY PIPING CONNECTIONS SHALL BE MADE WITH FLEXIBLE CONNECTORS.

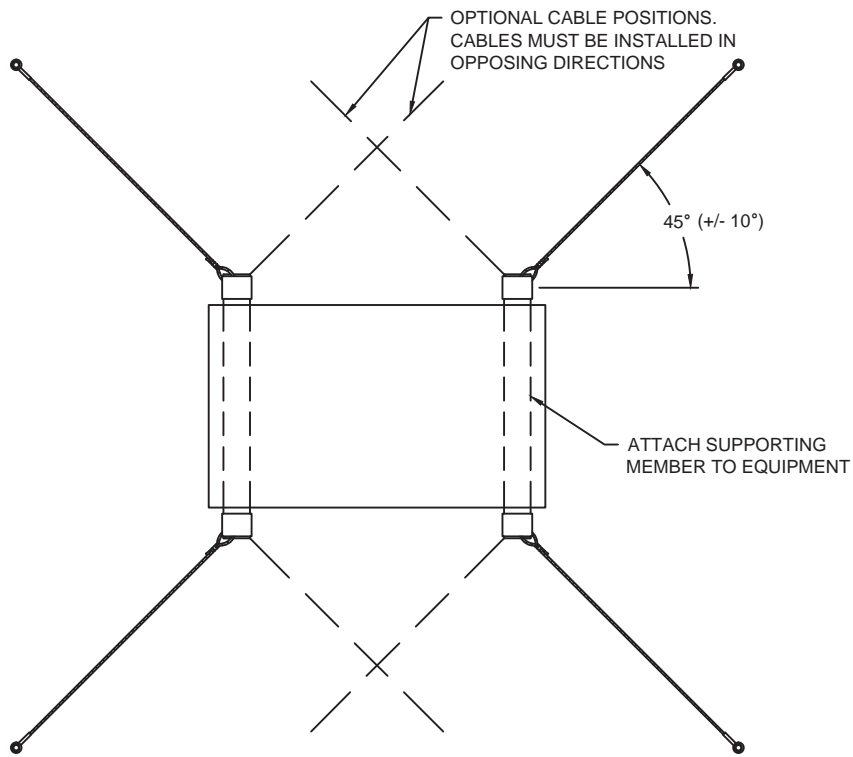
VIBRATION & SEISMIC CONTROL - CONDENSING UNIT

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DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-ER-105	1



ELEVATION VIEW



PLAN VIEW

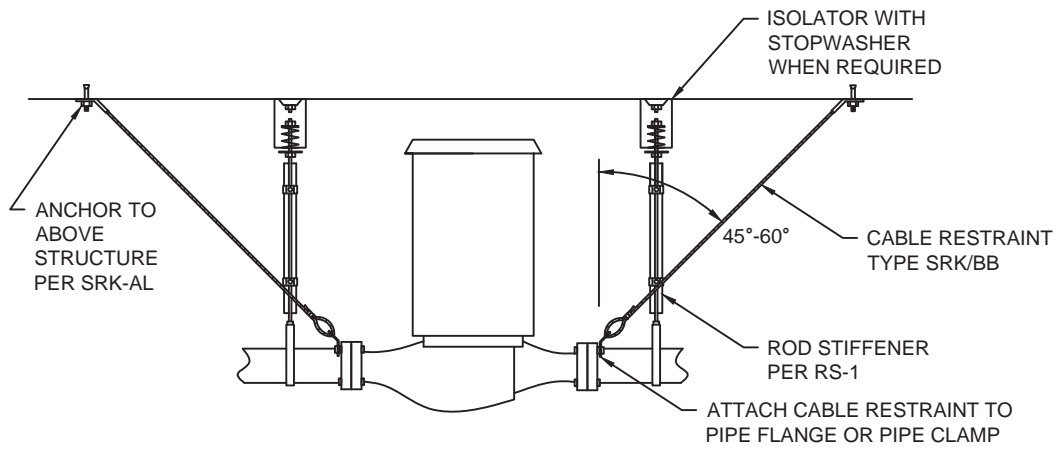
NOTES:

1. ALL PRODUCT SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

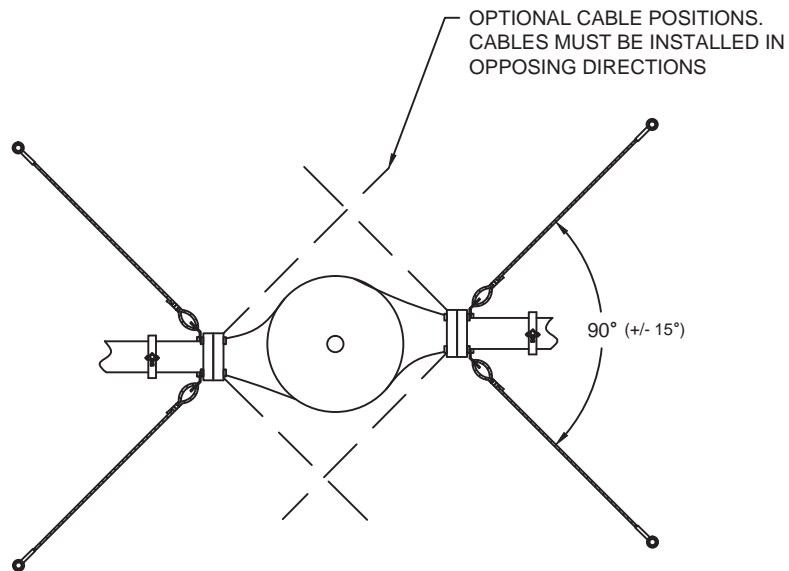
SEISMIC BRACING - SUSPENDED EQUIPMENT

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DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-ES-101	1



ELEVATION VIEW



PLAN VIEW

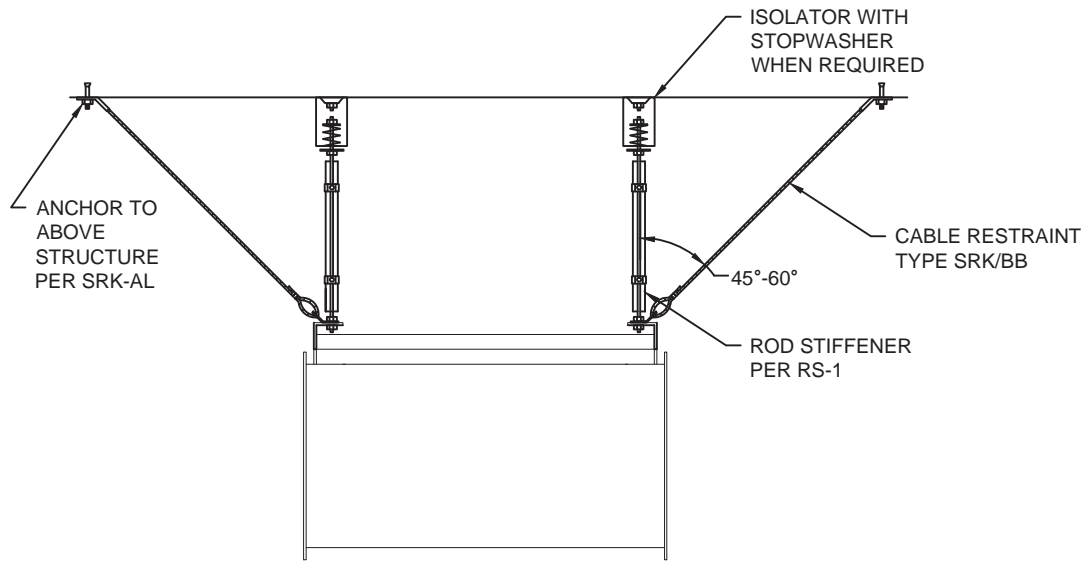
NOTES:

1. ALL PRODUCT SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

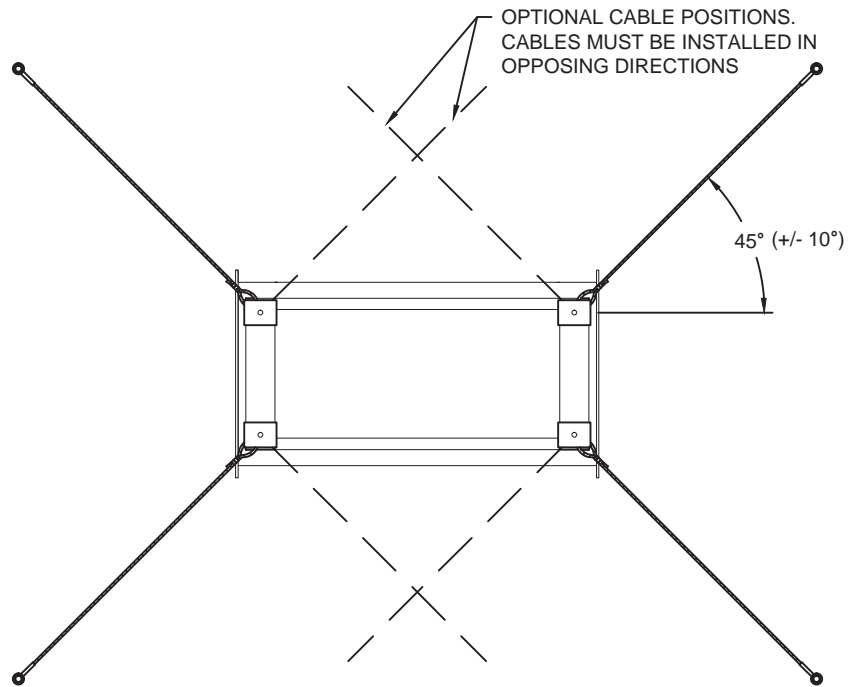
SEISMIC BRACING - SUSPENDED INLINE PUMP

**VIBRO-ACOUSTICS®**  
A Swegon Group company

DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-ES-102	1



ELEVATION VIEW



PLAN VIEW

NOTES:

1. ALL PRODUCT SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

SEISMIC BRACING - SUSPENDED AXIAL FAN

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DATE

4/29/2014

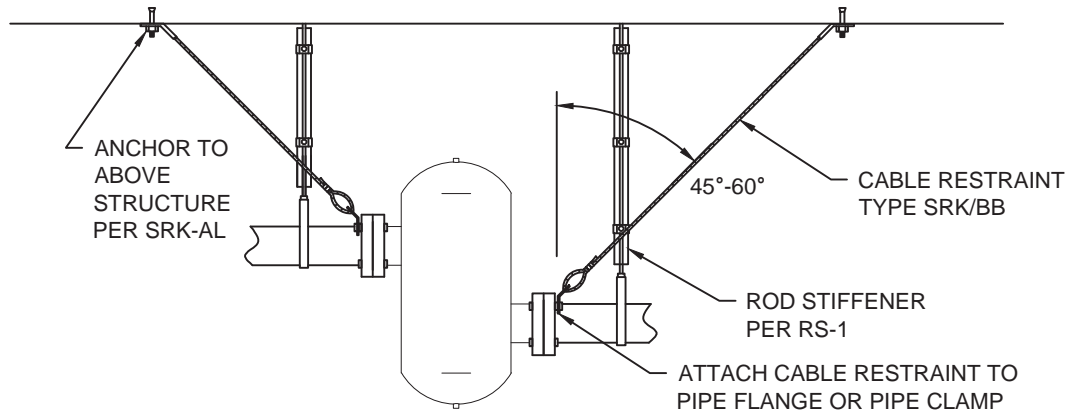
DRAWING NO.

VISR-ES-103

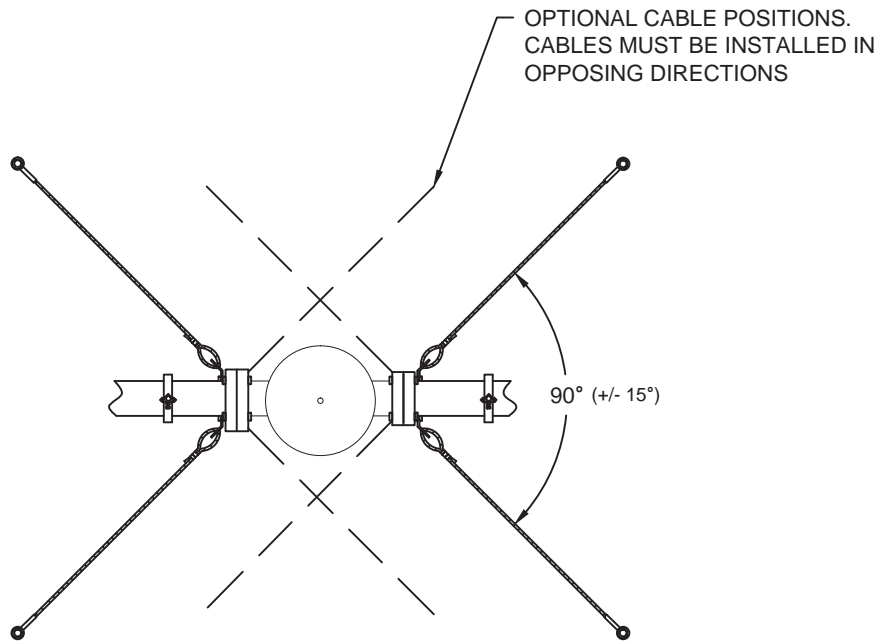
REV. NO.

1





ELEVATION VIEW



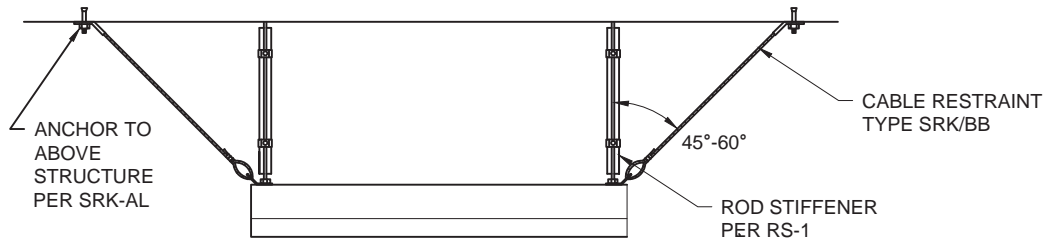
PLAN VIEW

- NOTES:  
 1. ALL PRODUCT SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.  
 2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

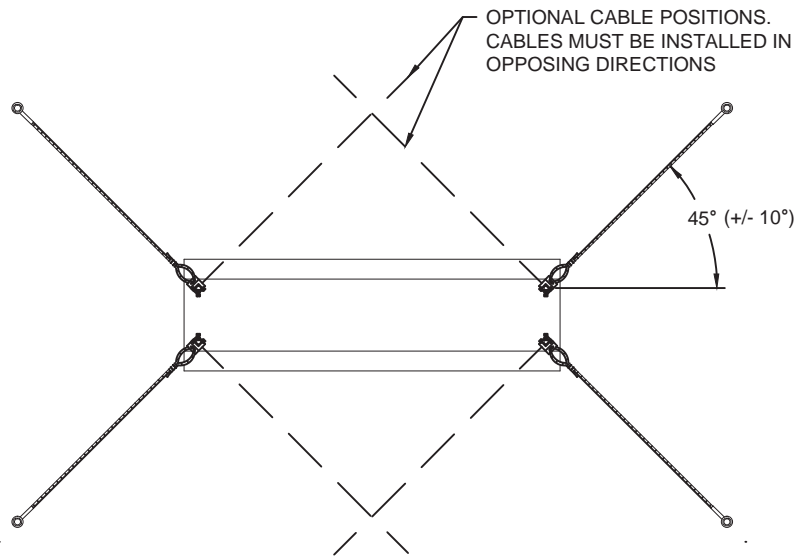
SEISMIC BRACING - SUSPENDED AIR SEPARATOR

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DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-ES-104	1



ELEVATION VIEW



PLAN VIEW

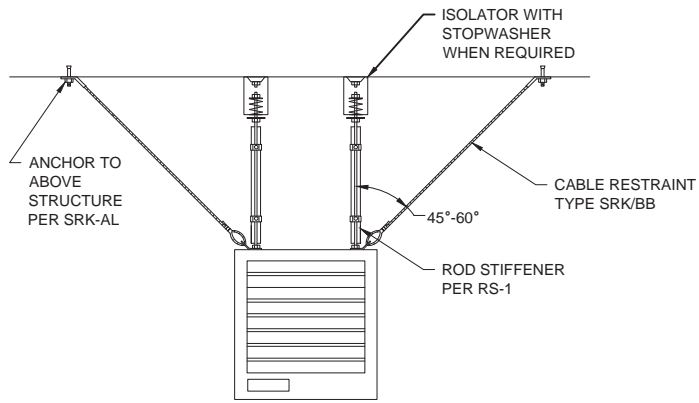
NOTES:

1. ALL PRODUCT SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.
3. ANY PIPING CONNECTIONS SHALL BE MADE WITH FLEXIBLE HOSES WITH SUFFICIENT CAPACITY FOR DIFFERENTIAL MOVEMENT.

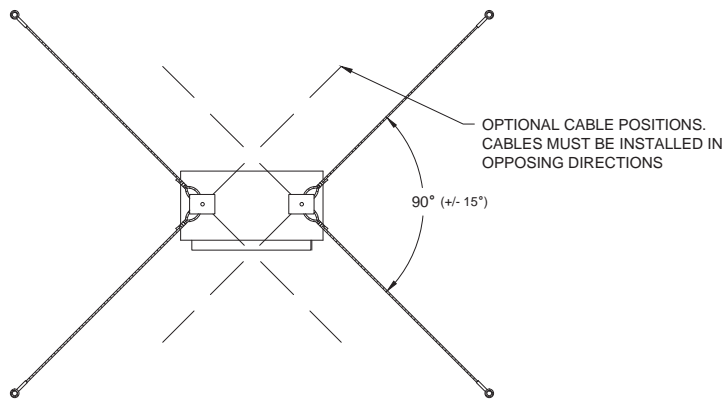
SEISMIC BRACING - CHILLED BEAM

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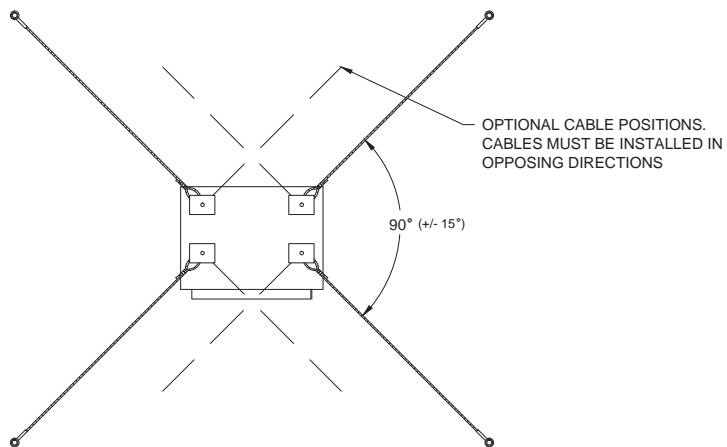
DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-ES-105	1



ELEVATION VIEW



PLAN VIEW (2 ROD ATTACHMENT)



PLAN VIEW (4 ROD ATTACHMENT)

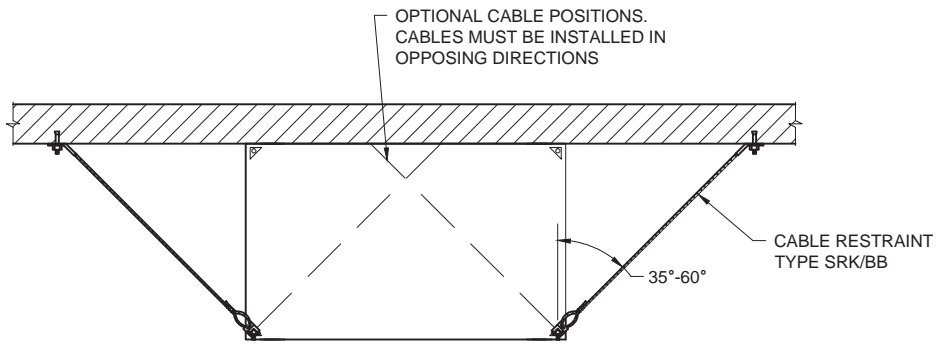
NOTES:

1. ALL PRODUCT SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.
3. ANY PIPING CONNECTIONS SHALL BE MADE WITH FLEXIBLE HOSES WITH SUFFICIENT CAPACITY FOR DIFFERENTIAL MOVEMENT.

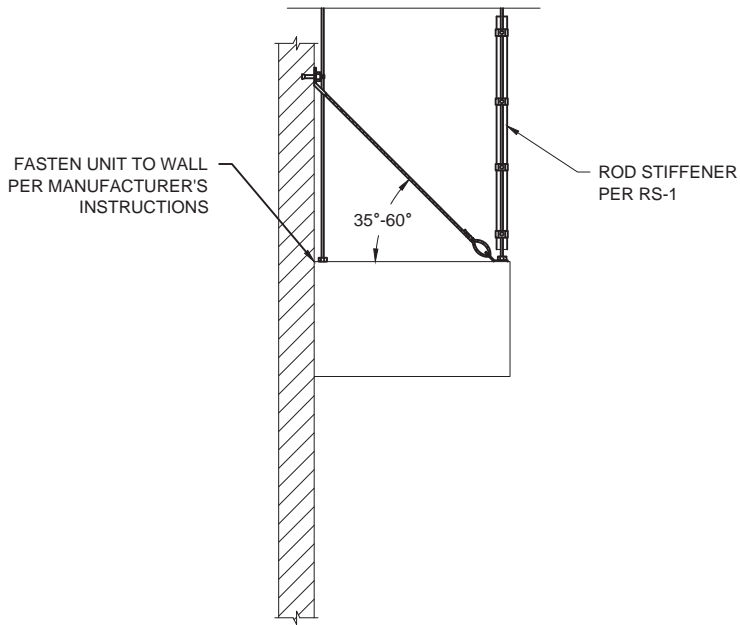
SEISMIC BRACING - SUSPENDED UNIT HEATER

**VIBRO-ACOUSTICS®**  
A Swegon Group company

DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-ES-106	1



PLAN VIEW



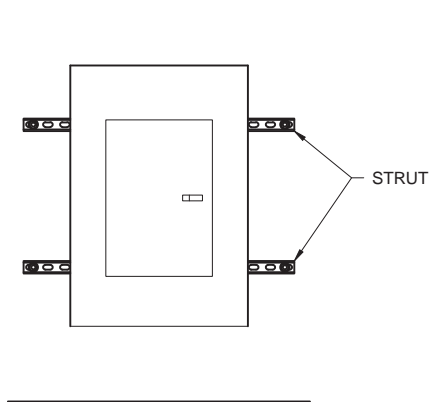
SIDE VIEW

- NOTES:  
 1. ALL PRODUCT SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.  
 2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

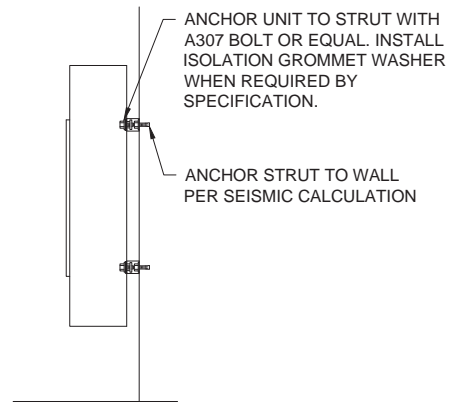
SEISMIC BRACING - SUSPENDED KITCHEN HOOD

**VIBRO-ACOUSTICS®**  
 A Swegon Group company

DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-ES-107	1

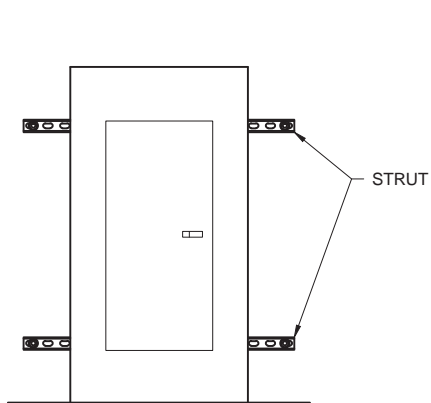


ELEVATION VIEW

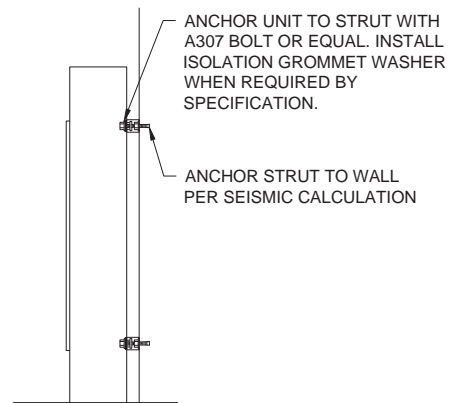


SIDE VIEW

PANEL BOARD (SMALL) - WALL MOUNTED



ELEVATION VIEW



SIDE VIEW

PANEL BOARD (LARGE) - WALL MOUNTED

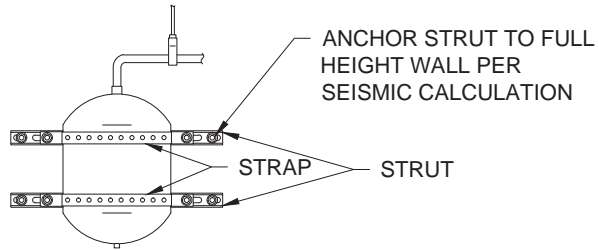
NOTES:

1. ALL PRODUCT QUANTITIES, SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

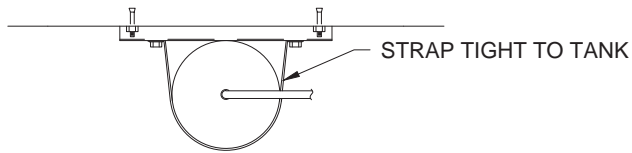
SEISMIC BRACING - PANEL BOARD

**VIBRO-ACOUSTICS®**  
A Swegon Group company

DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-EW-101	1



ELEVATION VIEW



PLAN VIEW

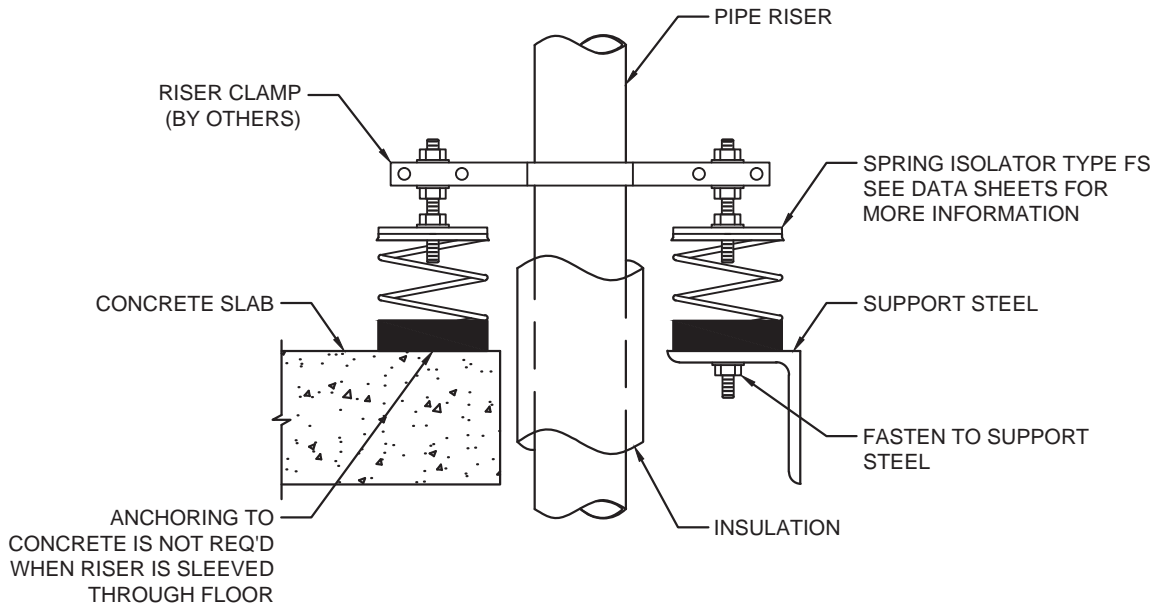
NOTES:

1. ALL PRODUCT SIZES AND CAPACITIES TO BE DETERMINED AFTER EQUIPMENT IS APPROVED AND CALCULATIONS HAVE BEEN PERFORMED.
2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

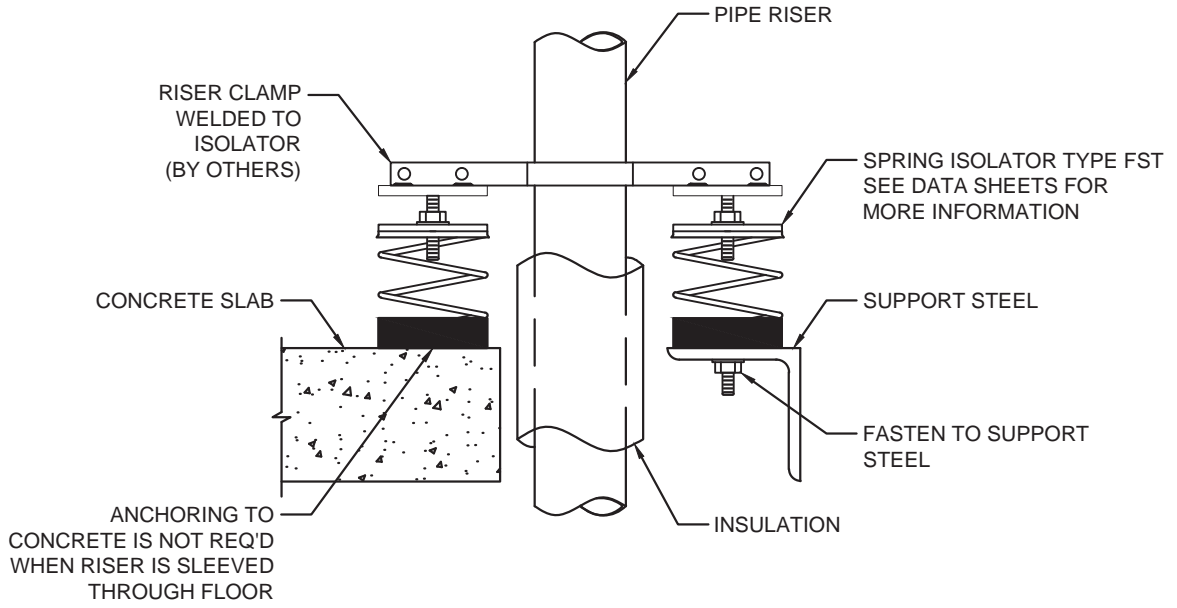
SEISMIC BRACING - WALL MOUNTED EXPANSION TANK

**VIBRO-ACOUSTICS®**  
A Swegon Group company

DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-EW-102	1



**PIPE RISER W/ FS TYPE ISOLATORS  
SUPPORT DETAIL**



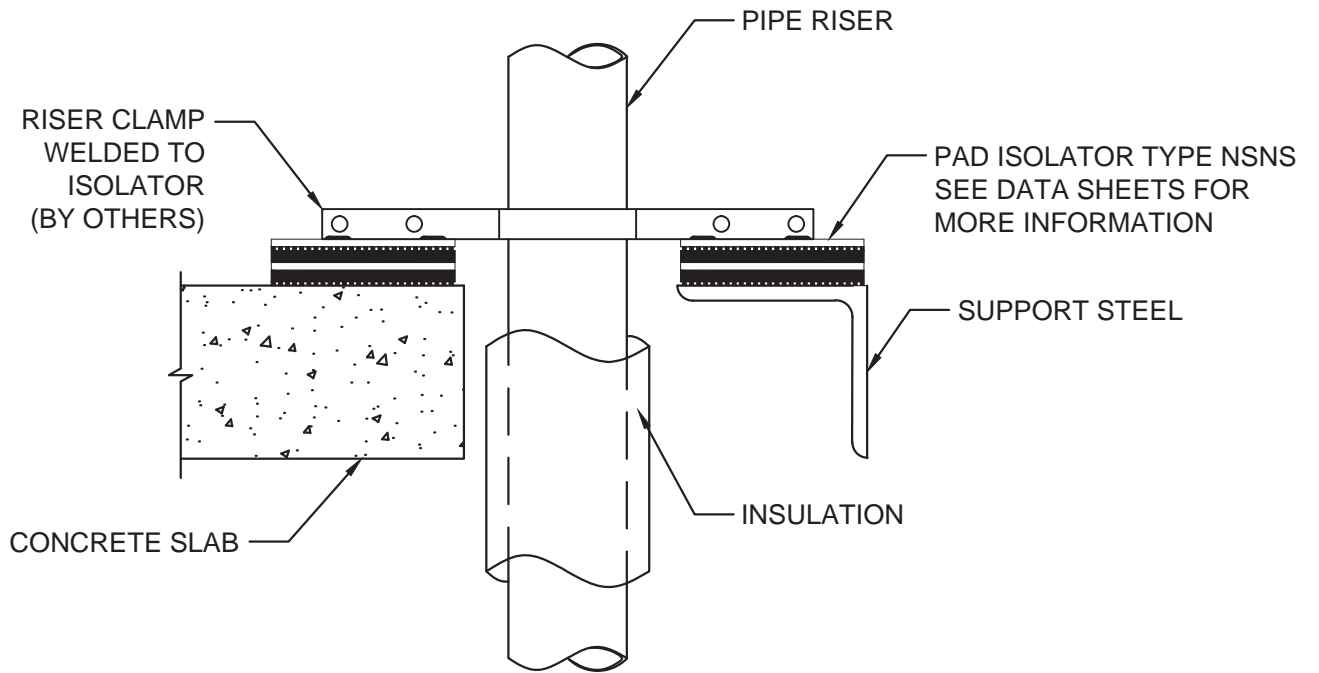
**PIPE RISER W/ FST TYPE ISOLATORS  
SUPPORT DETAIL**

NOTES:  
 1. REFERENCE SUBMITTAL DRAWINGS FOR RISER MOVEMENT CALCULATIONS, DIAGRAMS AND ISOLATOR LOCATIONS.  
 2. REFERENCE ISOLATOR DATA SHEETS FOR ADDITIONAL INFORMATION.

**PIPE RISER SUPPORT DETAIL - SPRING ISOLATORS**



DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-PF-101	1



**PIPE RISER WITH PAD TYPE ISOLATORS**  
**SUPPORT DETAIL**

NOTES:

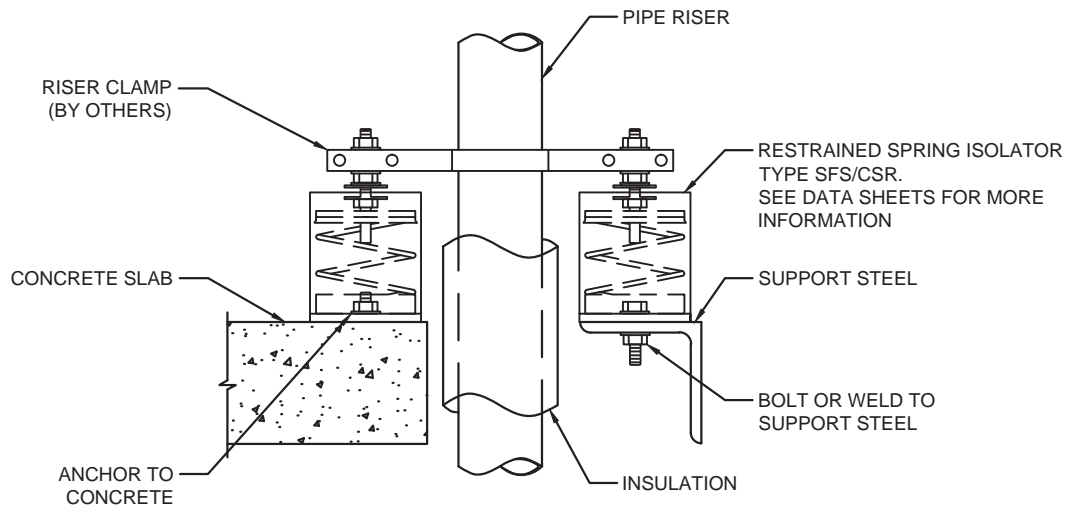
1. REFERENCE SUBMITTAL DRAWINGS FOR RISER MOVEMENT CALCULATIONS, DIAGRAMS AND ISOLATOR LOCATIONS.
2. REFERENCE ISOLATOR DATA SHEETS FOR ADDITIONAL INFORMATION.

PIPE RISER SUPPORT DETAIL - PAD ISOLATORS

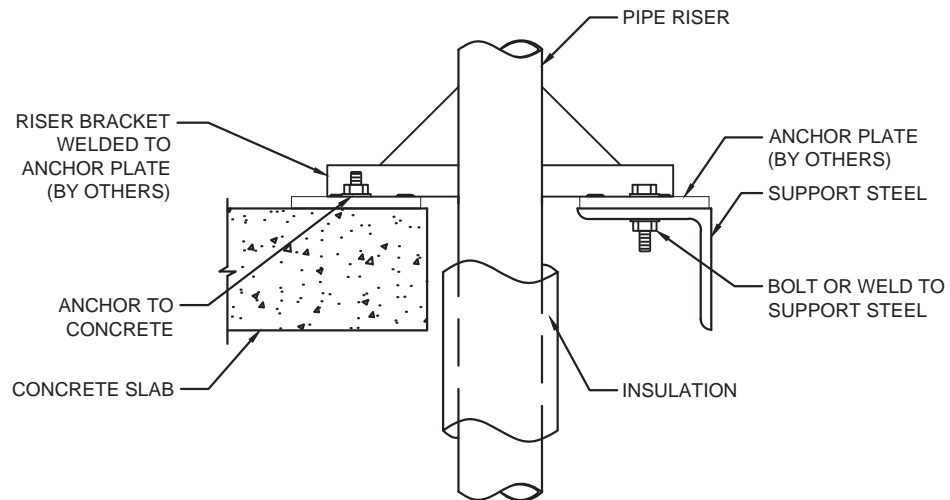
**VIBRO-ACOUSTICS®**  
A Swegon Group company

DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-PF-102	1





**PIPE RISER ANCHOR W/ ISOLATORS DETAIL**



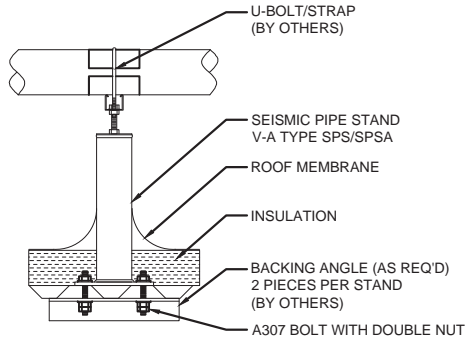
**PIPE RISER ANCHOR DETAIL**

- NOTES:
1. REFERENCE SUBMITTAL DRAWINGS FOR RISER MOVEMENT CALCULATIONS, DIAGRAMS AND ISOLATOR LOCATIONS.
  2. REFERENCE ISOLATOR DATA SHEETS FOR ADDITIONAL INFORMATION.

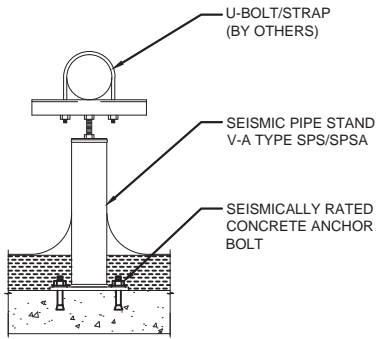
**PIPE RISER SUPPORT DETAIL - ANCHORS**

**VIBRO-ACOUSTICS®**  
A Swegon Group company

DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-PF-103	0

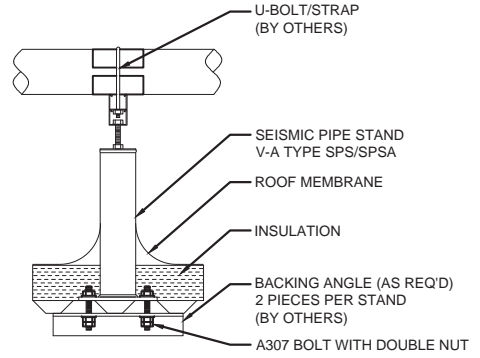


**SIDE VIEW - SEISMIC PIPE STAND WITH METAL DECK ATTACHMENT**

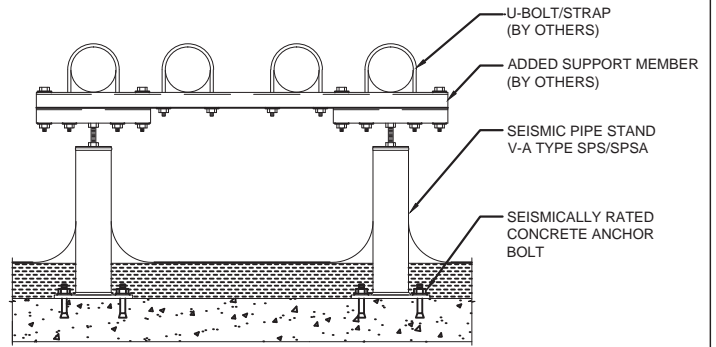


**END VIEW - SEISMIC PIPE STAND WITH CONCRETE ATTACHMENT**

OPTION #1 - SINGLE PIPE



**SIDE VIEW - SEISMIC PIPE STAND WITH METAL DECK ATTACHMENT**



**END VIEW - SEISMIC PIPE STAND WITH CONCRETE ATTACHMENT**

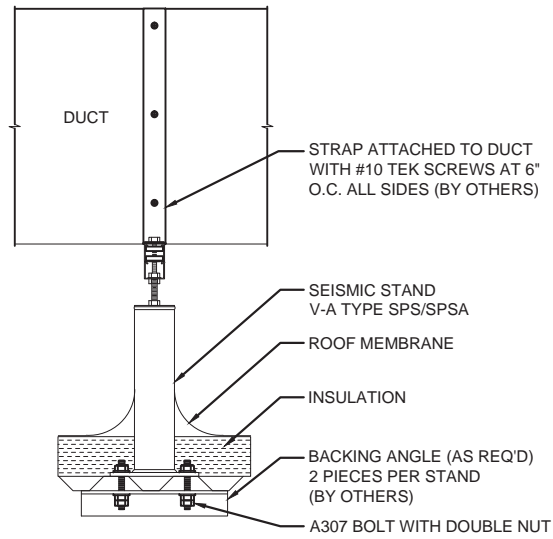
OPTION #1 - SINGLE PIPE

NOTES:  
 1. REFERENCE SEISMIC CALCULATIONS FOR ANCHOR BOLT REQUIREMENTS.  
 2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

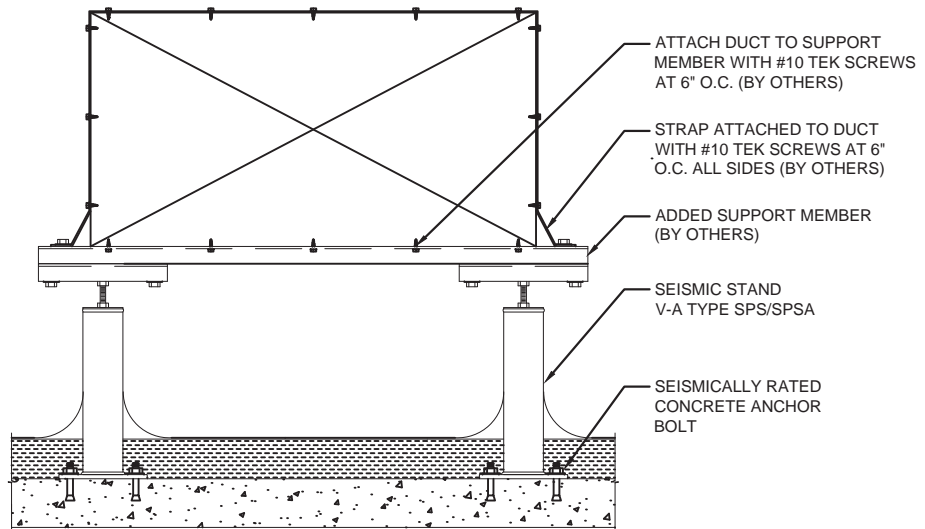
**ROOFTOP PIPE RESTRAINT DETAIL**

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DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-PR-101	1



**SIDE VIEW - SEISMIC STAND WITH METAL DECK ATTACHMENT**



**END VIEW - SEISMIC STANDS WITH CONCRETE ATTACHMENT**

- NOTES:
1. REFERENCE SEISMIC CALCULATIONS FOR ANCHOR BOLT REQUIREMENTS.
  2. REFERENCE PRODUCT DATA SHEETS FOR ADDITIONAL INFORMATION.

ROOFTOP DUCT RESTRAINT DETAIL

**VIBRO-ACOUSTICS®**  
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DATE	DRAWING NO.	REV. NO.
4/29/2014	VISR-DR-101	0

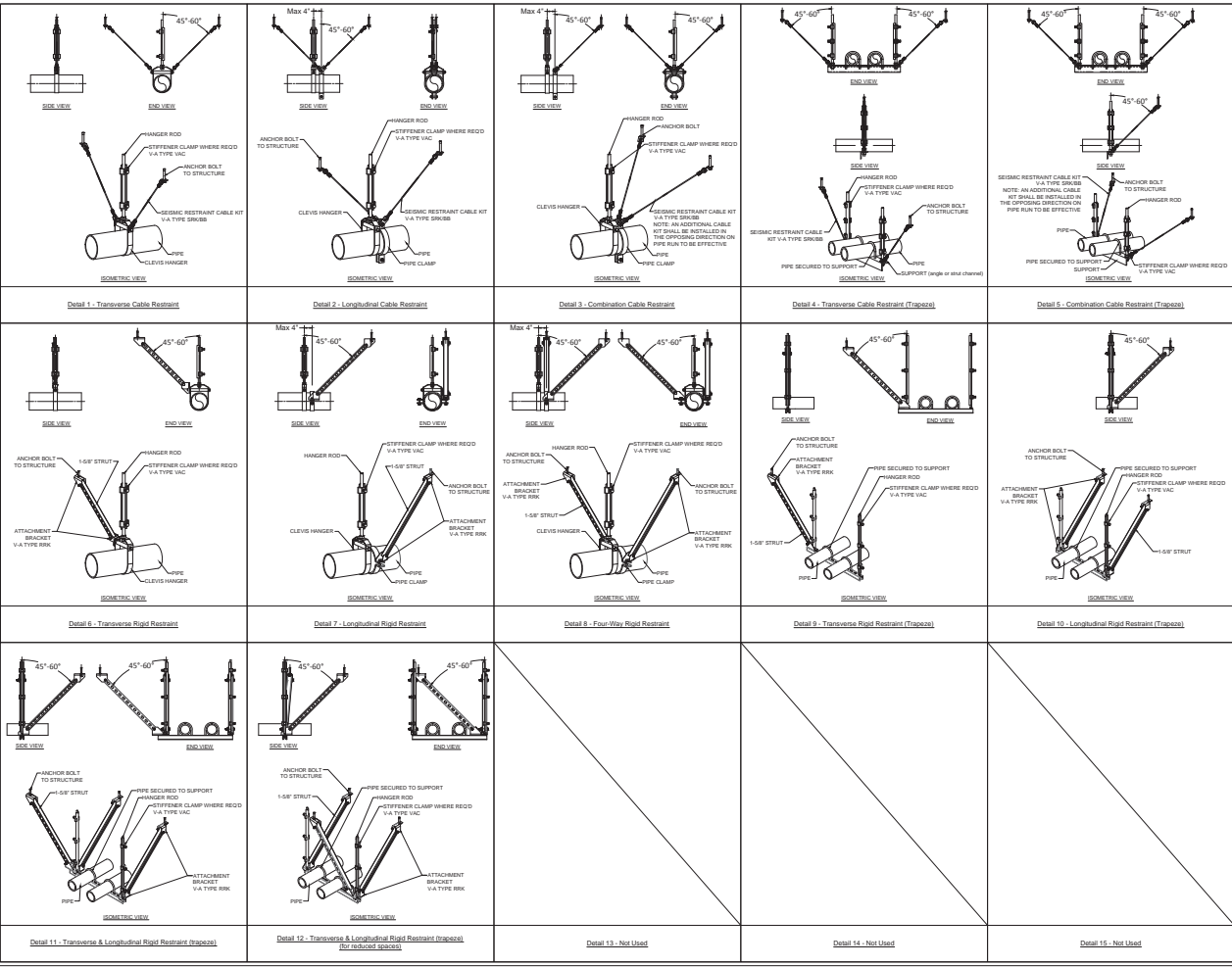
**Seismic Restraints - Piping**

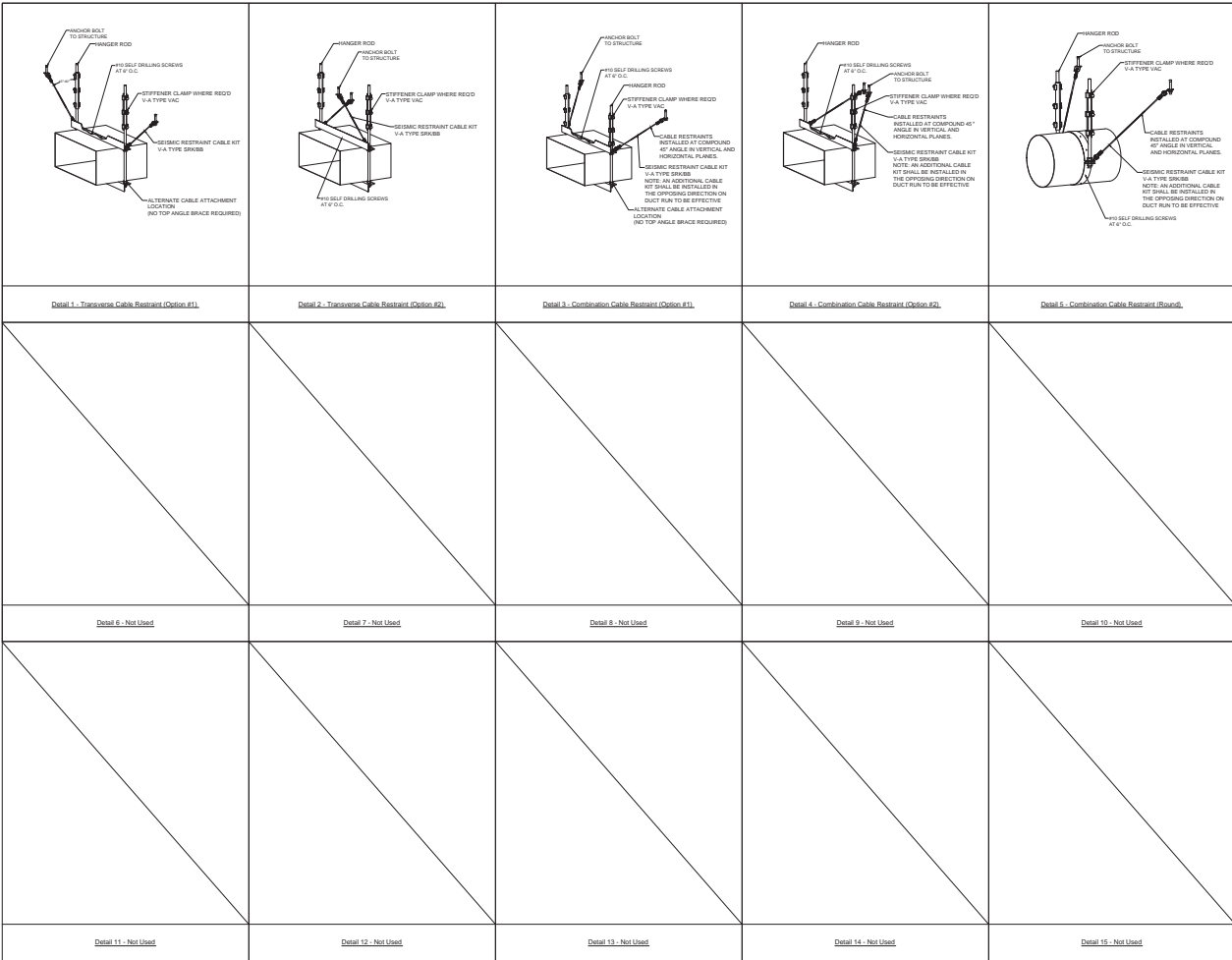
**Criteria**  
 Seismic restraints shall be installed for all piping in accordance with the current edition of the International Building Code (IBC). Piping shall be restrained to resist horizontal seismic loads (F<sub>p</sub>) in all directions and vertical seismic loads (F<sub>pv</sub>). All seismic loads shall be transferred by the restraints from the piping to the building structure.

Restraint sizes and their attachments shall be designed and installed to resist site specific seismic loads (F<sub>p</sub>) as determined by the IBC. Restraint strengths shall be proven by calculation to withstand such loads. For all restraints, the maximum allowable load shall be based on the weakest component of the restraint with safety factors. Restraint calculations shall be stamped by a professional engineer licensed in the state in which the project is located.

Transverse restraint spacing for ductile (e.g. steel) piping shall not exceed a maximum interval of 60 ft (18.2 m) on center. The distance between the last restraint and the end of the pipe shall not exceed 6 ft (1.8 m). Longitudinal restraints shall be allowed to act as longitudinal restraints if they are within 24 in. (610 mm) of the centerline of the piping restrained longitudinally and the transverse restraint is on a pipe of equal or greater size than the pipe being restrained longitudinally. For non-ductile or brittle (e.g. cast iron) piping, all spacing criteria shall be divided by a minimum of two.

Rigid restraint systems shall only be used for piping that are not supported by vibration isolators and/or not thermally active.





**Seismic Restraints - Duct**

**Criteria:**  
 Seismic restraints shall be installed for all duct in accordance with the current edition of the International Building Code (IBC). Ductwork shall be restrained to resist horizontal seismic loads (F<sub>p</sub>) in all directions and vertical seismic loads (F<sub>vs</sub>). All seismic loads shall be transferred by the restraints from the ductwork to the building structure.

Restraint sizes and their attachments shall be designed and installed to resist site specific seismic loads (F<sub>p</sub>) as determined by the IBC. Restraint strengths shall be proven by calculation to withstand such loads. For all restraints, the maximum allowable load shall be based on the weakest component of the restraint with safety factors. Restraint calculations shall be stamped by a professional engineer licensed in the state in which the project is located.

Transverse restraint spacing for duct shall not exceed a maximum interval of 30 ft on center.

Longitudinal restraint spacing for duct shall not exceed a maximum interval of 60 ft on center.

## VIBRATION ISOLATION & SEISMIC/WIND RESTRAINT SUBMITTAL

Project:  
Project No.:

Date:

### Disclaimers, Assumptions and Directive Statements:

1. Seismic and/or wind calculations will be provided for non-structural components as per Vibro-Acoustics' scope of work and provided in accordance with the specified edition of applicable building codes (e.g., International Building Code with local amendments). In cases where the required seismic and wind factors are not provided, the currently adopted code used in the region will be used and factors will be assumed as applicable to the region.
2. Equipment weights and dimensions used in Vibro-Acoustics' work will be taken from approved submittals provided by the contractor to Vibro-Acoustics. The contractor shall communicate any deviations or changes to Vibro-Acoustics for review; significant changes to equipment after time of release may result in additional fees.
3. All restraint attachments to building structure will be defined by Vibro-Acoustics. Where information is not provided to Vibro-Acoustics as to the type of building material at the point of attachment, Vibro-Acoustics will make a reasonable assumption. Additional work to change from these assumptions due to lack of provided information at time of release may be considered additional scope of services and may result in additional fees. It is the responsibility of the contractor to communicate seismic loads determined by Vibro-Acoustics to the project's structural engineer of record.
4. Unless included in Vibro-Acoustics' scope of work, housekeeping pads will be assumed to be adequately dowelled to the supporting structure and reinforced to withstand seismic loads.
5. Unless included in Vibro-Acoustics' scope of work, all suspended equipment and all floor-mounted equipment installed on vibration isolators will be assumed to be flexibly connected to associated conduit, piping and/or ductwork to prevent failure or damage from seismic loads on the equipment.
6. The contractor shall install all concrete anchor bolts to the manufacturers' recommended torque. Vibro-Acoustics will assume that the concrete depth and edge distances shall be sufficient for proper installation as noted in the appropriate calculations. The contractor must review the work and if anchorage requirements cannot be satisfied, the contractor shall inform Vibro-Acoustics for review and rework as appropriate. The installing contractor shall comply with all special inspection requirements.
7. All equipment and components supplied by others, including ductwork or piping, concrete housekeeping pads, customized support structures and building structure components are not certified by Vibro-Acoustics' analyses as capable to withstand the applied seismic loads. Mounting supports, brackets, or other means of attachment not provided by Vibro-Acoustics must be certified by others. Unless otherwise noted, calculations provided by Vibro-Acoustics apply only to components provided by Vibro-Acoustics such as seismic spring isolators, brackets and restraints and their attachments to structure.
8. Vibro-Acoustics assumes the following as part of standard building design criteria:
  - Steel structure provided by others between the equipment and isolators is determined by others and is considered sufficiently rigid to transfer seismic loads.
  - The building support structure will have at least ten times the stiffness of the specified isolators.
  - The building support structure natural frequency will be at least three times the natural frequency of the specified isolators.
9. Vibro-Acoustics will consider worst-case loading scenarios for seismic/wind calculations for groups of identical or similar pieces of equipment.
10. All drawings included in Vibro-Acoustics submittals are not to scale unless otherwise noted.