

2021 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 ISBD 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 ISBD 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 Integrated Sustainable Building 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 Prince George, Canada 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 ISBD?

A: Yes

Q: Do we get the weather data of Prince George, Canada?

A: Yes ASHRAE provides weather data files for Prince George 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: Why is the lowest level put at 89'? Is there a below-ground portion of the building? Where is ground level?

A: Elevation views including ground level are provided as part of the competition drawings provided on the website.

Q: The project document says the building is meant to operate from 0700 to 2000, 7 days a week. Are these the complete operating hours or can we expect that the management and or custodial service will be operating outside of these hours? The document also mentions the peak occupancy is set to 720 people. Is there any particular time(s) we should expect the peak – should we assume breakfast 0700-0900, lunch 1200-1400 and dinner 1700-1900 should be at the peak? Can we expect the same peak occupancy on the weekends?

A: Yes, these are the complete operating hours for the building. For all assumptions you should provide rationale to support your design decisions. Weekends are part of the defined operating hours.

Q: In order to meet the expected target of 3000 people served each day, there must be a certain amount of food stored onsite at the beginning of the day. How much food do we expect to be onsite, or will it change throughout the week? (I.e. do we receive regular shipments every day or are some of the cooling facilities left mostly empty on some days and mostly full on other days?)

A: Please feel free to make your own assumptions, however make sure they are consistent and that you provide proper reasoning in the analysis section to support your design.

Q: “There are no temperature or relative humidity setbacks during unoccupied operation for spaces where materials are stored, but there are for other areas” means we have to consider these spaces to be ‘always on’ while others are only in use during the operating hours?

A: Correct

Q: Do we need to include a financial analysis pertaining to the building/HVAC systems including rate of return and pay-back period (etc.) as well?

A: It depends on which competition you are applying for. The ISBD competition requires one. However, you may find doing said analysis will help you in your final system selection. It depends on the criteria you have set to select your final system.

Q: With regards to the construction details, there are also some general comments made with regards to the type of windows (double glazed, fixed, etc), are we meant to make reasonable assumptions based on these details as to the envelope performance values associated with these components, or are there specific values we should be using? Similarly, will we be provided with the Thermal Bridging loss values or can we estimate those as well?

A: Correct, you can make reasonable assumptions provided that you explain them in the analysis section.

Q: The project document mentions 400V/3 phase/50 Hz power is available on site. Can you confirm this because this seems to be outside of the regular Canadian standard power supplies?

A: This is a typo, please use 575V-600V/3phase/60Hz.

Q: Concerning the Standards referenced in the project documents. My team has been unable to find a way to access these documents, is it possible that we can be given temporary access to the standards and Handbook mentioned in the project documents?

A: We don't make any of our publications available to teams for free but if you are an ASHRAE student member you get a significant discount on the Fundamental book (\$54 instead of \$230). We also have online read-only versions of our popular standards available [here](#).

Q: It is of note that the building location is in BC where the local authorities are following different standards than are listed in the project document. For example, rather than ASHRAE standards 15 and 34, Canada references code CSA B52. On the same note, can you provide the specific version of the standards we are expected to use, or are we just expecting to use the latest version of all standards?

A: It is always recommended to use the latest version available.

Q: Is there any recommended information regarding projected future weather pattern data which could perhaps impact the usefulness of the design in 20 or 30 years?

A: We strongly encourage students to look into current events and publications about future weather patterns, as it will give realistic design conceptions. However, make sure that the information is from a valid source and that explanations are provided in your analysis.

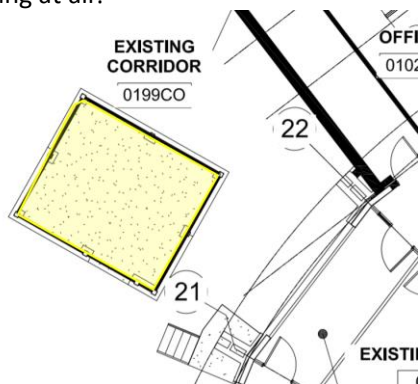
Q: How many people can we expect to be in the office spaces and restrooms during peak hours when occupied?

A: This answer can be found in multiple ASHRAE Handbooks and Standards. You can also make your own assumptions provided they are reasonable and that you have explained them in your project.

Q: The project requires a VAV system be selected as the HVAC system. Is it allowed to implement a DOAS unit, or does the system have to be a conventional VAV?

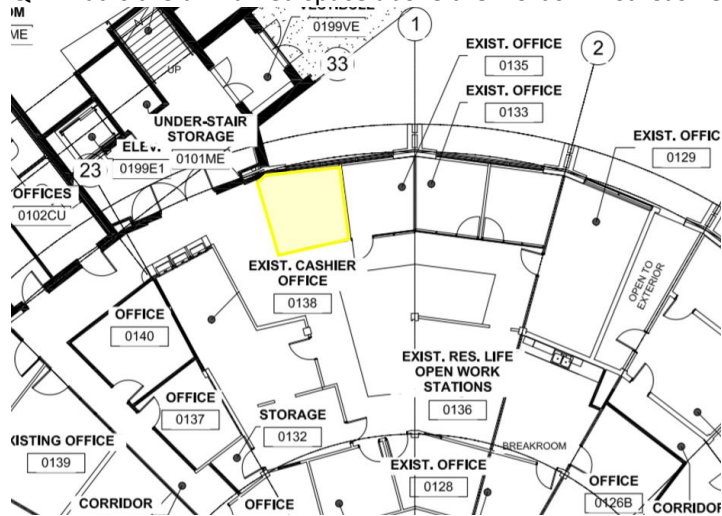
A: Your design can implement any type of technology as long as you provide support in your analysis.

Q: Regarding the lower floor plans what is the unmarked square near the circled "21". Is it attached to the building at all?



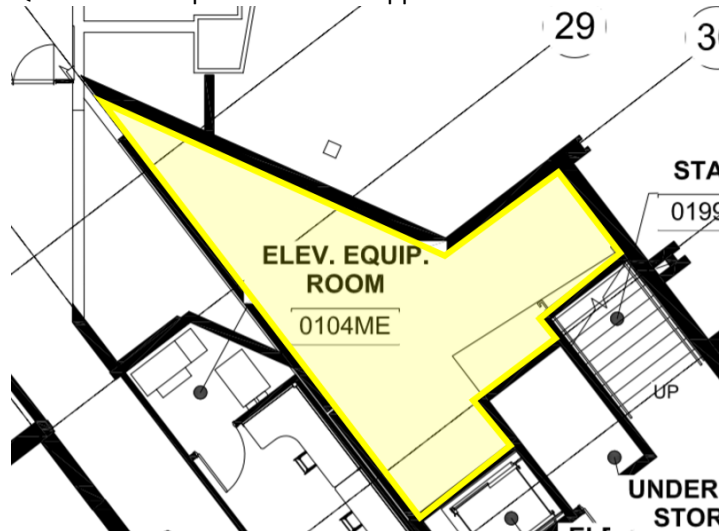
A: Concrete slab located outside

Q: What is the unmarked space above the words "Exist. Cashier Office"?



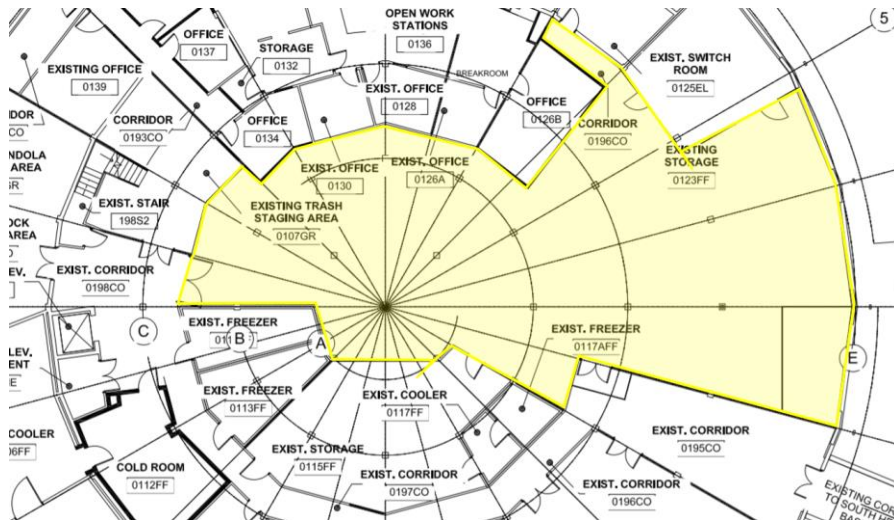
A: It is part of the "Exist. Res. Life Open Work Stations". The line was an extension of the previously marked "circled 24" – it is supposed to be erased.

Q: What is the space above the upper stairs near the circled "30", is it just a corridor?



A: Entrance hallway from an adjacent building. You could treat it as an exterior entrance if you would like. So yes, a corridor is appropriate.

Q: What is the space at the center of the floor plan?



A: It is open space

Q: It appears to be labelled as "Existing Storage [0123FF]", or is the label referring to the room just above the label?

A: Existing Storage "0123FF" is for the room above the label.

Q: Regarding the "Gondola Staging Area", you've mentioned that it's for "Staging Gondolas". Please describe what a Gondola is and what is its purpose, how many Gondolas may be staged at a time, and how long they will be staged for. Please also include any other information that will be relevant to the project.

A: There is many types of gondolas possible: gondolas shelves, gondolas island, gondolas refrigerated island, gondolas shelving cooler equipment, ect. Please feel free to make your assumptions but make sure they are consistent and that you explain the reasoning in the analysis section.

Q: Please describe the purpose of the area marked "Exist. Res. Life Open Office", including expected room occupancy pattern, any additional equipment/devices, and if the lines on the floor map are walls, or partial walls. Please include any additional information that may be relevant to the project.

A: Feel free to make your own assumptions. For all assumptions you should provide rationale to support your design decisions.

Q: Please confirm what direction is North. Is the radial line marked (1) set at true north?

A: Please revised the Building Assumptions section for the answer.

Q: Please confirm the thickness of the bronze tint on the windows. Please also confirm the value of "low" emissivity.

A: Feel free to make your own assumptions. For all assumptions you should provide rationale to support your design decisions.

Q: Please confirm the upper and lower bounds of the stairwell. In particular does it access the main floor, and the mechanical penthouse, or just the lower floor and the attached corridor. Please also mention if there stair well is there is a doorway between the corridor and the stairwell, or if air is free to move between them

A: The stairway only connects the lower floor and the attached corridor. There is no doorway between the corridor and the stairwell.

Q: What is the thickness of the concrete floor? Is the floor thickness uniform for the main floor and lower

floor? Is the floor of the mechanical penthouse also from concrete? What is the thickness/material of the ceiling/roof? Is it uniform around the building?

A: All floors are poured concrete. The lower level is slab on grade and all other levels are concrete poured on metal decking. Material thickness meet ASHRAE Standard 90.1 thermal resistance values and are uniform around the building.

Q: The elevation documents mention the exterior walls are faced with Fiber Cement Panel. What is the interior construction of the portion of these walls? Please be specific including material and dimensions. The project documents also mention the exterior walls are made of "masonry mass construction", but the CAD files show the walls are constructed with more than one material. What are the details of the exterior wall construction? Additionally, if the U-Factor for both the portion of wall with the cement paneling or the masonry mass construction is known, this information would also be appreciated.

A: The OPR document supersedes any callouts mentioned on the drawing files. Assemblies meet ASHRAE Standard 90.1 thermal resistance values.

Q: Is there an available list of electric and gas equipment of the building? or we do a supposition with provided competition Drawings

A: Feel free to make your own assumptions. For all assumptions you should provide rationale to support your design decisions.

Q: Just want to verify - for the ISBD competition, is it required that the building is designed in British Columbia? The following excerpt is from the competition brief I downloaded from the website: "ASHRAE student teams must locate the building in Prince George, British Columbia, Canada."

A: Yes, the building needs to be located in Prince George, British Columbia, Canada.

Q: Hi, as there are no sections provided with the building, shall we make assumptions on ceiling/floor voids?

A: Yes

Q: in ISBD competition, do team member have to make HVAC design calculation to start design an Net-Zero energy building? or we can assume the loads?

A: A Single line electrical design is not required as part of the submission. If you have done this and wish to include it with your submission it would be above and beyond the minimum requirements.

Q: Regarding the ISBD competition, are we asked to make Electrical distribution design? or we just need them for the renewable energy sources.

A: The judging criteria will be centered on ASHRAE Standard 189.1; thus, areas of judging shall include Site Sustainability, Water Use Efficiency, Energy Efficiency, Indoor Environmental Quality, the Building's Impact on Atmosphere-Materials-Resources, and Construction and Plans for Operation. ASHRAE student teams must locate the building in Prince George, British Columbia, Canada.

Q: Could you please provide a list of kitchen equipment for this project?

A: Feel free to make your own assumptions. For all assumptions you should provide rationale to support your design decisions.

Q: Can Room and Spaces declared 'existing' be modified in our design proposal? Is there a study for these 'existing' areas?

A: Feel free to make your own assumptions. For all assumptions you should provide rationale to support your design decisions.

Q: The elements that are stated on the facades to be preserved (to remain) are obligatory to remain the same in our proposal?

A: Correct

Q: Are there specific specifications for the temperatures that food storage and freezing areas should have?

A: Please review the Design requirements section for the answer: it can be found in ASHRAE Handbooks.

Q: Is there any data on the amount of food stored in the storage areas, cold rooms and freezers and about the frequency of provisioning of the restaurant?

A: Feel free to make your own assumptions. For all assumptions you should provide rationale to support your design decisions.

Q: What is the difference between COLD ROOM and COOLER? (why are the thickness and type of insulation in the floor plans different?)

A: Cold room is usually set warmer than a cooler would be. However, feel free to make your own assumptions. For all assumptions you should provide rationale to support your design decisions.

Q: The occupancy of the offices in the lower floor must be assumed or can you provide the amount of people who work there?

A: Feel free to make your own assumptions. For all assumptions you should provide rationale to support your design decisions.

Q: Some of the windows on the Main and Lower floor on the Elevation drawings have angled lines on the lower section of the window. What do these angled lines represent?

A: It usually represent Awning Windows. However, the OPR document supersedes any callouts mentioned on the drawing files.

Q: Under Building Assumptions it mentions the windows are fixed. However, the elevation diagrams specifically mention the windows in the clerestory are operable. Which of these should we follow.

A: The OPR document supersedes any callouts mentioned on the drawing files.

Q: After evaluating the plans given, we have not found a ceiling height or plenum depth. Is this an assumption that we need to make based on standards or should we assume there is no plenum?

A: Feel free to make your own assumptions. For all assumptions you should provide rationale to support your design decisions.

Q: We are going to model the building on Revit but need the finished floor levels to know the volume of the areas. Can you provide us this information?

A: Please review the Introduction section for the answer. If it is still unclear, please feel free to make your own assumptions. For all assumptions you should provide rationale to support your design decisions.

Q: It appears from the description that only the main level is being built/remodeled, and that everything in the lower level is already existing. Do we need to consider the load calculations and ventilation for the lower level too? Or just the main level?

A: All levels are affected, please review the OPR.

Q: According to the Owner's Requirements, the budget is given as 350 USD?ft². Does the budget include the life cycle of the building (50 years)?

A: Typically, the owner's mechanical budget is for the initial cost.

Q: Are we allowed to use 50 Hz for the electrical power although it is specified as 60 Hz in the Utility and Service Life Overview? This is because our region is South East Asia and we are using 50 Hz for the electrical power. It would be easier for us to work with 50 Hz electrical power as the spec of HVAC components available in our industry are rated at 50 Hz.

A: The building is located in Prince George, British Columbia, Canada. It is expected to follow that region's frequency.

Q: I wondered if competition teams have to consider the Northeast entry and North entry in our load calculations? I ask this because we are given minimal AutoCAD elevation drawings for these sections of the building, and the Plan drawings exclude some of these entries.

A: Please review drawings "North Entry - North, East, West Elevations", as well as "Lower level Floor Plan".

Q: How to know the Areas(sq.ft.), of the provided lower and main level of the building, since there are no dimensions provided in the available CAD File?

A: The CAD files are usually to scale. If not, a typical door is usually 3 feet.

Q: Also, what are the guidelines that must be followed to calculate the product load of the various Zones of the Cafeteria?

A: Codes and Standards are listed in the OPR. All ASHRAE Handbooks might be useful as well.

Q: Can you describe the specifications of the various lighting equipments used to calculate the Internal Lighting Loads?

A: Feel free to make your own assumptions. For all assumptions you should provide rationale to support your design decisions.

Q: For the Design competition are we supposed to calculate the heat load for entire lower level (including the office space) and the Main Level (Cafeteria) or only the Cold Storage at the lower Level and the Cafeteria in the Main Level

A: The scope of the project is to create a new two-storey building of about 50,000 square foot. The whole building must be considered. Please disregard any discrepancies between the drawings and the OPR. The OPR document supersedes any callouts mentioned on the drawing files.