

## **2023 Design Competition Frequently Asked Questions**

Q: Are teams allowed to register in more than one category of the competition?

A: Yes

Q: How many students can participate in a team?

A: There is no max for Setty Family Foundation Net Zero Energy Design teams but there is a max of six students per team for the other categories. Project groups should consist of at least two members from an undergraduate engineering or architecture curriculum for the HVAC Design Calculations or HVAC System Selection and at least three members (architecture or construction, mechanical & electrical) for the Setty Family Foundation Net Zero Energy Design competition. Team members can be from multiple colleges. All team members must be enrolled during the semester/term in which they contribute to the design. The Applied Engineering Challenge is for a team of 1 to 6 engineering students.

Q: Are graduate students allowed to participate in the competition?

A: Projects can be submitted by graduate students in the Setty Family Foundation Net Zero Energy Design category only. For the other categories, entries should originate from an undergraduate engineering or architecture curriculum and all team members must be enrolled in an undergraduate program during the semester/term they contribute to the design.

Q: Is a university permitted to register more than one team into the competition as a whole? For example, if I were to be a member of a registered team for one of the three team categories, but I'm also interested in the Applied Engineering Challenge while my other teams members aren't, can I partake in both?

A: Yes

Q: Do the page limits include appendices?

A: No.

Q: Can we change the orientation of the building to see how it would affect our load calculations?

A: For the Design Calculation the building is set in its orientation and will not be judged if the building is rotated. However for your own benefit the team can rotate the building to see how Solar effects the building.

Q: Is it possible to get the actual location of the building? We would like to explore the use of nearby waste heat opportunities to supplement our HVAC system.

A: The building location is Cairo, Egypt and the ground information can be obtained through research.

Q: Are we allowed to add features to the building?

A: For the Design Calculation the building is set in its features and will not be judged if the building has additional features. However for your own benefit the team can add those feature to the building to see how they effects the building loads.

Q: Where can we get the dimensions of the building?

A: Teams can get the full dimensions of the building from the provided CAD drawings.

Q: In the drawings included with the competition information there is no site plan or information about the terrain. Would it be possible to know any information regarding the building site?

A: No site plans will be provided for this competition. For the design calculation part of the competition, the only information they need about the site is the direction the building is facing.

Q: Can we change the layout, i mean the interior layout of design at Setty Family Foundation Net Zero Energy Design?

A: Yes

Q: Do we get the weather data of Cairo, Egypt?

A: Yes ASHRAE provides weather data files for Cairo, Egypt on the Design Competition website. You can also utilize the ASHRAE Climate Data Center and ASHRAE Fundamentals.

Q: Do we get the baseline model to compare our design?

A: The base line is the building you see in the drawings plus ASHRAE 90.1

Q: I would like to use revit for the design calculations competition, however only AutoCAD drawings are posted. Are there revit drawings I can use?

A: No

Q: May we get a table of finishes please?(Table of finishes contains the meaning of the architecture codes in CAD)

A: Teams should make a reasonable assumption of architectural finishes

Q: If there is a table for wall's layers to calculate to loads , please send it Teams should make a reasonable assumption on wall construction.

Q: Can we get a description for each space in the cad? ( space (107) does not have any data about the use of it) Space descriptions are provided in the Owner Project Requirements.

A: Teams should make a reasonable assumption on any further space descriptions needed.

Q: What is meaning of (VG,VC,SG) in CAD drawing?

A: VG – vision glass  
VC – Vision glass - clear  
SG – Spandrel Glass  
SP – Spandrel panel  
IP – Insulated panel  
TS – Steel panel

Q: What is the meaning of:

GWP - painted gypsum / drywall  
ACT - acoustic ceiling tile ie-tbar  
PNT - exposed structure / painted

Q: What is the difference between ACT1050 , ACT1250 , ACT2440 , ACT3600

A: The numbers are the dimension between ACT ceiling and finished floor

Q: What is the difference between GWP1000 , GWP2400 , GWP2750

A: The numbers are the dimension between gypsum ceiling and finished floor

Q: Is it reasonable that the height from the finished floor to the Ceiling According to ACT 1050 is only one meter for example office 119

A: The team shall make a reasonable assumption for the ceiling height.

Q: in Office 122 , There are ACT-2 1050 and GWB 1000 , what is the height then ? and same for all other offices there are ACT and GWB

A: The team shall make a reasonable assumption for the ceiling heights.

Q: Does the roof slab considered to be above the roof level (4420) or beyond it? (if beyond) then we need any information to explain the height difference (48cm) between roof level and EXIT DOOR FROM MECH ROOM on the ROOF (shown in south elevation)

A: The roof level is the top of the structural roof. The design teams should determine other reasonable assumptions related to the building elevations.

Q: Can we use a CRAC unit in Secured data center room or we should use AHU with VAV ?

A: The design teams are to determine the appropriate system for each space.

Q: When i opened ASHRAE Lab Elevation (DWG file), the Autocad program gave me a message that two referenced files were not found (JY\_Seal\_1 % JY\_Seal). How can I get these files? Second, how do I know the materials of the building's interior and exterior walls?

A: Please disregard the referenced files as they are not required. Please refer to previous question on material types abbreviations. Teams shall make a reasonable assumption for all other material types and document them as needed.

Q: What is the difference between the normal hood and the hood with blue exhaust circle and VAC pump beside her.

A: The exhaust adjacent to the vacuum pump represents the necessary exhaust connection to the vacuum pump.

Q: When the size of a "typical smart phone" is specified, is there a specific smart phone in mind? Could we be provided with specific size restrictions?

A: Team should make a reasonable assumption of a typical smart phone.

Q: What specifically are the "indoor conditions", under ASHRAE 62.1 Table C, we need to consider? Are there any contaminants we can remove from consideration, if so which ones?

A: The design teams should make a reasonable assumption of the indoor conditions provided in Table C.

Q: What specifically are "outdoor conditions", under ASHRAE 62.1 Table C, we need to consider?

A: The design teams should make a reasonable assumption of the outdoor conditions provided in Table C.

Q: Is there a more updated version of ASHRAE 62.1 Table C and could we get a link/copy? The 2022 Version of 62.1 doesn't include Table C. We currently use the 2016 version and haven't found any evidence suggesting the table is out-of-date.

A: Please refer to the 2016 version of table C.

Q: My team and I were wondering if teams are allowed to create/design an accompanying structure on the chosen site in order to help the building approach net zero as close as possible. For example, our team is thinking of possibly putting solar trees outside the building to catch sunlight and provide shading over the building. We were also wondering if the mentioned idea was allowed, is there a limit to how many that can be placed surrounding the building? These are not final designs but just future prospects of what could be the building and structures placed on the site around it.

A: Teams can make consideration of net zero approaches. Alternates should still maintain the Owner Project Requirements in the proposed budget.

Q: What dimensions exactly is the building utilizing? We are aware of it using the metric system but when the building simply says "height is 4420, 1250, 3650" we aren't exactly sure what metrics are being used. (We tested centimeters and maybe we have had it the entire time, but we came up with the building being 140ft high which is why our concerns arose from this.)

A: Teams should determine the units system by review of the PDF and DWG files provide.

Q: Are we allowed to remove certain materials given upon the building? We see that the penthouse on the second floor has insulated metal panels and were wondering if we could remove these and instead have a different exterior wall material?

A: Teams are allowed to make architectural material substitutions as long as the over project requirements and project budget are maintained.

Q: I want to ask about if the laboratory of the competition have a Legend identifying various elements, symbols, and names of layers? And if yes ,Can I get this? Also want to know The expected equipment placed in different rooms such as: Biological Lab, Clean and Biological Lab, Infectious.

A: A legend is not available. Teams should make reasonable assumption for layer naming as well as expected equipment in different rooms.

Q: The layer name shortcut (Level3 APR 12\$1\$A-CL\_EQPM) stand for what?

A: Teams shall make a reasonable assumption.

Q: The roof level of the building is 4420mm as shown on the lab elevations layout document that was provided to us. Is this the floor-to-floor height for the whole building (besides the atrium)? Or is it the height of the bottom of the floor slab to the height of a drop ceiling? If the 4420mm is the floor-to-floor height, are we allowed to choose our drop ceiling elevation?

A: For anything not specified explicitly in the OPR or drawings, teams will need to make reasonable assumptions and justify them in the final report.

Q: Are we permitted to run ductwork under the ground floor level of the atrium?

A: Yes

Q: Is the roof of the atrium made of glass?

A: Student teams should utilize the provided drawings/OPR to determine the construction materials.

Q: The OPR outlines that only VAV systems are allowed to ventilate the building. Does this mean we are not allowed to use a dedicated outdoor air system? Student teams should consider the use of the owner preferred system, which is a VAV systems.

A: The student teams are not limited to this systems type as long as the design calculations support the desired approach. Any deviation from the preferred system should be documented by the student teams.

Q: We are confused between which is the drawing floor we should work on, the rooms in Autocad drawing are not explained in the owner's requirements, instead their is an explanation of rooms in the Ashrae Lab A1.5. So our question is which drawing we must use , the Autocad drawing or we should import the Ashrae Lab A1.5 on Autocad and work on it, and if we should work on Autocad drawing from where can we find the details of each room?

A: Teams should work from the provided autocad files (ashrae-lab.dwg). The provided PDF (ASHRAE Lab A1.5) is simple a PDF print of the autocad drawing. The Owner Project Requirements provides additional information that is to be used by the student teams.

Q: What if I change the layout of interior that affects the exterior form so the building area will slightly different from given data because of interior layout change? is that permitted? For example, Let say I move the position one of the room that located in building perimeter to another position so the floor and wall will expanding or shrinking to adapt with the new layout.

A: Your team can change the interior layout of the building in the design at Setty Family Foundation Net Zero Energy Design category. Please remember to justify any changes made in your final report.

Q: Do we need to calculate ductwork costs into their analysis? How about air distribution equipment such as registers and diffusers? Lastly how deep should we go, down to individual sensors including temp, CO2, humidity etc?

A: The design teams along with their faculty/advisors should determine the correct level of depth for the project. The owner's mechanical budget should incorporate a complete mechanical system while the life cycle cost analysis should include the applicable first costs for the systems being compared.

Q: What is the name of the 3D software used for building CAD and floor plans? Could we receive a copy of the source CAD 3D/floor plan file for the building? (.stp,.dwg,.igs, etc.) Are there detailed views available to include with the drawings? Are there dimensions available to include with the drawings? Are we able to manipulate or retrofit the building envelope for thermal insulation?

A: Your team will have to make assumptions for anything that isn't explicitly stated in the OPR, drawings or on the website. We do not share any additional drawing files beyond what is on the website.

Q: What information is available about the fume hoods and lab ventilation requirements that would help in determining supply air requirements?

A: All information is provided on the website and in the OPR. For anything not specified, your team should make an assumption. Please remember to justify any assumptions made on the lab equipment in your final report.

Q: In the space description of the secured data server room is mentioned that the load will be 20 kW and it may increase to 50 kW in the future ? is it right? because it seems to be a little too much

A: Yes, the space description is accurate.

Q: It seems that the documents only show the first floor and atrium of the lab but not the second floor. There are also no mechanical rooms but there is a large mechanical penthouse.

Is there a document for the second floor layout? Are all of the mechanical components meant to fit in that penthouse?

A: A layout of the second floor mechanical room is not available. The anticipated size of the room can be reasonable inferred from the architectural elevations. The teams are to determine the location of the mechanical equipment and components which would include which equipment is meant to go in the penthouse.