ASC Regions 6 & 7 Student Competition

Virtual Design and Construction (VDC) Pre-Problem Statement

WEBCOR

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VDC

Virtual Design and Construction (VDC) is the integration of Building Information Modeling (BIM) to a project. While 3D BIM files are useful for visualizing how the project looks and fits into the surrounding environment, they are also becoming an integral part of the entire construction management process. VDC is a methodology that allows project teams to incorporate processes using these "smart" models at the core of every project. These models are integrated to a shared database that will allow users to visually see the relationships and impacts between resources, costs, and time. Webcor continuously innovates and implements these processes to help improve the efficiency, quality, and transparency of construction management. These processes encompass elements using 2D, 3D, 4D, 5D and 6D, including constructability reviews, shop drawing creation, clash detection and coordination, cost estimating, scheduling, and life cycle or facilities management; and can also include many facets of quality control throughout the construction process. The ASC Student Competition VDC Challenge is intended to provide an opportunity for student teams to demonstrate their understanding of the VDC approach to integrated construction project management through digital means as well as expand it.

Areas of Competition

Student teams will be evaluated on their demonstrated understanding of VDC in these main areas: Logistics and Coordination (2D & 3D), Scheduling & Production Control (4D), Estimating (5D), and Communication (written, verbal and presentation) of virtual information and data. Project integration techniques will be utilized, and teams should be flexible, open-minded, and have the ability to quickly react to impromptu changes.

The following sections outline the types of exercises which will be utilized in the competition problem set, however all exercises may not necessarily be used. It is suggested you develop a basic understanding of each of the exercise types in preparation for the problem.

Communication

- Use graphic and written electronic communication to communicate questions and solutions to judges.
- Clearly communicate the team's approach and understanding of the problem during a team presentation
- Presentation skills: The presentation portion of the competition should not be thought of as a 'Role Playing' scenario but should instead be thought of as an executive level review on how you approached the problem and effectively developed solutions using the tools available to you. Judges are not necessarily interested in the 'picks and clicks' and software 'how to's' you used to get to your answer, but more so will be looking for insight into how you organized your team and tools to work efficiently, how you addressed issues that arose during development of problem solutions, and how you strategically and innovatively used the combination of software tools to help solve competition day problems.

Logistics & Planning (3D)

The goal of these exercises is to demonstrate the ability to read construction documents, evaluate site conditions, and use construction knowledge to plan the job to generate easily understood documents that communicate your proposed approach to site utilization and jobsite planning.

- Identify key project milestones based on the project schedule that require specific planning
- Interpret 2D drawings along with 3D models to better understand the site conditions

- Create 3D logistics and construction sequence graphics at each project milestone to clearly demonstrate construction logistics for a project
- Create 3D animations to communicate changes in project planning, schedule, and accessibility.
- Determine placement and location of equipment and construction aids (cranes, man-lifts, placing booms, trailers, toilets, fences, flagmen and other)
    - Providing and downloading site element's level of photo-realism will not be criteria for judging, but rather the logical use and placement of such items within the logistics model
    - There is no requirement to purchase site element/equipment models
- Identify site restrictions and recommend solutions before starting construction
- Strategize at a high level and develop big picture ideas for how overall project will be executed
- Utilize 3D model data in field layout applications such as Autodesk Point Layout

Design and Trade Coordination (3D)

The goal of these exercises is to demonstrate the ability to identify clashes between various building systems, attempt to find possible solutions, and document your work. Exercises may include things like:

- Utilizing designers' and subcontractors' models with a coordination platform
    - Webcor will provide access to Autodesk Forma (formerly known as Autodesk Construction Cloud (ACC)) and the Model Coordination module
- Determining the Project Base Point and its coordinates system.
- Run clash detection to identify major clashes and propose solutions
- Eliminating the clashes by modifying building system's geometry in native model(s)
- Generating coordination log to demonstrate identified clashes and status of clash.

Model Based Scheduling (4D)

The goal of the exercise is to explore the logistical aspect of how a building can be broken down into manageable zones and how it can impact the schedule. Exercises may include things like:

- Use provided schedules to evaluate requested changes in scope for time, cost, and logistical impacts.
- Synchronizing proposed or modified schedules with the models to create visual representations of the construction schedule(s)
- Use 3D models to evaluate safety concerns
- Identify schedule impacts and mitigation opportunities with a focus on maintaining crew flows and minimizing risk

Model-Based Estimating (5D)

The goal of these exercises is to become familiar with utilizing models for design review and estimating, as well as generating a complete cost estimate. Exercises may include things like:

- Using designer models to perform design review and analysis. Provide visual examples and evaluate alternative cost saving solutions
- Organize designer's models in such a way that it provides accurate data for estimating
- Extract take-off quantities from a model and arrange in an organized structure to inform the estimate
- Utilize the cost database provided by Webcor. A detailed cost assembly and high level Gross Square Footage (GSF) cost will be provided if required by problem.
- Develop a project estimate by quantifying specified scope for building systems extracted from the model and applying unit rates
- Generate summary level cost reports for a project based on location breakdown

Software

Software competency is vital to succeed in the VDC competition. We have listed software recommendations (all free for students) below and provided a few software recommendations for completing problems. Although we have listed commonly used software below, the team is free to utilize any software that achieves the problem objectives whether it is listed below or not. Please note that models will be distributed in Revit or AutoCAD.

Required Software:

Autodesk provides free software licensing for students. To gain access to their education platforms, please visit their website: http://www.autodesk.com/education/home

- Autodesk Revit
- Autodesk Revit Point Layout Plugin
- Autodesk AutoCAD
- Navisworks
- Autodesk Forma (formerly known as Autodesk Construction Cloud (ACC))
- 4D/5D Software (Synchro, Assemble, etc.)

Additional Software (Not required, but may be useful):

- Scheduling Software
- Excel
- Smartsheets
- PowerPoint
- VR software
- Sketchup for Web (Free Version)

Core Skills for the software programs:

- Visual Communication
- Modeling: organization, accuracy, speed
- Quality Control/Quality Assurance
- Quantity take-offs
- Logistics detailing
- Clash Detection
- Field use of Model Data (APL)
- Model-based estimates
- Model-based and location-based schedule

File Sharing and Team Communication

Communication and collaboration methods will affect a team's overall performance and will be considered in judging. Contemplate the methods in which the team will share files, model, and work on a single project simultaneously.

Internet access will be provided but low speeds and low consistency should be considered. Consider alternative means such as wireless tethering devices and setting up local networks between personal computers.

Pre-Event Deliverables

While they will not be graded or impact your competition score, we will be requesting a handful of pre-event deliverables as a method for verifying that your teams have a basic understanding of, and access to, the tools that will help make you as successful as possible during the competition. The two requested pre-event deliverables are listed below. Please make sure you have uploaded both of these items and emailed ASC2027@webcor.com a confirmation of the upload by **Friday December 4th, 2026.**

Deliverable #1 – Autodesk Forma (formerly known as ACC) Access

Different from previous years, we will be handling access to our coordination software via an online form. Webcor will send a link to a survey at a later date to collect information needed to provide access.

Deliverable #2 - Student Resume Packet

Each team will submit a resume packet in the form of a PDF document before **noon on January 8th, 2027**. A template of the Cover Sheet is on Box.com via the "Resume Packet Download" link below. After completing this cover sheet and attaching the individual resumes, upload to the link below with a confirmation email of the upload sent to (ASC2027@webcor.com). All sheets should be size 8 ½"x11" and follow the naming convention noted in the upload link. ***This will be considered the first deliverable of the competition and judged for conformance with the requirements specified below.***

Resume Packet Download: https://webcor.box.com/s/hgfqv616j0styutpe3lz4l68tgbstrei
Student Resume Packet Upload: https://webcor.app.box.com/f/b90fd322591444899000f32bd7924e54

Cover Sheet Requirements:

- School Name
- Name of Team Captain and Email Address
- Name of Faculty Advisor
- Six (6) headshots with student information: one of each competing student
  - Student name
  - Role on team (modeling, estimating, or scheduling)
    - Primary role
    - Secondary role (if applicable)
    - School email address of each team member
- Expected graduation date
- Individual resumes in same order as presented on cover sheet

Previous Problem Statements

Previous year's challenge will be made available by Webcor and can be accessed by any team wishing to compete. These files will be available via this link: https://webcor.box.com/s/grzqf9qjzr2daz9vwdxgi09tfdvvncbp

Please contact the Webcor ASC Team (ASC2027@webcor.com) if you encounter any issues accessing files from the Box.com links.

Event Time Line

PROBLEM STATEMENT DAY – THURSDAY, FEBRUARY 4TH (7A – 10P)

- Problem Kick Off **(6:30A – 7:00A)**
  - To be held in Redwood 6.
  - Target Audience: Competitors, faculty, alternates, and Webcor team.
  - Topics will include:
    - Problem Solution Requirements and Rules
    - Problem Set up, Timeline, and Break Down of Deliverables
    - Problem Presentation Expectations
    - Problem Scoring Details
    - Ice Breaker Event
    - Handing out of Problem Statement or first portion of Problem Statement
- Problem Administration **(7:00A – 10:00P)**

PRESENTATION DAY – FRIDAY, FEBRUARY 5TH

- Presentation Order Announcement **(6:30A)**
- All presentations to be collected via flash drive at 6:30A, ahead of announcement of presentation order. Students will use this flash drive at time of presentation, no new presentations will be allowed.
- Problem Recap will be held in Redwood 6 after the completion of the last student presentation. All schools, faculty, etc. that wish to attend the problem recap are welcome.

See you in at the Nugget in February!