NAHB Student Competition
Held in conjunction with the 2027 NAHB International Builders' Show
Problem Description Secondary Programs

Welcome to the 2027 NAHB Student Competition. Developed by the NAHB Student Chapters Advisory Board, the NAHB Student Competition is the highlight of the International Builders' Show (IBS) for student members. This year's problem will make for an exciting and challenging 2027 NAHB Student Competition.

The 2027 competition allows teams from Secondary Programs to compete in one of two tracks: Architecture or Construction Management. The Architecture track will develop a working set of drawings. The Construction Management track will not require a set of working drawings but will place greater emphasis on the estimating and scheduling and drawing construction details.

The information that you will use to develop your project and presentation is listed below and can be accessed through the NAHB Student Chapters web page Secondary Problem. The Rules and Guidelines document includes the sample grading summary that the judges will use to score your project and presentation. *Please read all documents thoroughly.* If you have problems viewing any of the provided items, **please contact StudentChapters@nahb.org:**

- Rules and Guidelines
- Problem Description (included in this document)
- Plans: Floor Plans, Elevations, and Plat Plan
- Higharc Model
- Description of Materials (Included Features)
- Estimate Template
- Sponsor website

Read and follow the instructions carefully and fulfill all the required elements of the exercise. Going beyond the required elements of the exercise, while it may show initiative, may hurt the overall team score if the basic exercise is not executed well.

- **Problem**

The project is located in Oconomowoc, Wisconsin. Your team is part of **Tim O'Brien Homes' internal design, preconstruction, and construction management group** and has been assigned responsibility for planning the construction of the **Lavender Farmhouse Elevation** on a pre-graded lot in Oconomowoc, Wisconsin.

Your team will present its work to **Tim O'Brien Homes' senior management team** for review and approval. The proposal should demonstrate that your team understands the project, can accurately develop the required drawings and details, estimate the work, and plan the construction process.

As part of the proposal, all teams must prepare a detailed materials and labor cost estimate and develop a complete construction schedule for the provided single-story floor plan.

Architecture Track

Teams on the Architecture track must recreate a complete set of working drawings for the **Lavender Farmhouse** , prepare a detailed materials and labor cost estimate, and develop a complete construction schedule.

Construction Management Track

Teams on the Construction Management track must recreate the construction details specified below, prepare a detailed materials and labor cost estimate, and develop a complete construction schedule.

All submitted drawings, details, estimates, and project materials must be created by the team. **Copying and pasting provided drawings or details is not permitted.**

- **Design Criteria**

The plan must allow for all items in the Description of Materials for the Oconomowoc, Wisconsin home. Easements and setbacks are shown on the site survey plan.

- **Problem Location**

The project address is 1756 Switchgrass Street, Oconomowoc, Wisconsin 53066. The lot is graded, and the improvements are complete (streets, curb and gutter, and utilities to the lot).

- **Applicable Building Codes**

The plans shall be recreated to meet applicable building codes for Oconomowoc, Wisconsin home.

- **Specifications and Finish Schedules** (See Specifications provided)

- **Deliverables**

    - **Drawings**
        - Architecture Track

          Each team must **recreate** a complete set of working drawings which are sufficient to allow a building permit to be obtained. **Your team should not change the shape of the home or the size and layout of rooms. Points will be deducted if these are altered.** Copying and pasting is not allowed.

          Working drawings shall include the following:

          - Cover Sheet

- Site Plan showing location of the home and utilities
- Foundation Plan(s) and Details
- Floor Plan(s) and Framing Details
- Elevations
- Area calculations for heated and non-heated floor space under roof
- Roof Plan and Details
- Building Sections (as required)
- Drawings for Electrical, Plumbing and HVAC are **not** required.

Drawings shall be drafted using the following architectural standards:

- Sheet Title Block: Title block design shall be the same for each sheet, and include the school's name, address, phone number, drawn by, checked by, revision space, sheet number, date drawn, date checked, sheet name and plan name.
- Sheet Size 22x34: Ensure that if judges print 11x17 (HALF SIZE) copies of the plans, they print out to exactly one-half scale
- Dimensioning shall be consistent with industry practice
- Dimension and Annotation text height shall be 1/8" (minimum). Text on half-size drawings must be readable by judges
- Floor plans shall be drawn to a scale of 1/4" = 1'-0"
- Details shall be drawn to show complete information. Consider 1" = 1'-0" a minimum
  scale
- Do not dimension in increments less than 1/4" (except diagonal or squaring dimensions)

■ Construction Management Track

Each team must recreate details and drawings to assist in developing the estimate and documenting the quantities. **Your team should not change the shape or room configuration of the floor plan. Points will be deducted if these are altered.** Copying and pasting is not allowed.

Drawings shall include the following:

- Wall Section - Ranch ACI Energy Star 2x6 -2" Foam
- Common Covered Porch Detail - No Column
- Concrete Stoop Flashing Section
- Garage Cutout
- Stone Sill at Window - Section
- Other drawings to assist in developing and documenting the estimate, as required
- Drawings must be well organized, neat and legible. They may be drawn using

a CAD program, other drawing software or by hand. Hand-drawn sketches should be created using a straight-edge and appropriate tools to ensure lines are perpendicular. Sketches should be drawn to scale with the scale indicated on the drawing.

- **Material and Labor Estimate**

Each team must complete a detailed estimate of the required material and labor for their plan.

- The estimate must be market-based, i.e., adjusted to the market area.
- The estimate should include an allowance for Electrical, Plumbing and HVAC costs. This may simply be based on the square footage of the house.
- The estimate will be judged on clarity, accuracy, and overall conclusion. Provide sufficient detail so that judges can check your calculations. List assumptions in the notes section of the estimate template.
- The estimate must be completed using sheets from the file *2027 NAHB Estimating Template.xlsx*. This is just a template and teams are expected to edit it as they see fit. Teams enter the takeoff quantity, unit cost, and amount total for each item based on the unit of measure provided. Format the sheets with page breaks or blank rows before printing to provide a well- organized copy for the judges. All columns must print on one sheet. Each sheet MUST include the team/school name and page number.
- Each team must justify that the quantities and pricing are reasonable for the problem. Document the sources used for this justification

- **Construction Schedule**

- Each team must produce a complete construction time schedule for the project showing a logical construction sequence (i.e., footings before trusses).
- The schedule shall include activity durations and dependencies.
- The schedule will be judged on clarity in the construction process and understanding of lead times. Teams should focus primarily on process (dependencies) and less on durations
- Each team must justify that the schedule is reasonable for the solution to the problem. Justification sources must also be documented.
- Plan for construction to begin 5/1/2027.

- **Presentation**

February 1 - February 2, 2027: The 2027 competition presentations resume to an in-person format at IBS. **There will not be a virtual presentation option**. Every effort will be made to schedule presentations according to the stated preference, but NAHB Student Chapters cannot guarantee a particular time slot. Teams will be notified of the preliminary schedule after the competition entry deadline.

Each presentation should include a description and explanation of their drawings, estimate and

schedule. The presentation will be made to a panel of industry professionals, including the project sponsor, Tim O'Brien Homes. The format will be a 10-minute presentation followed by questions.

The following elements shall be included in the presentation to the judges:

- Introduction of your team members and the school's name
- Overview of the drawing details
- Overview of the cost estimate
- Overview of the schedule and possible issues or problems that may come up during this project

It is highly recommended that all team members participate in the presentation and answer the judge's questions.