



May 1, 2008

Margaret Bailey, Ph.D., P.E.  
Rochester Institute of Technology  
Mechanical Engineering Department  
76 Lomb Memorial Drive  
Rochester, NY 14623-5604

**Re: New Compressor Installation – Room 09-2329**

Dear Dr. Bailey:

I have completed a review of the feasibility of placing a new compressor in room 2329 of Building 9. My findings are as follows.

The proposed compressor has plan dimensions of 59 inches by 50 inches and is 80 inches in height. The operating weight of the compressor is approximately 8,000 pounds. The compressor will operate at a frequency of about 8Hz. The compressor will be anchored to the floor at 12 points with anchors and vibration damping mounts (proposed model 6219k91 by McMaster-Carr).

The proposed placement of the new compressor is in room 2329 where it will rest such that it is nearly centered in the room. The floor structure that will support the compressor consists of a 5-inch thick reinforced concrete slab that spans between 22-inch deep by 12-inch wide reinforced concrete beams. The reinforced concrete beams are supported at each end by a reinforced concrete wall below.

Based on the above loading and proposed placement of the compressor, I have found that the existing 5 inch slab cannot support the loads from the new compressor. In order to strengthen the slab to support the compressor, I would recommend placing two new W8x18 steel beams under each side of the compressor as indicated in attached detail SD-1. I have found that the remaining structure is adequate to support the compressor and no additional reinforcement is required.

With regard to serviceability, there were no specific deflection requirements given by the manufacturer. However, I have found that the natural frequency of the floor structure is about 8.5 Hz, which is greater than the operating frequency of the compressor – which is an ideal



## JENSEN ENGINEERING, P.C.

STRUCTURAL ENGINEERING CONSULTANTS

DONALD JENSEN, P.E.  
JOHN BAUMLER, P.E.  
JOE ROSENSTIEL, P.E.  
PATRICIA MCKEE, P.E.  
STEPHEN RUDNICKI, P.E.  
JASON VIGIL, P.E.

situation to avoid annoying vibration related issues in adjacent areas. Furthermore, the use of the vibration damping mounts will further reduce the perceptibility of vibrations by occupants in the area. Based on this, the presence of this new compressor should not pose any vibration related issues.

I also looked at the proposed installation route (attached for reference). The compressor will be brought in through room 09-2340, which is a slab on grade. The compressor will then be moved across the reinforced concrete slab and beam structure, similar to the structure that is under the final position of the compressor. Based on this, I would recommend that load be spread out over an area that is at least 60 square feet to avoid stress concentrations in the 5 inch slab until the compressor reaches it's final placement.

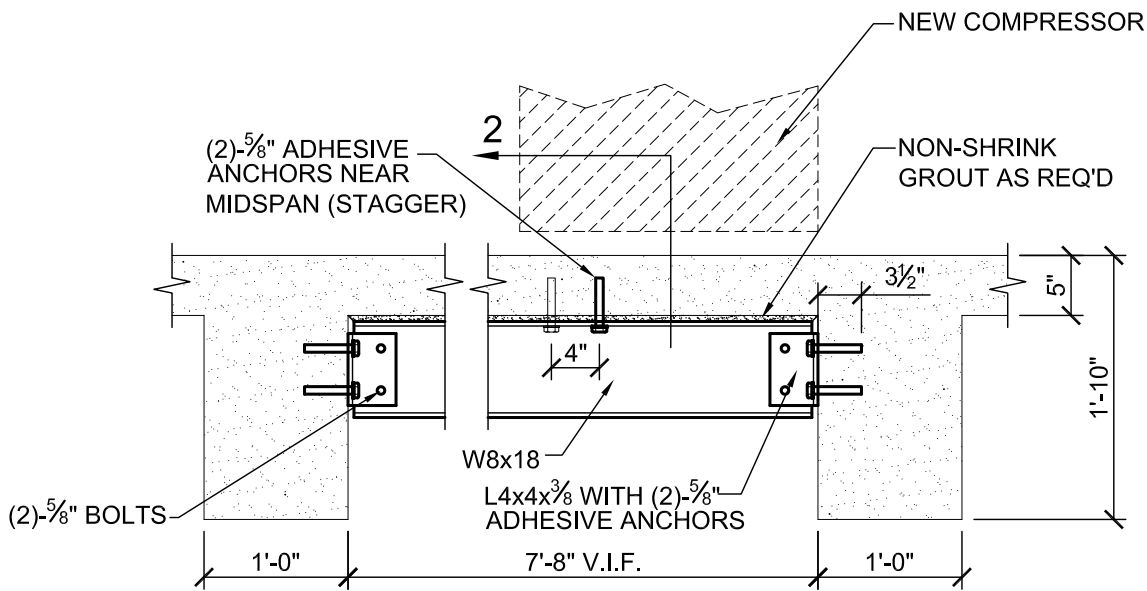
Regarding the attachment of the compressor to the existing structure, the anchors into the existing structure should be placed such that they do not interfere with existing rebar in the concrete slab and beams. A construction testing company could provide assistance in locating the existing rebar.

This concludes my findings. Please call me if you have any questions.

Sincerely,

Jason Vigil, P.E.

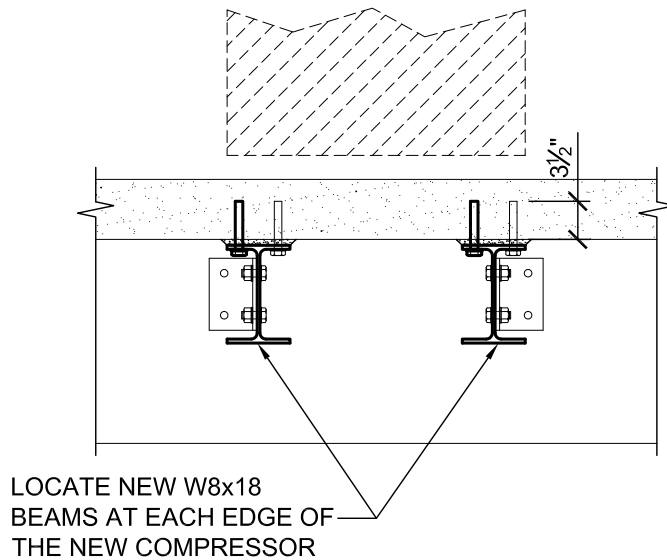




**SECTION 1**

N.T.S.

NOTE: LOCATE ALL ANCHORS AWAY FROM EXISTING REBAR



**SECTION 2**

N.T.S.

Project Name: **New Compressor Installation - RIT Room 09-2329**

Project No.



**JENSEN ENGINEERING, P.C.**  
 Structural Engineering Consultants  
 1653 East Main Street  
 Rochester, New York 14609  
 phone: (585) 482-8130  
 fax: (585) 482-0440  
 www.jenseneng.com

Drawn By:  
JV

4

Checked By:  
JV

3

2

Scale:  
As Noted

1

Date:  
05/01/08

Distribution:

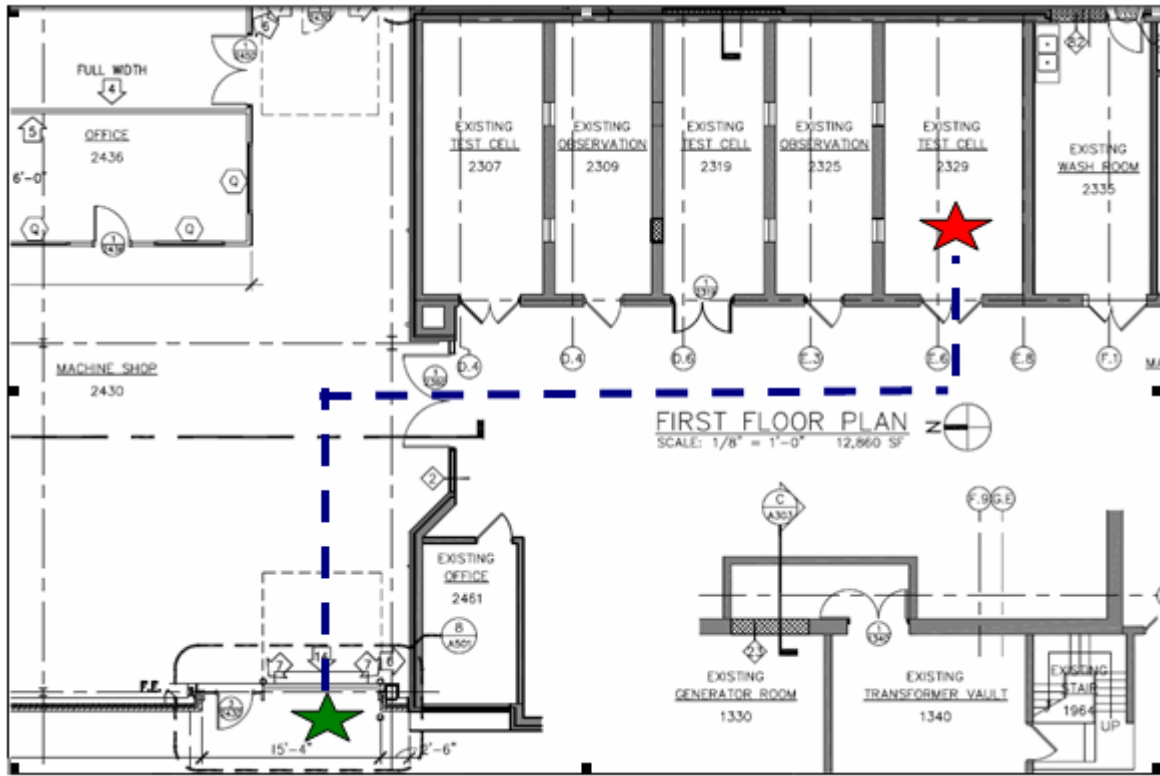
No.	Revisions	By	Date

Sheet No.

**SD-1**

Drawing of Origin:

Transportation Route:



- 45 feet of transportation across floor with basement underneath.
- Loading bay area has foundation and can use fork lift until the entrance to the old machine shop(double door).