The Unico System®

ENGINEERING SPECIFICATIONS

ADRIAN

Prepared by Victor Carroll

DISCLAIMER

The attached sizing and layout design is for estimation purposes only. The actual size and performance of the system is the responsibility of the installing contractor and design engineer. Unico will only warrant the equipment capacity as shown in the ARI Unitary Directory under the specified conditions when properly installed using all of the installation instructions provided by Unico.

As such, the ***UNICOSYSTEM***® is a comfort heating and cooling system that has limitations as summarized below. Under certain conditions the system may require the use of special controls.

The following pages summarize the heat gain and heat loss of the building using the ACCA Manual J calculation procedure. The calculations are based on the information given to Unico in the form of drawings, sketches, and interviews. In certain cases, Unico may make assumptions about design conditions that may or may not be accurate for the location of concern. It is the responsibility of the installing contractor to verify the design conditions and to inform the building owner. Unico makes no claim that the information given to us is correct or complete.

LIMITATIONS

Ambient conditions:

- -10 to 110°F for the MB blowers (higher temperatures require a cooling tube)
- 32 to 160°F for water coils with standing water
- -10 to 160°F for all other units

Outdoor Conditions:

- 80 to 110°F for refrigerant cooling systems with air-cooled condensers (use a low ambient head pressure control for lower outdoor temperatures)
- 10 to 50°F for refrigerant heating (heat pump) systems with air-cooled condensers (use the UPC-65 mild weather control kit for higher temperatures)

Return Air Conditions:

- 72 to 95°F for refrigerant systems
- 32 to 120°F for hydronic systems

Water temperatures:

- 35 to 200°F except for the M1218 which is limited to 160°F maximum.

Electric Heaters:

- Refer to installation instructions. Maximum size is limited by airflow, especially for heat pump applications.

Unico warrants that the equipment will operate properly under these conditions. If conditions exceed these limitations, Unico will provide technical advice on the feasibility of adding special controls or modifying the equipment to operate under said conditions. Unless otherwise stated, no express warranty is given for operating the equipment outside of these limitations.

Unico, Inc. is a manufacturer of heating and air conditioning equipment and ductwork. Unico, Inc., is not an architectural or engineering firm and does not provide architectural or engineering plans or diagrams for the public or for use by contractors or construction companies as final "construction documents"

Unico, Inc. works with architectural and engineering firms and with contractors in connection with their designs of heating and air conditioning systems and their specifications for particular applications and buildings, using Unico, Inc.'s equipment and products. Any load calculations, duct design and list of materials and equipment provided in the following pages are based upon information provided by the party referring a particular project to Unico, Inc. (copies of key portions of this material, which provided the basis for the various Design Support information included are attached as part of this package. Any other basic information about this Project used by Unico, Inc. is on file at the Unico, Inc. Customer Service Department under the file number listed).

Unico, Inc. has not and does not independently verify that the data provided to Unico, Inc. is correct or complete, and any calculations made by Unico are based upon the information provided by third parties. Various modifications to the information provided to Unico, Inc. may have occurred after this Design Support information was prepared, which would require that this Design Support information be modified in order to be accurate.

AS A RESULT, UNICO DOES NOT WARRANT THAT THE EQUIPMENT AND MATERIALS SUGGESTED IN THE FOLLOWING PAGES WILL HEAT OR COOL A PARTICULAR BUILDING TO ANY PARTICULAR LEVEL OF COMFORT, SINCE THAT DETERMINATION IS TO BE MADE BY THE ARCHITECT, ENGINEER OR CONTRACTOR FOR A PARTICULAR PROJECT.

UNICO, INC.'S SOLE WARRANTY IS THAT ALL UNICO, INC. EQUIPMENT AND THE UNICO DUCT SYSTEM WILL PERFORM AS RATED, PROVIDED THAT THE INSTALLER OF THE UNICO, INC. EQUIPMENT AND DUCT SYSTEM FOLLOW THE WRITTEN INSTRUCTIONS FOR INSTALLATION PROVIDED BY UNICO, INC. ALL OTHER WARRANTIES ARE EXPRESSLY DISCLAIMED.

If the duct layout is altered onsite due to space and/or layout constraints, the Bill of Materials duct length quantities may not be accurate. The DUCT quantities are estimates ONLY. The attached Duct Layout and Bill of Materials are suggestions ONLY. Alterations may be necessary.

- In bathrooms: do not place outlets above or below the sink, toilet, or shower.
- While placing outlets be aware of how placement may cause draperies and blinds to move. May have to shift outlets to either side of windows.

The Unico System Green Series

Load Short Form
Entire House

Job: 0811-021
Date: Aug 31, 2011
By: Victor Carroll

Project Information

For: Herman Moonian

Design Information

	Htg	Clg
Outside db (°F)	-11	92
Inside db (°F)	70	75
Design TD (°F)	81	17
Daily range	-	M
Inside humidity (%)	30	50
Moisture difference (gr/lb)	31	41

Infiltration

Method	Simplified
Construction quality	Average
Fireplaces	1 (Tight)

HEATING EQUIPMENT

Make		
Trade		
Model		
AHRI ref no.		
Efficiency	80 AFUE	
Heating input	0	Btuh
Heating output	0	Btuh
Temperature rise	0	°F
Actual air flow	510	cfm
Air flow factor	0.019	cfm/Btuh
Static pressure	0	in H2O
Space thermostat		

COOLING EQUIPMENT

Make		
Trade		
Cond		
Coil		
AHRI ref no.		
Efficiency	0 SEER	
Sensible cooling	0	Btuh
Latent cooling	0	Btuh
Total cooling	0	Btuh
Actual air flow	510	cfm
Air flow factor	0.034	cfm/Btuh
Static pressure	0	in H2O
Load sensible heat ratio	0.86	

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Room1	149	4880	2536	93	86
Room2	149	5178	2713	98	92
Room3	35	739	151	14	5
Room4	734	16077	9700	305	328
Room5	18	0	0	0	0
Room6	15	0	0	0	0
Room7	1099	0	0	0	0
Entire House d	2198	26875	15100	510	510
Other equip loads		0	0		
Equip. @ 0.97 RSM			14647		
Latent cooling			2484		
TOTALS	2198	26875	17131	510	510

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

The Unico System Green Series

Project Summary
Entire House

Job: 0811-021
Date: Aug 31, 2011
By: Victor Carroll

Project Information

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Notes:

Design Information

Weather: Toronto Int'l AP, ON, CA

Winter Design Conditions

Outside db	-11	°F
Inside db	70	°F
Design TD	81	°F

Summer Design Conditions

Outside db	92	°F
Inside db	75	°F
Design TD	17	°F
Daily range	M	
Relative humidity	50	%
Moisture difference	41	gr/lb

Heating Summary

Structure	19421	Btuh
Ducts	7454	Btuh
Central vent (0 cfm)	0	Btuh
Humidification	0	Btuh
Piping	0	Btuh
Equipment load	26875	Btuh

Sensible Cooling Equipment Load Sizing

Structure	9911	Btuh
Ducts	5190	Btuh
Central vent (0 cfm)	0	Btuh
Blower	0	Btuh
Use manufacturer's data	n	
Rate/swing multiplier	0.97	
Equipment sensible load	14647	Btuh

Infiltration

Method	Simplified
Construction quality	Average
Fireplaces	1 (Tight)

	Heating	Cooling
Area (ft^2)	1099	1099
Volume (ft^3)	8790	8790
Air changes/hour	0.45	0.23
Equiv. AVF (cfm)	66	34

Latent Cooling Equipment Load Sizing

Structure	1509	Btuh
Ducts	975	Btuh
Central vent (0 cfm)	0	Btuh
Equipment latent load	2484	Btuh
Equipment total load	17131	Btuh
Req. total capacity at 0.70 SHR	1.7	ton

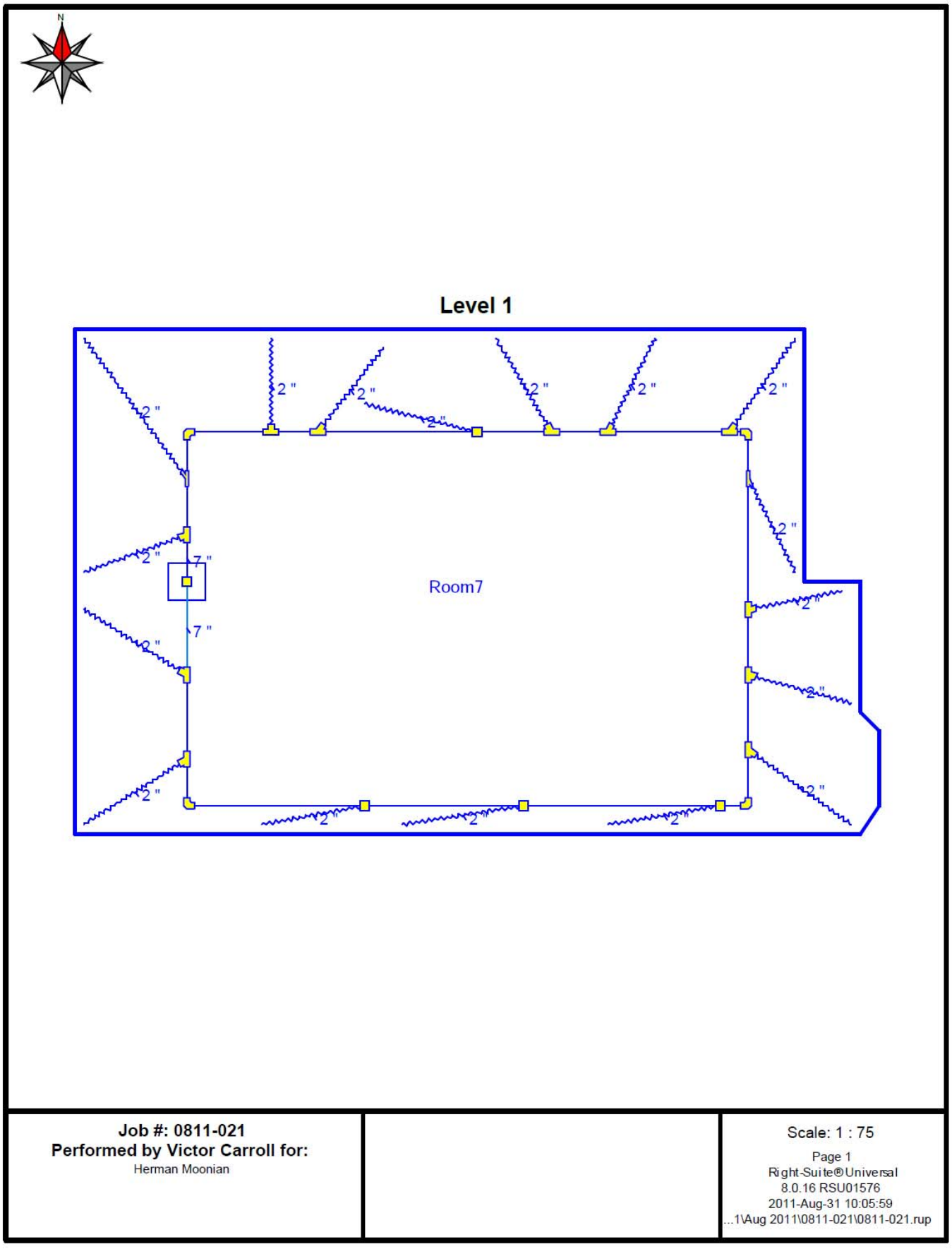
Heating Equipment Summary

Make		
Trade		
Model		
AHRI ref no.		
Efficiency	80	AFUE
Heating input	0	Btuh
Heating output	0	Btuh
Temperature rise	0	°F
Actual air flow	510	cfm
Air flow factor	0.019	cfm/Btuh
Static pressure	0	in H2O
Space thermostat		

Cooling Equipment Summary

Make		
Trade		
Cond		
Coil		
AHRI ref no.		
Efficiency	0	SEER
Sensible cooling	0	Btuh
Latent cooling	0	Btuh
Total cooling	0	Btuh
Actual air flow	510	cfm
Air flow factor	0.034	cfm/Btuh
Static pressure	0	in H2O
Load sensible heat ratio	0.86	

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.



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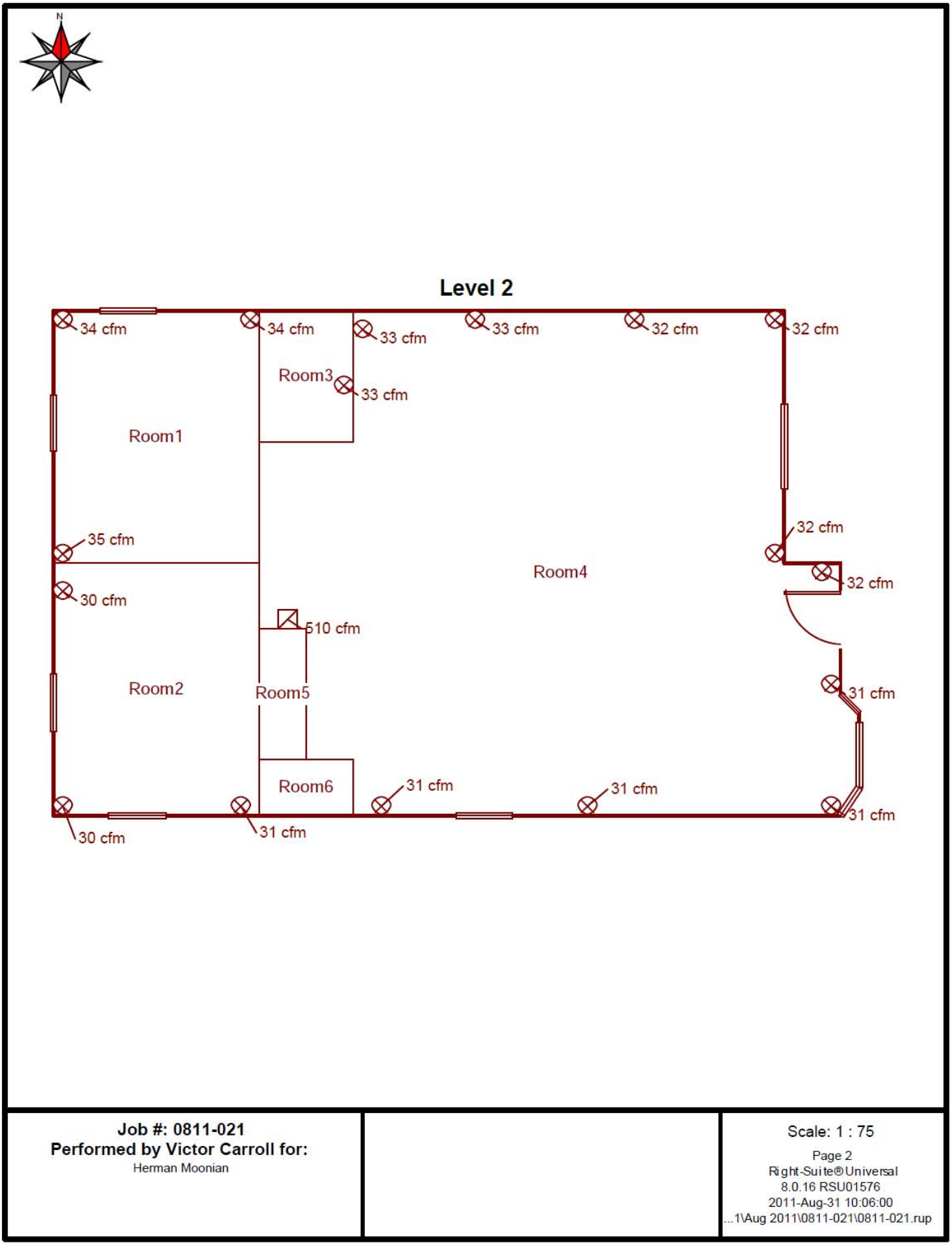

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Scale: 1 : 75

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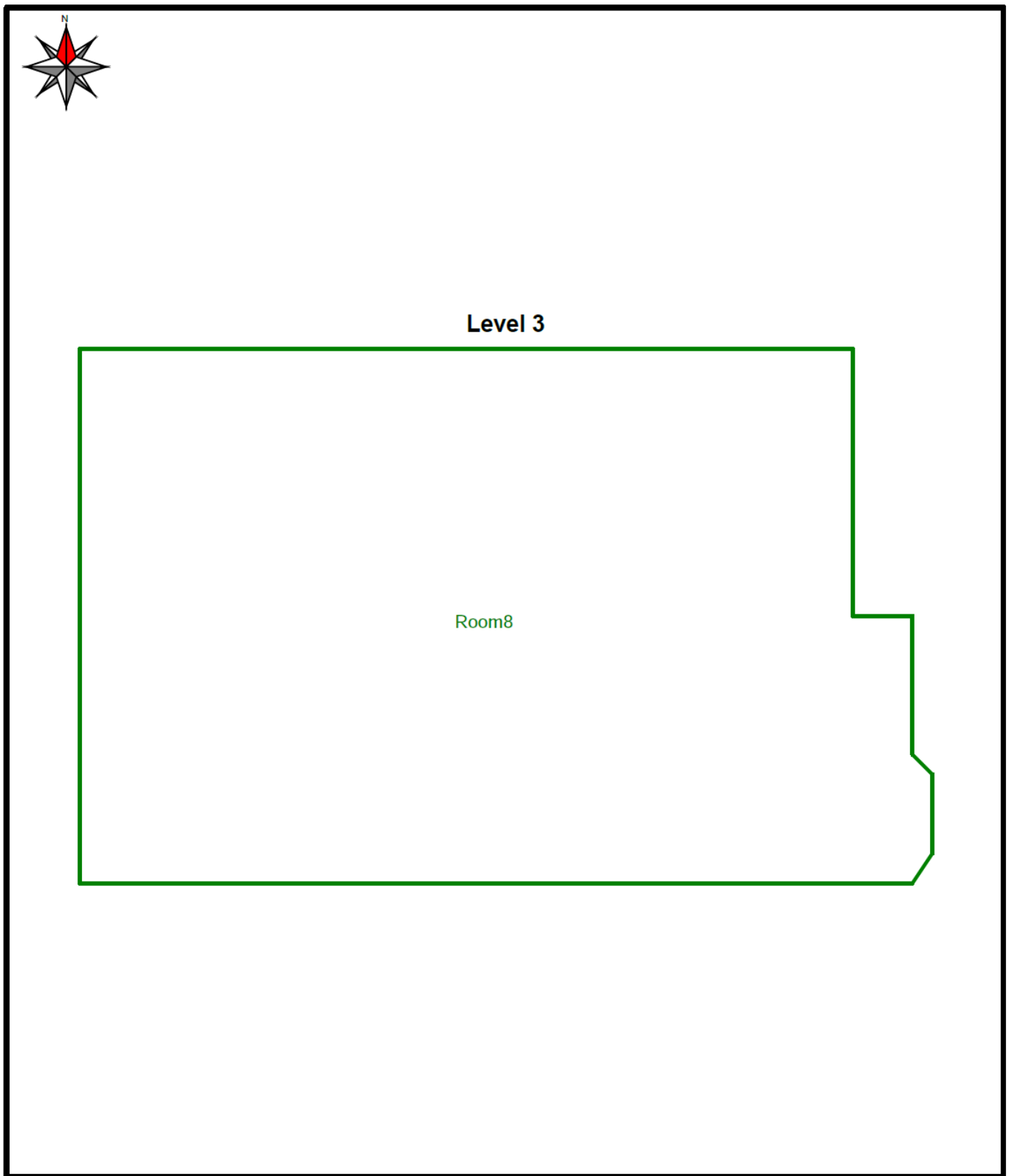

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