Recommended Specifications for

 Stravifloor Jackup-R



Section 13 48 00 Sound Control

This document is for specification writers' reference in the drafting process. CDM Stravitec will not be held responsible for the use or unauthorized modification of any information contained herein.

Specification notes are identified in the document as follows “***SPEC NOTE***” – these notes must be removed from final documents. Where multiple options may be available, these are identified in the corresponding spec note.

Text highlighted in yellow indicates text that should be coordinated with the entire spec book or represent sections that are options not found on every installation.

This document specification has been specifically written for the Stravifloor Jackup-R system. Below is a schematic indication of the construction process from start to end as described in this specification.

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1. GENERAL
	1. Summary
		1. Section Includes:
			1. The Scope of Work includes for Products and/or Systems to isolate a floating floor from the building structure (Floating Floor Assembly) by means of discrete acoustical isolators within a concrete slab and separated from perimeter by acoustical isolation board.
	2. Related SECTIONS
		1. The work under this section must consider the following sections:
			1. Submittal Procedures: Section 01 33 00
			2. Quality Control: Section 01 45 00.
			3. Close-Out Procedures: Section 01 77 00
			4. Concrete and reinforcing: 03 30 00
			5. Subflooring: Section 06 16 23
			6. Joint Sealants / Caulking:  Section 07 92 00

*SPEC NOTE:*

1. *Stravifloor Jackup-R systems require a flat and level structural floor to be specified.* *(Note to Specifier: FF 25 as minimum – meaning a single 6 mm (¼’’) 6 mm defect across 3 m (10-feet)).*
2. *Caulking: to be coordinated with appropriate specification or specified herein. Care should be taken to identify the proper acoustical caulking if in separate spec section.*
	1. Administrative Requirements
		1. Coordination:
			1. Closely coordinate and carry out jointly this Work with other trades.
			2. Place only sufficient insulation modules to permit placing flooring panels without disturbing insulation materials.
			3. Do not run heavy equipment over floating floor.
		2. Conduct pre-installation readiness site reviews:
			1. Manufacturer or its representative shall attend a pre-installation readiness site review meeting to ascertain conditions prior to installation.
		3. Conduct post-installation site review:
			1. Manufacturer or its representative shall attend a post-installation site review meeting and confirm that installation has been conducted as per its instruction manuals.
			2. Identified non-conformities must be rectified prior to concrete pour.
	2. Submittals
		1. Submit required submittals in accordance with Section 01 33 00.
		2. Product data sheets:
			1. Submit manufacturer’s Product data sheets for Products and/or Systems proposed for use in the Scope of Work, including installation requirements, setting drawings, templates, installation requirements, and directions for installation of proposed solutions.
		3. Shop Drawings:
			1. Submit engineered Shop Drawings.
			2. In addition to the requirements of Section 01 33 00, Shop Drawings shall include the following information:
				1. Identification of project load conditions – Dead (DL), Live (LL), Superimposed (SiDL) loads.
				2. If concentrated loads are imposed on the System, then indicate Concentred Loads and type of load – i.e. point, linear and/or area.
				3. Identification of project Acoustic Design Load (ADL) and Serviceability Limit State (SLS) for all different load scenarios.

***SPEC NOTE:***

*Unless stated otherwise the Acoustic Design Load (ADL) and Serviceability Limit State (SLS) shall be calculated as follows:*

*ADL = DL + 100% SiDL + 25 % LL*

*and*

*SLS = DL + 100% SiDL + 100 % LL*

* + - 1. Shop Drawings shall also include Drawings indicating:
				1. Include a floor plan layout with all loads indicated.
				2. Include a floor plan layout presenting all penetrations.
				3. Include a floor plan layout of all isolators to be installed on-site, including identification of additional isolators needed to support concentrated loads.
				4. Include information regarding the size of all isolators on all plans.
				5. Include information related to spacing of all isolators.
				6. Include information related to the size, type, elevation and spacing of concrete reinforcement.
			2. Shop Drawings shall also include Calculations indicating:
				1. All design assumptions regarding loading designs, at a minimum ADL and SLS shall be presented for all load areas.
				2. Provide design loads (DL and ADL) and Serviceability Limit State (SLS) for all isolators used on the project.
				3. Provide deflection and resonance frequency for each isolator indicated in the drawings and for all load conditions.
				4. [OPTION] If large horizontal loads are present, provide calculations for Acoustic Lateral Load Bearing Restrain Isolator Pads to restrain Acoustical Isolated Floating Floor.
				5. Calculations shall be presented in a clear and comprehensive manner so that they can be easily reviewed. Incomplete or haphazard calculations will not be reviewed and lead to Shop Drawing being rejected.

***SPEC NOTE:***

*Item above should be removed if Item 2.4.6 of this spec section is removed.*

* + - 1. Shop Drawings shall also include the following additional information:
				1. Dynamic (resonance frequency with load curves) and Static (deflection with load curves) property curves for all isolators used on the plan view.
				2. Acoustical test data from an independent laboratory showing required STC and IIC ratings for the floating floor assembly, with tests conducted within the last 10 years.
				3. Material datasheet for all other materials used in the design of the Floating Floor Assembly.

***SPEC NOTE:***

*Item above relative to Acoustical test data references a requirement for “tests conducted within the last 10 years”. It should be noted that this is different from the test report as it is common practise for laboratories to re-issue reports with new test report dates for testing that occurred outside of a 10-year test date.*

* 1. Closeout Submittals
		1. Submit closeout documentation in accordance with Section 01 77 00.
		2. Operation and maintenance data:
			1. If applicable, submit Manufacturer’s operation and maintenance instructions for inclusion in the operation and maintenance manuals
1. PRODUCTS
	1. Acceptable Floor Isolation Systems
		1. Stravifloor Jackup-R by CDM Stravitec

***SPEC NOTE:***

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* 1. Performance/Design Requirements:
		1. Intent:
			1. Isolated floating floor system shall consist of 100 mm (4”) thick concrete slab, and a Stravifloor Jackup-R box with vibration isolators as per section 3.1 .1 .

***SPEC NOTE:***

*The Stravifloor Jackup-R comes in 3 standard dimensions, which correspond to slab thickness:*

*. Jackup-R-100 with a box height of 100 mm (4”)*

*. Jackup-R-150 with a box height of 150 mm (6”)*

*. Jackup-R-200 with a box height of 200 mm (8”)*

*Slabs with a thickness other than the standard ones identified above is possible. The minimum slab thickness is 100 mm with no identified maximum. It should be noted that for very thick floating slabs a two pour scenario may be necessary and the replaceability function of the system lost.*

* + - 1. The air cavity between the isolated floating floor system and base structural floor shall be minimum 50 mm (2”).

***SPEC NOTE:***

*The most common air cavity is 50mm (2"). However, in order to reduce air stiffness in the cavity, a higher cavity may be required per the Acoustic Design.*

*Higher air cavities can be achieved by using longer lifting bolts.*

*Any air cavity above 200 mm (8”) should be discussed with CDM Stravitec in order to assess the potential modifications to the specification.*

* + - 1. Isolated floating floor shall be isolated from adjacent structures (e.g. walls, columns and/or curbs) by means of perimeter isolation board material.
			2. Floor penetrations such as piping, conduits and drains shall be isolated from the isolated floating floor by use of adequate isolation materials such as the perimeter isolation board material.
			3. Floor drains to be used on the isolated floating floor shall consist of two-piece isolated drains.
			4. Equipment on top of the isolated floating floor shall be mounted as indicated on drawings and/or acoustical report.
		1. Performance Requirements:
			1. Isolated floating floor system shall have the following minimum acoustic ratings:
				1. STC-61
				2. IIC-62
				3. Testing to be conducted by an independent laboratory.
				4. All testing to be conducted in the last 10-years.

***SPEC NOTE:***

*Item above relative to Acoustical test data references a requirement for “tests conducted within the last 10 years”. It should be noted that this is different from the test report as it is common practise for laboratories to re-issue reports with new test report data.*

***Stravi-dB:***

*CDM Stravitec provides various acoustic tests for different floor setups on* [*www.stravi-dB.com*](http://www.stravi-dB.com)*. In addition to the test reports, editable .csv files with data and typical cross-sections are also available.*



* + - 1. Vibration isolation material to achieve a minimum 3 Hz resonance frequency at the Acoustic Design Load.

***SPEC NOTE:***

*A standard Isolated Floating Floor Isolator of 50 mm (2’’) in height can achieve a 6-10 Hz resonance frequency.*

*Steel springs can achieve lower resonance frequencies – from 3 to 6 Hz.*

*The Stravifloor Jackup-R's most common use is with steel springs.*

*Please contact CDM Stravitec for assistance with the design of special floating floors with low resonance frequency.*

* 1. Materials
		1. Stravifloor Jackup-R Isolated Floating Floor System: which is composed of:
			1. Steel housing box dimensioned to hold isolators and thickness slab.
			2. Adjustment plate, loading plate and lifting bolt designed to withstand the imposed loading.
			3. EPDM bottom plate
			4. Spring Isolator, capable of achieving a resonant frequency of 3-6 Hz [OR] Elastomeric bearing, capable of achieving a resonant frequency of 6-10 Hz

***SPEC NOTE:***

*In the text above no indication is made to the spacing of isolators. In previous specification sections standard maximum distances of 1.6 m (~ 62”) are mentioned.*

*CDM Stravitec does not recommend using this as a base as it may provide an erroneous guidance to the distribution of isolators. Isolators spacing including maximum spacing between isolators should be defined based on loads imposed on the Jackup boxes (including loads during construction).*

* + 1. Bond breaker material: 0.15 mm (6 mil) polyethylene sheeting.
		2. Bond breaker tape at joints and perimeter: waterproof adhesive tape as recommended by Isolated Floating Floor system Manufacturer.
		3. Perimeter Isolation Board: glass fiber performed boards with a minimum 20 mm (3/4”) thick, with an apparent density of 96 kg/m3 (6 lbs/ft3). *[OPTION] Perimeter Isolation Board shall be Formaldehyde-Free.*

***SPEC NOTE:***

*CDM Stravitec recommends one of two potential Perimeter Board:*

*1. Standard Item: Johns Manville Whispertone Wallboard - fine, rotary-process, borosilicate glass fibers bonded with a special thermosetting resin to produce a structurally rigid board-type insulation.*

*2. Formaldehyde-Free Item: Knauf Acoustical Smooth Board with ECOSE® Technology - inorganic glass fibers preformed into boards with ECOSE Technology. W/ UL Environment: GREENGUARD Certified, GREENGUARD Gold Certified, Validated to be Formaldehyde-Free and EUCEB Certified*

*Alternatively, use of a 3/8’’ (10 mm) resilient perimeter isolation strip with a minimum density of 20 lbs/cu-ft (320 kg/m3) in areas where seismic loading is considered is recommended.*

* + 1. [IF REQUIRED] Acoustic Lateral Load Bearing Isolator Pads: In order to isolate the Acoustical Floating Floor from horizontal movements due to large horizontal forces (e.g. seismic loads), Acoustic Lateral Load Bearing Isolator Pads shall be installed at the perimeter of the Acoustical Floating Floor. The Isolator Pad shall be designed to transfer the lateral forces without compromising the resonance frequency of the Acoustical Floating Floor.
		2. [IF REQUIRED] Acoustical Batt Insulation: Mineral wood batt insulation with a minimum 38 mm (1-1/2”) thick, with an apparent density of 40 kg/m3 (2.5 lbs/ft3). [OPTION] Acoustical Batt Insulation shall be Formaldehyde-Free.

***SPEC NOTE:***

*As a reference the thickness of the Acoustical Batt Insulation should be at least 75% of the cavity depth. So, for a 50 mm (2’’) air cavity a 37.5 mm (1-1/2’’) Acoustical Batt Insulation is recommended.*

*CDM Stravitec recommends one of two potential Acoustical Batt Insulation:*

*1. Standard Item: Rockwool Acoustical Fire Batt (AFB) - lightweight, acoustical fire batt stone wool insulation specifically designed for steel stud and wood stud interior wall and floor applications – OR EQUIVALENT. This will depend on supply chain at time of project delivery.*

*2. Formaldehyde-Free Item: Knauf KN Series with ECOSE® Technology - flexible to semi-rigid blankets made from inorganic glass fibers bonded with ECOSE Technology. W/ UL Environment: GREENGUARD Certified, GREENGUARD Gold Certified, Validated to be Formaldehyde-Free and EUCEB Certified*

* + 1. Perimeter Sealant Compound: Non-hardening, drying or bleeding, trowel or pour grade sealant.

***SPEC NOTE:***

*CDM Stravitec recommends the use of Tremco Acoustical Sealant or equivalent.*

* 1. Installation
		1. Setting of Isolated Floating Floor materials shall be performed by or under supervision of isolation manufacturer and/or its representatives.
		2. Install perimeter isolation board around walls, columns, curbs, and vertical penetrations.
		3. Using the installation plans supplied, mark out the location of the center of each box across the whole floor.
		4. [IF REQUIRED] When using an absorption layer in the Isolated Floating Slab System cavity (between floating slab and structural slab) is recommended, provide at the locations where the boxes will be installed over-height to raise the boxes from structural slab (using fibercement board plate or other approved material) with same thickness as absorption layer.
		5. Prior to the placement of isolator assemblies, with bond breaking material and overlap and seal joints.
		6. All isolator assemblies shall be placed on the marks, per floor submittal.
			1. Verify that the EPDM bottom plate, and Jackup-R Boxes are placed at each marked location prior to the concrete pour. Ensure that that there are no gaps under the base flange of the housing which could allow entry of concrete slurry.
			2. Cut the polyethylene sheeting such that it overlaps the Jackup-R Box flanges. Seal the polyethylene sheeting to the Jackup-R Box with tape ensuring that there are no gaps that could allow the entry of concrete to leak through.
		7. Place reinforcing as shown on the drawings and pour floor monolithically.

***SPEC NOTE:***

*The slab should be properly reinforced and cured per structural design, respecting the code minimums specified and SEOR floating floor design.*

*CDM Stravitec recommends a minimum rebar reinforcement as follows:*

*• For the 4” slabs (100 mm): #4@10”, One mesh, cover ½”.*

*• For the 6” slabs (150 mm): #3@10”, Top & Bottom meshes, cover ¾”.*

*• For the 8” slabs (200 mm): #3@10”, Top & Bottom meshes, cover ¾”.*

*With a minimum splicing of 50db i.e., 500 mm (20’’) for the #3s and 600 mm (23-5/8’’) for the #4s.*

* + 1. After concrete has cured to the required strength, remove the stickers and open the top lid by removing the two screws holding it in place. Insert the elastomeric or spring bearings as indicated on the plan. Position the bearings on the bottom plate.
		2. Jack-up the floor as defined in the installation manual from manufacturer and identified in the shop drawings.
		3. Trim the perimeter isolation to the finished floor height. Seal the perimeter with a suitable elastic caulk. The floor is now ready for use.
	1. Field Quality Control
		1. Manufacturer shall have established a Quality Control plan in accordance with Section 01 45 00.
		2. Manufacturer’s field review to be in accordance with Section 01 45 00.
		3. Upon completion, the Manufacturer or its representative is to submit a report attesting to the proper installation of the Acoustically Isolated Floating floor.
	2. Protection
		1. Ensure that sound isolation materials are not disturbed or damaged during placing of formwork or concrete.
		2. Ensure that waterproofing membrane, if any, is not disturbed or damaged during placing of Sound Isolated Floating floor.
		3. The operation of heavy equipment and machinery on the floating floor shall be verified with the manufacturer before use.

END OF SECTION