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Date: April 17, 2015

ADDENDUM NO. TWO TO THE BIDDING DOCUMENTS FOR:

111 Upgrade MRI Suite
VA Project No. 695-14-145

**VA Medical Center
5000 West National Avenue
Milwaukee, Wisconsin 53295**

for

RE: Mark Wisniewski, Facilities Management

TO ALL BIDDERS OF RECORD:

This addendum shall be a part of the Contract Documents and modifies the original Bidding Documents dated 01/05/2015 as follows. Acknowledge receipt of this addendum in the space provided on the Bid Form. Failure to acknowledge receipt of Addendum may subject Bidder to disqualification.

The following changes regarding the contract specifications and drawings are hereby provided by amendment.

Attachments:

819_Shield Effectiveness Test Report-r0

CHANGES TO PROJECT SPECIFICATIONS: (None)

REFERENCE TO DRAWINGS

Drawing SHEET AD-101:

- 1.1 Demolition Key Notes #9 – Note #9 makes reference to the Shield Effectiveness Test Report, now attached in Addendum No. Two.

END OF ADDENDUM NO. TWO

BANCROFT ARCHITECTS + ENGINEERS

700 Nicholas Blvd., Suite 403
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Document1-BN

PDC Facilities, Inc. - RF Shielding Division				
Shielding Effectiveness Test Report		Project No.	Revision	Issue Date
For:	Clement J Zablocki VA Hospital	819	0	Apr. 03, 2014
Location:	5000 W. National Avenue	Purchase Order		Page
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SHIELDING EFFECTIVENESS TEST REPORT

Customer: VA Hospital

Location: Clement J Zablocki VA Hospital
5000 W. National Avenue
Milwaukee, WI 53295

Test Standard: IEEE STD 299* (Modified for MRI)

Test Report No: 819

Project Number: 819

Vendor: GE

Magnet: 1.5T HDx

Test Report History

Rev.	Issue Date	Affected Page(s)	Description of Modification(s)	Revised By	Approved By
0	April 3, 2014	All	Initial Release		

*Institute of Electrical and Electronics Engineers

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Test Report for Project:

819

From:

PDC Facilities, Inc.

RF Shielding Division

Test Location:

Clement J Zablocki VA Hospital
5000 W. National Avenue
Milwaukee, WI 53295

Customer & Representative

VA Hospital
5000 W. National Ave.
Milwaukee, WI 53295

Written By:

Carpenter, David

Authorized By:

Matt Boesel, RF Manager

Test Personnel - PDC Facilities, Inc.

Jared Ringenberg	PDC Facilities, Inc.

GE FE Witness

Customer Test Witness

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Test Company	PDC Facilities, Inc.
Address	700 Walnut Ridge Drive
City, ST Zip	Hartland, WI 53029
Phone	262-367-7700
Fax	262-367-7744

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1. INTRODUCTION

This report documents the results of a series of radio frequency (RF) measurements collected to test the effectiveness of the customer's shielded enclosure, manufactured and installed by PDC Facilities, Inc.

PDC Facilities, Inc., is an independent shielding manufacturer that provides testing service in accordance with IEEE STD 299 (Modified for MRI).

2. TEST DATE(S)

Initial Test: Thursday, April 03, 2014

3. TEST STANDARD(S)

IEEE STD 299 (Modified for MRI)

4. PURPOSE OF TEST

The purpose of this test is to determine the effectiveness of the shielded enclosure. Testing was performed in accordance with the MR device manufacturer's requirements.

5. TEST SAMPLE

The test sample was MRI scan room at the test location. The scan room is illustrated in section 15 of this report.

6. PENETRATIONS

Control Room Door, Control Room Window and Penetration Panel. HVAC and Plumbing waveguides and Electrical Filters installed. Magnet is ramped and room is fully populated.

7. TEST LOCATION

Clement J Zablocki VA Hospital
5000 W. National Avenue
Milwaukee, WI 53295

8. CUSTOMER AND REPRESENTATIVE

VA Hospital
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9. TEST PERSONNEL

Jared Ringenberg

PDC Facilities, Inc.

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10. TEST PROCEDURE

Testing was performed in compliance with PDC Facilities, Inc., Standard Operating Procedure TST-02-00001: RF Test Procedure. PDC's Quality System was developed to comply with and is audited to ISO 9001:2008.

The enclosure walls, door, windows and penetration panel were tested individually and their respective attenuation values are shown on the Shielding Effectiveness Datasheet (Page 6).

11. TEST RESULTS

The test data detailing the shielding effectiveness of the test sample are shown on the following Final Shielding Effectiveness Datasheet (Page 6). In cases where there is no detectable signal, "NDS" or "≥" precedes the attenuation value, indicating the enclosure attenuation was greater than this value and exceeds the measurement capabilities of the equipment used to perform the tests.

12. CONCLUSION

Testing followed the IEEE STD 299 (Modified for MRI) procedure for evaluating the shielding effectiveness of the MRI enclosure. The MRI device manufacturer, GE, requires a minimum 100 dB shielding effectiveness for the MRI system installed.

The MRI enclosure as tested DOES NOT meet the MRI device manufacturer's shielding effectiveness requirement. Refer to the Shielding Effectiveness Datasheets on the following pages for specific shielding effectiveness data.

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13. INITIAL TEST DATA: Initial Shield Effectiveness Datasheet

Test Date: April 3, 2014

Test Point	Test Frequency (MHz)	Reference (dBuV)	Noise Floor (dBuV)	Test Level (dBuV)	Shielding Effectiveness (dB)	Pass / Fail (P / F)
North Wall	25.4	91	-5	28	63	F
	64.0	117	-5	42	75	F
	100.0	101	-5	29	72	F
	128.0	113	-5	41	72	F
East Wall	25.4	91	-5	14	77	F
	64.0	117	-5	21	96	F
	100.0	101	-5	21	80	F
	128.0	113	-5	26	87	F
South Wall	25.4	91	-5	3	88	F
	64.0	117	-5	22	95	F
	100.0	101	-5	20	81	F
	128.0	113	-5	30	83	F
West Wall	25.4	91	-5	22	69	F
	64.0	117	-5	29	88	F
	100.0	101	-5	27	74	F
	128.0	113	-5	40	73	F
RF Door North Wall West Side	25.4	91	-5	39	52	F
	64.0	117	-5	53	64	F
	100.0	101	-5	37	64	F
	128.0	113	-5	57	56	F
RF Window West Wall	25.4	91	-5	22	69	F
	64.0	117	-5	29	88	F
	100.0	101	-5	27	74	F
	128.0	113	-5	40	73	F
Pen Panel North Wall East Side	25.4	91	-5	13	78	F
	64.0	117	-5	22	95	F
	100.0	101	-5	14	87	F
	128.0	113	-5	33	80	F

Note: NDS or "≥" = No Detectable Signal

Comments:	Leak where Threshold meets Shield at floor and Pen Panel components missing screws
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14. EMI/RFI TEST EQUIPMENT

The absolute performance calibration of equipment requiring calibration is performed on an as needed basis in accordance with MIL-STD 45662. However, calibration periods do not exceed one (1) year. The test equipment is capable of making measurements within tolerances of at least +/- 2 dB amplitude and +/- 2% frequency deviation. Equipment certifications showing traceability to NIST (National Institute of Standards and Technology) are maintained on file at PDC Facilities, Inc., in Hartland, WI.

14.1 TABLE: MRI Test Equipment List

Set: Black

Mfg. / Model	Description	Serial #	Cal Date	Cal Due
R&S FSH3	(100 kHz - 3 GHz) Spectrum Analyzer	104783	07/09/13	07/09/14
Marconi/2022	(10 kHz - 1 GHz) RF Signal Generator	119022/198	04/11/13	04/11/14
ENI/4111LA	(20W), (150 kHz - 300MHz) RF Amplifier	1009	04/16/13	04/16/14
ISC/MRI-T	(25 - 150 MHz) Tunable Dipole	304	Not Required	Not Required
ISC/MRI-R	(25 - 150 MHz) Tunable Dipole	305	Not Required	Not Required

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15. ROOM DIAGRAM

