

Quick Guide to
the Integrated
Design Project
and Qnect

Downers Grove
Office Building

for Unified Design of Steel
Structures, *Third Edition*

January 2022

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This guide is a companion to *Unified Design of Steel Structures*, Third Edition, by Louis F. Geschwindner, Judy Liu, and Charles J. Carter. The authors would like to thank Jef Sharp and Henry Lederman of Qnect for introducing their web-based connection tool. Special thanks to Josh Hines (Qnect) for adapting the existing model to work with Tekla and Qnect, and to Allen Adams of Bentley Systems, Inc. for the original model and his technical assistance. We would also like to acknowledge Dr. Rachel Chicchi and Ambar Alvarez-Garcia at the University of Cincinnati for their video modules for teaching connection design with Qnect. Much appreciation to the American Institute of Steel Construction (AISC) for the AISC Educator Forum as well as their sponsorship of the U. Cincinnati teaching aid.

Overview

The Integrated Design Project problems can be used selectively or as a full course project to help students learn how to apply the AISC *Specification* to the design of a structural steel building. With the RAM Structural Model and guide (see www.steelstuff.com), students can also gain experience with the software-assisted design process. Now, our partnership with Qnect (www.qnect.com) provides the ability to quickly explore connection design alternatives, with 3D models and calculations. Again, instructors can tailor to their course, with options ranging from qualitative comparisons to in-depth investigations into design and detailing.

This document is a quick guide to getting started with Qnect and the Integrated Design Project. Whether you are an instructor developing examples or homework problems, or a student working on an assignment, this guide will show you how to get set up with the software and building model for a basic exploration of a gravity frame connection.

Connection Teaching Aids

Interested in learning more? AISC released a set of video modules on connection design in January 2022. These modules also utilize the Integrated Design Project building. Created by Dr. Rachel Chicchi and Ambar Alvarez-Garcia at the University of Cincinnati, the modules include introductions to different types of connections, explanations of design and detailing decisions, and suggestions for connection studies. Students using these video modules will be able to evaluate the impact of different design decisions on the adequacy of the connection. They will understand and evaluate different construction/erection decisions that impact connection type choices. Student can use Qnect connection design reports to compare with their own hand calculations for each limit state. The video modules are part of *Steel Connections: A Teaching Aid for Design Considerations*, which also includes three PowerPoint modules on connection design.

The video modules are:

- Video 1: How to Set Up and Use Qnect (13 minutes)
- Video 2: Introduction to the Integrated Design Project Building (12 minutes)
- Video 3: Overview of Connection Design Decisions (8 minutes)
- Video 4: Constructability Considerations (9 minutes)
- Video 5: Beam-to-Girder Shear Connection Types (34 minutes)
- Video 6: Beam-to-Column Shear Connection Types (16 minutes)

Getting Set Up

To get set up with Qnect and the Integrated Design Project building, you will need Tekla Structures, the Tekla model, and Qnect. The instructions provided in this section are for *individual installation* of the software applications and model.

Students: please check with your instructor for your options for accessing the software and model. Tekla and Qnect might be available through your university's computing resources. The building model will be provided by your instructor.

Downloading and Installing Tekla

Tekla Campus provides access to educational software for students and educators. Go to <https://campus.tekla.com/> and scroll down to “Students” and click “Learn more” to get to the page with the free Tekla software subscriptions for students; click “Download” (Figure 1). Follow the instructions to register, activate your free account, and download Tekla Structures. The latest version (2021) and service pack (5) should work with the Integrated Design Project model; the video modules use the 2020 version. You will also need to download an additional environments; select and download the “USA” environment, choose “Open when done” (Figure 2). Start Tekla Structures, select the “US” Environment, select “Imperial Engineering” for your Role, and select the “Educational” configuration.

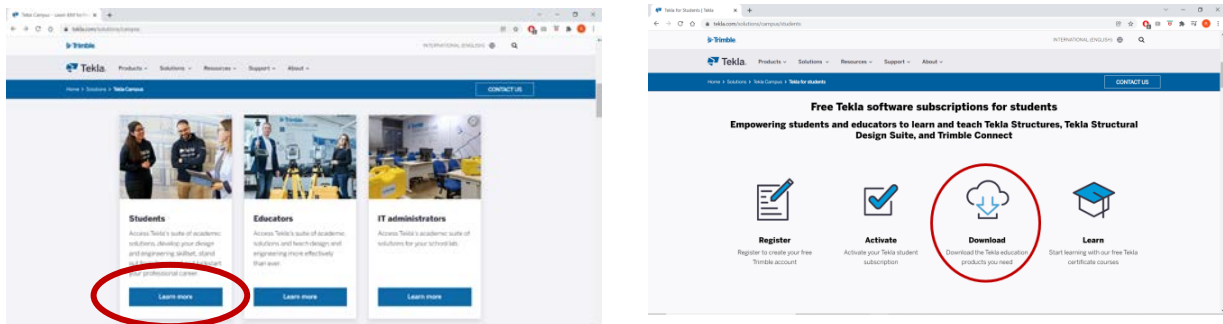


FIGURE 1. NAVIGATING TO THE TEKLA STRUCTURES DOWNLOAD PAGE

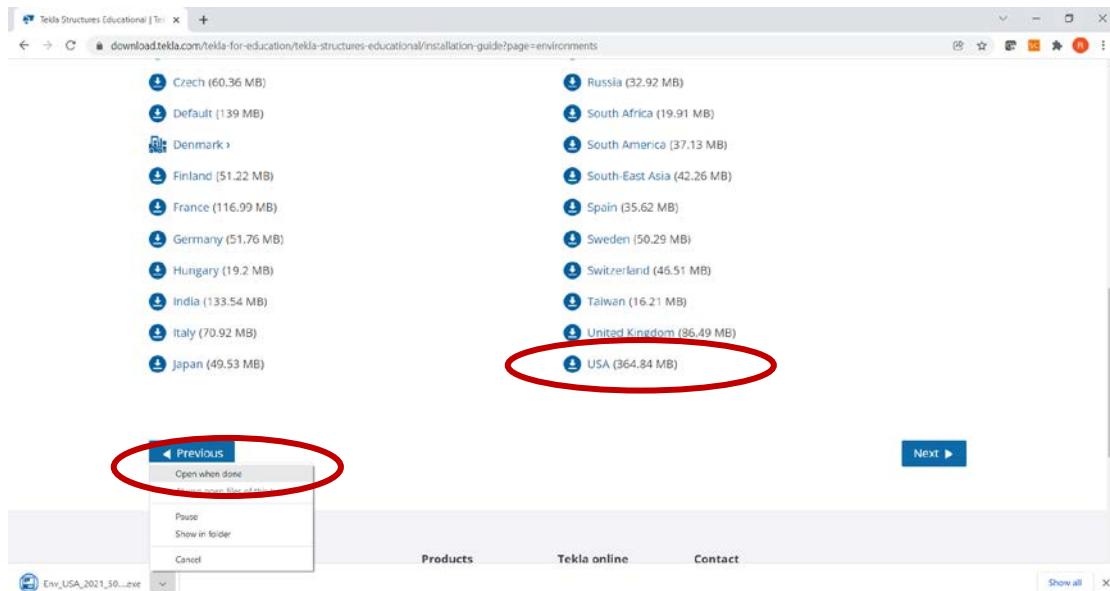


FIGURE 2. INSTRUCTIONS FOR TEKLA ENVIRONMENT AND SET-UP

Accessing and Installing Qnect

An account is needed to access and download the QuickQnect interface for Tekla. Accounts will be set up by university (see note for instructors). Individuals will be notified by e-mail with a login and temporary password.

Instructors: please e-mail judy.liu@oregonstate.edu with the names and e-mail addresses of all individuals requesting a Qnect account. Your university will be set up as a “company” with all individuals as “users”. You will then be able to add and remove users.

Once signed in on the Qnect website (www.qnect.com), find “Tools & Tips” in the left sidebar (Figure 3) and download QuickQnect. Once installed, upon reopening of Tekla Structures, QuickQnect buttons will appear in the Tekla Structures toolbar in the Steel tab for the 2020 version of Tekla (Figure 4) and as its own tab in the 2021 version.

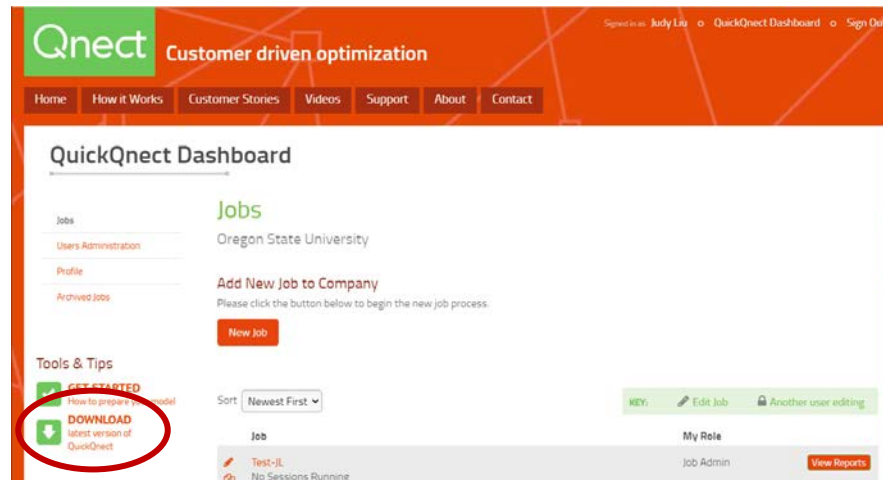


FIGURE 3. QUICKQNECT DASHBOARD WITH DOWNLOAD AT LEFT SIDEBAR

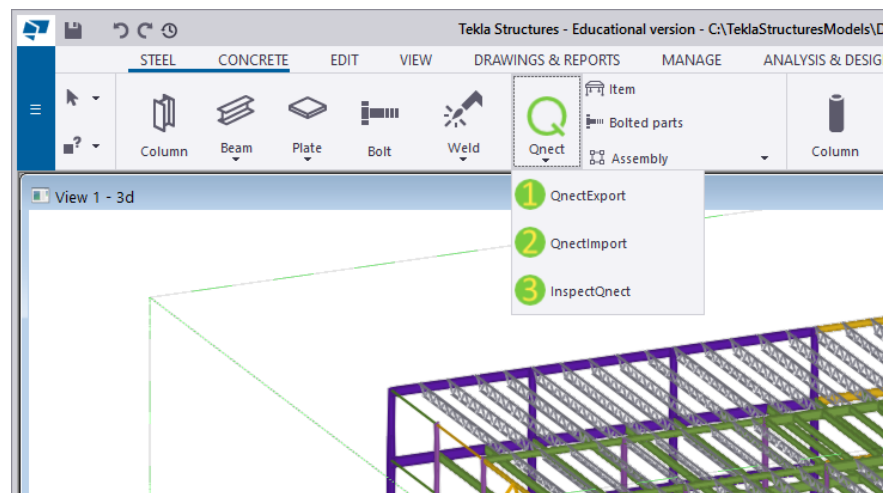


FIGURE 4. QNECT BUTTONS ON TEKLA TOOLBAR

Accessing the Downers Grove Model

The model for the Integrated Design Project, the Downers Grove office building, is available through the AISC Educator Forum. Access to the Educator Forum is limited to full-time university instructors.

Instructors: On the AISC Educator Forum (www.aisc.org/education/university-programs/educator-forum/), go to the Publications Corner and the “Unified Design 3ed Integrated Design Project” folder (Figure 5). If needed, a “REQUEST ACCESS” link on the Forum webpage will take you to a form to submit.

Download Downers_Grove_Office_Building_STUDENT MODEL.zip. This file can then be made available on your learning management system or a shared folder in your university cloud storage.

Extract zipped files to a folder named “Downers_Grove_Office_Building_STUDENT MODEL”. (The folder name must match the name on the .db1 file to access the model.)

The first time you open the model in Tekla, navigate to the “All models” tab and click “Browse” to find and select the “Downers_Grove_Office_Building_STUDENT MODEL” folder. Selecting the “3d” view will open a window as shown in Figure 6.

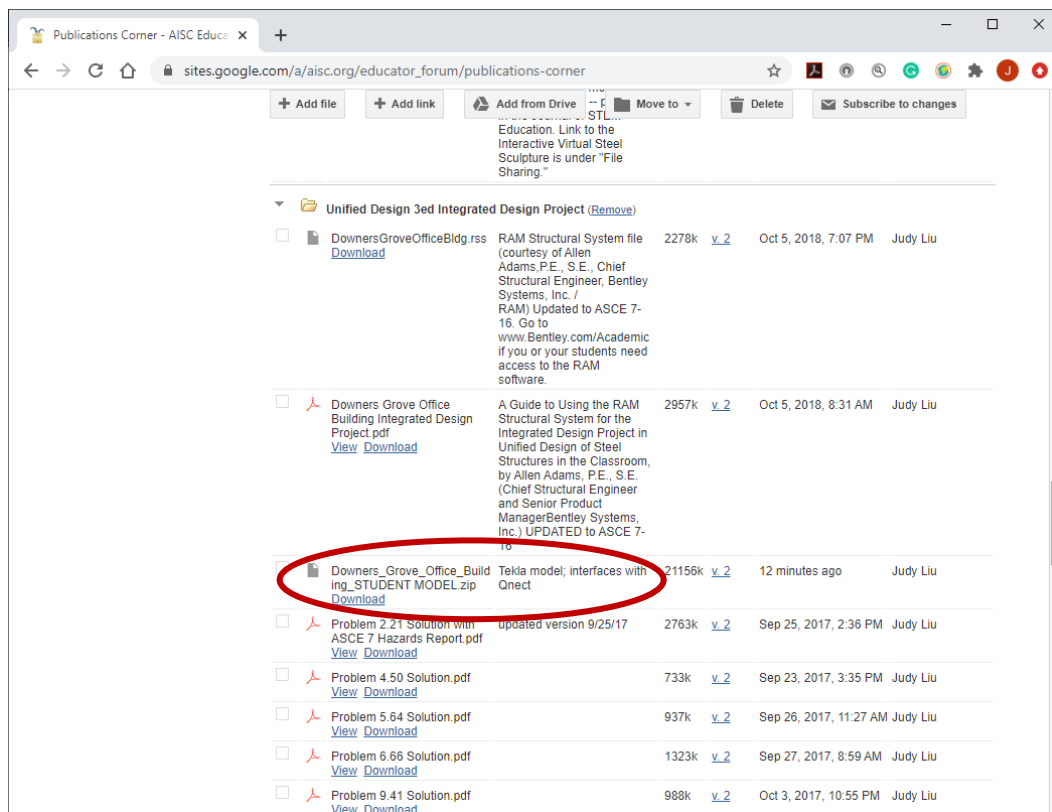


FIGURE 5. TEKLA MODEL ON AISC EDUCATORS FORUM (PUBLICATIONS CORNER)

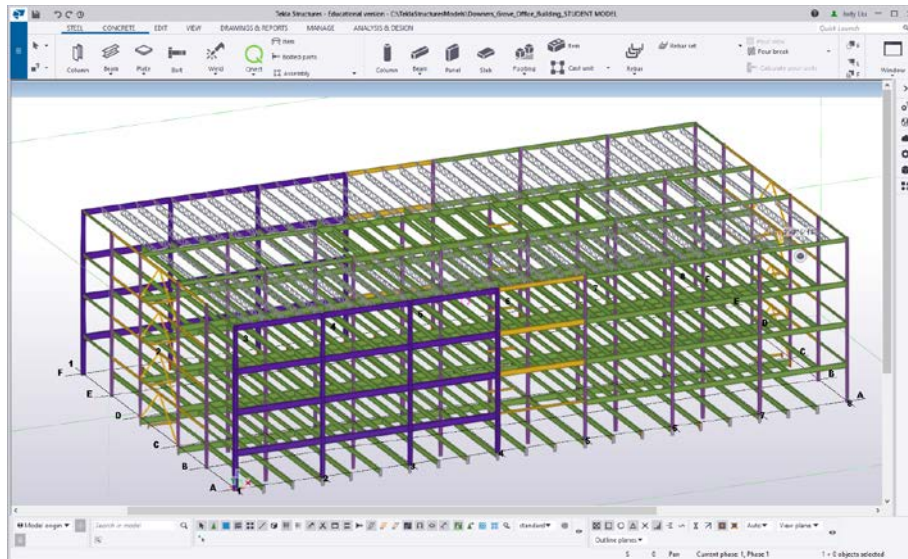



FIGURE 6. 3D VIEW OF DOWNERS GROVE MODEL IN TEKLA

Try Qnect on a Gravity Frame Connection

In this section, Qnect and Tekla will be used for the design of a beam-to-column flange shear connection. The connection at grid location C-6 has been selected, but this exercise could of course be completed for any shear connection in the building.

Sign in to access the QuickQnect dashboard. Click on “**New Job**”, create and submit a project name. For this example, the project name will be “C-6 Beam-Col”. The project will appear in the list of jobs below. Click on the project name or the pencil icon  to edit the project.

At any point in the process of editing a specific project, clicking on “Job Completion Status” at the upper right-hand side of the Qnect site will show you the information needed before Qnect can design the connections. The required, default categories are: *Basic Information, Minimum Job Requirements, Fabricator's Connection Type Preferences, Fabricator's Detailing Preferences, General Bolt Preferences* and *Job Requirements for Welds* (Figure 7). Click on “Basic Information” in the status list or in the left sidebar to get started; Qnect will step you through the required pages. In many cases, the default settings will suffice. If desired, one may also specify “Optional” requirements such as “Custom Edge Distances”; the pages are populated with default values that can be easily edited.

Basic Information

The *Basic Information* page contains project information, units and specifications, and optimization choices. For the project information, the fabricator, general contractor, and contract number, the defaults are “Sample” names or values. In the Imperial/Metric section, one can select imperial or metric units and choose ASTM or other profile catalogs. Note that the 2010 AISC *Specification for Structural Buildings* (14th edition manual) is currently the latest edition that can be selected. There are some updates to the 2016 Specification (15th edition), e.g., for some bolt preferences. On this page, one can also select “Preference Optimization” and “Bolt Optimization”. For “Preference Optimization”, Qnect will complete designs for several connection preferences and compare. “Bolt Optimization” utilizes changes in the bolt

spacing. For this example, both optimization options will be set to “No”. Default values are used for the other parameters, as shown in Figure 8. The “Terms and Use” acknowledgement must then be selected before clicking “Submit”.

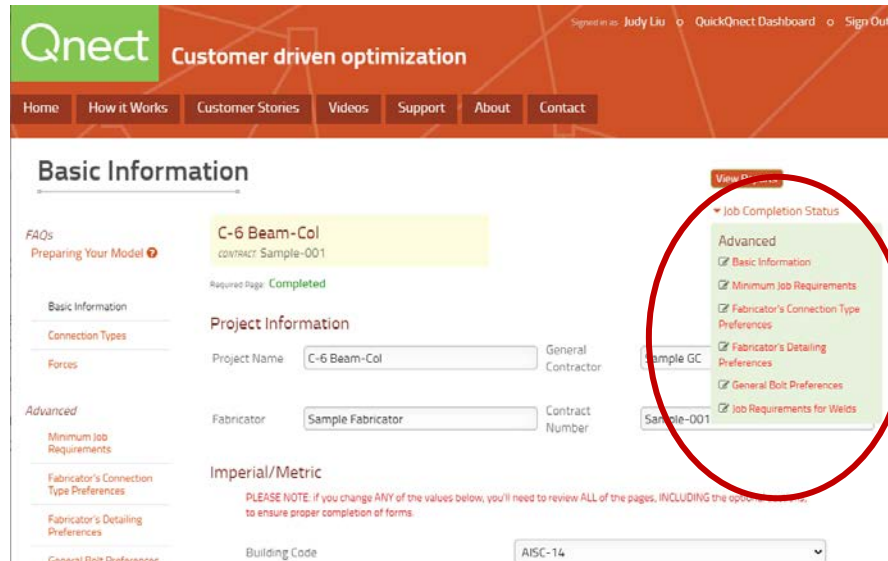


FIGURE 7. BASIC INFORMATION AND JOB COMPLETION STATUS CHECKLIST IN QNECT

[Home](#) | [How it Works](#) | [Customer Stories](#) | [Videos](#) | [Support](#) | [About](#) | [Contact](#)

Signed in as: [Judy Liu](#) | [QuickQnect Dashboard](#) | [Sign Out](#)

Basic Information

C-6 Beam-Col
CONTRACT: Sample-001

Required Stage: **Completed**

Project Information
 Project Name: General Contractor:
 Fabricator: Contract Number:

Imperial/Metric
 PLEASE NOTE: if you change ANY of the values below, you'll need to review ALL of the pages, INCLUDING the optional sections, to ensure proper completion of forms.
 Building Code:

Job Completion Status
 Advanced
 Basic Information
 Minimum Job Requirements
 Fabricator's Connection Type Preferences
 Fabricator's Detailing Preferences
 General Bolt Preferences
 Job Requirements for Welds

Project Information
 Project Name: General Contractor:
 Fabricator: Contract Number:

Imperial/Metric
 PLEASE NOTE: if you change ANY of the values below, you'll need to review ALL of the pages, INCLUDING the optional sections, to ensure proper completion of forms.
 Building Code:
 Engineering units:
 What bolt catalog will you be using?:
 What profile catalog is being used?:

Optimization
Preference Optimization - Auto P+Op
 Would you like us to run several preferences and present a report comparing the results?
 Yes No

Bolt Optimization - B+Op
 Would you like us to take the vertical hole spacing and iterate from the traditional 3" up to 6" to achieve the fewest number of bolts in each connection?
 Yes No

I have read the [Terms and Use](#), acknowledge that they are reasonable, and accept them, on behalf of myself and any employer or other entity on whose behalf I am using the Site or downloading the Software.

FIGURE 8. BASIC INFORMATION FOR C-6 BEAM-COL EXAMPLE

Minimum Job Requirements

The *Minimum Job Requirements* page is used to establish design requirements and preferences. The user specifies LRFD or ASD, design loads, whether or not to design moment or vertical brace connections, material specifications, any integrity checks, and connection preferences such as minimum or maximum plate thickness. If the design forces (e.g., beam end reactions) have not been provided in the model for some connections, the user can instruct Qnect to (1) not design connections at those locations, (2) follow a user-completed table of vertical shear forces for different beam sizes and spans, (3) use a percentage of the uniform design load (UDL), or (4) use 90% of the factored beam shear yield capacity (Figure 9). All connection design forces have been provided in the Downers Grove model, and this example focuses on just one connection, so the “Do Not Connect” option is selected and the “Update” button clicked. [To check the member end reactions in Tekla, click to select the member, right-click and select “User-Defined Attributes”, and then select “End Conditions” in the pop-up window.] There are a number of other minimum job requirements that must be selected. Default values are used for the remaining parameters and questions (see Figure 10 for an example). Users are encouraged to evaluate the influence of these various decisions on the connection design.

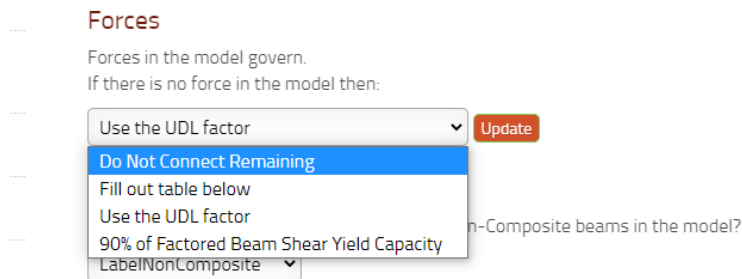


FIGURE 9. OPTIONS FOR CONNECTION FORCES IF NOT PROVIDED IN MODEL

Fabricator's Connection Type Preferences

On this page, the fabricator's preferences are specified for connection types for different loadings. For this example, “No” had been selected for design of moment and vertical bracing connections, so only connections for shear or shear and axial demands are listed.

Default connections and preference orders are provided; Qnect has pre-populated the lists with common connections. For example, for the beam-to-column flange connection, welded-bolted double angle, all-bolted double angle, and single plate (shear plate) connections are listed in that order. Any of the connections can be deleted or moved in the preference order by clicking to highlight and then using the trash can icon or up and down arrow buttons (Figure 11). For this example, the all-bolted double angles have been selected and moved to “1” in the preference order. One can also use the “[Select One]” drop-down menu to add other connections (Figure 12). “No” was selected for “Preference Optimization”, so only the first connection in the preference order will be designed.

Minimum Job Requirements

C-6 Beam-Col
CONTRACT: Sample-001

Required Page: [Edit to Complete](#)

Connection Strength Computing Methods

Design Basis:

Seismic Requirements
 Seismic Provision R = 3

Forces

Forces in the model govern.
 If there is no force in the model then:

If EOR has requested beams be connected for min # of rows, please fill out table below.

Beam Size	Min # of rows
<input type="text" value="[Select One]"/>	<input type="text" value=""/>

View Reports

Job Completion Status

Advanced

- Basic Information
- Minimum Job Requirements
- Fabricator's Connection Type Preferences
- Fabricator's Detailing Preferences
- General Bolt Preferences
- Job Requirements for Welds

FAQs
 Preparing Your Model

Basic Information

Connection Types

Forces

Advanced

- Minimum Job Requirements
- Fabricator's Connection Type Preferences
- Fabricator's Detailing Preferences
- General Bolt Preferences
- Job Requirements for Welds

FIGURE 10. MINIMUM JOB REQUIREMENTS - CONNECTION STRENGTH

Beam to Column Flange Connection preference order

- 1 - Double Angles - Welded at Beam/Bolted at Column Flange
- 2 - Double Angles - Bolted at Beam/Bolted at Column Flange
- 3 - Shear Plate

FIGURE 11. MOVING CONNECTION TYPE UP OR DOWN IN PREFERENCE ORDER

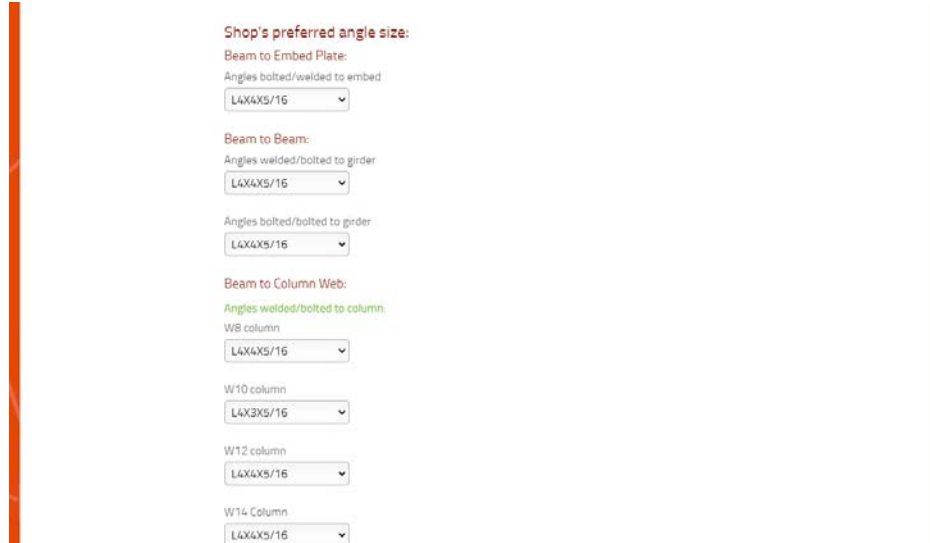
Beam to Column Flange Connection preference order

- 1 [Select One]
- 2 Double Angles - Knifed - Bolted at Beam/Welded at Column Flange
- 3 Single Angle - Bolted at Beam/Welded at Column Flange
- Single Angle - Bolted at Beam/Bolted at Column Flange
- Single Angle - Welded at Beam/Bolted at Column Flange

FIGURE 12. ADDITIONAL CONNECTION OPTIONS TO ADD TO PREFERENCE ORDER

Fabricator's Detailing Preferences

On this page, the fabricator's detailing preferences for copes, beam setbacks, gages, and other items are specified. Other items include the fabricator shop's preferred angle sizes at various locations (Figure 13). For this example, all of the default values are used.

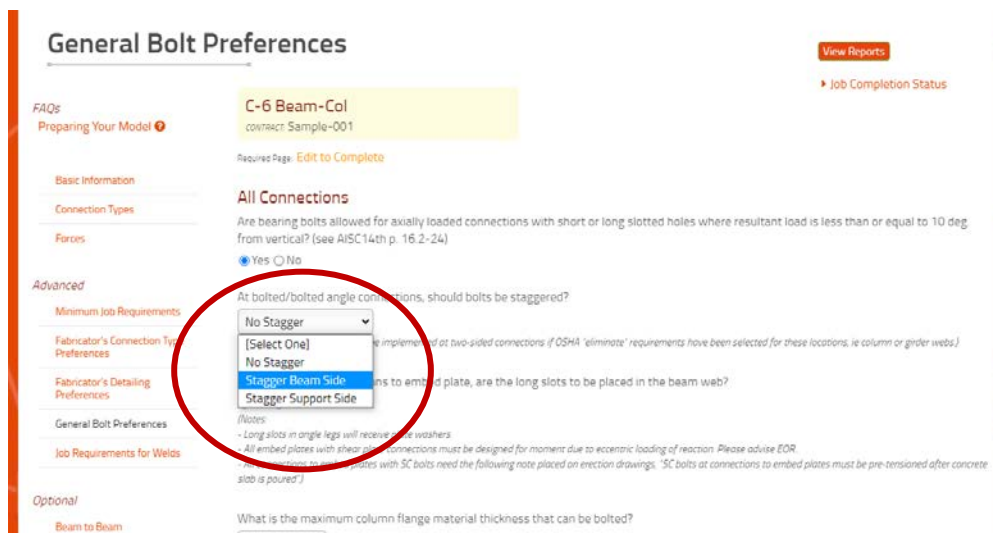


The screenshot shows a form titled "Shop's preferred angle size:" with several sections and dropdown menus. The sections are: "Beam to Embed Plate" (Angles bolted/welded to embed), "Beam to Beam" (Angles welded/bolted to girder and Angles bolted/bolted to girder), and "Beam to Column Web" (Angles welded/bolted to column). Under "Beam to Column Web", there are four sub-sections for different column types: "WB column", "W10 column", "W12 column", and "W14 Column". All dropdown menus are set to "L4X4X5/16".

FIGURE 13. PREFERRED ANGLE SIZES FOR CONNECTIONS

General Bolt Preferences

On this page, bolt and bolt hole preferences are specified. For example, hex head (HH) or tension control (TC) bolts can be specified for shop and field bolts. For all-bolted angle connections, the user can select no stagger, or choose to stagger on the beam or support side (Figure 14). For this example, the "Stagger Beam Side" is chosen. Otherwise, default values are used for bolt preferences.



The screenshot shows the "General Bolt Preferences" page for a project named "C-6 Beam-Col" (contract: Sample-001). The page has a sidebar with navigation links like "FAQs", "Preparing Your Model", "Basic Information", "Connection Types", "Forces", "Advanced", "Minimum Job Requirements", "Fabricator's Connection Type Preferences", "Fabricator's Detailing Preferences", "Job Requirements for Welds", and "Optional". The main content area is titled "All Connections" and contains a question: "At bolted/bolted angle connections, should bolts be staggered?". Below this question is a dropdown menu with four options: "No Stagger", "[Select One]", "No Stagger", and "Stagger Beam Side". The "Stagger Beam Side" option is highlighted with a red circle. Other options include "Stagger Support Side".

FIGURE 14. STAGGERED BOLT (BEAM SIDE) PREFERENCE

Job Requirements for Welds

Job requirements for welds include fillet weld sizes (Figure 15) and preferences for partial-joint penetration (PJP) and complete-joint penetration (CJP) welds if needed. Qnect offers some potential cost-savings methods, such as beveling the plate at a skewed single-plate connection to allow use of fillet welds. For this example, all default values are used for the job requirements for welds. With the final page submitted, the “Job Completion Status” should show with checked boxes that all required information has been provided (Figure 16).

The screenshot shows the 'Job Requirements for Welds' configuration page for a 'C-6 Beam-Col' connection (contract: Sample-001). The page is divided into several sections:

- FAQs:** Preparing Your Model (with a help icon).
- Basic Information:** Connection Types, Forces.
- Advanced:** Minimum Job Requirements, Fabricator's Connection Type Preferences, Fabricator's Detailing Preferences, General Bolt Preferences, Job Requirements for Welds.
- Optional:** Beam to Beam, Beam to Column Flange, Beam to Column Web.

Key configuration details include:

- For Fillet Type welds, please select minimum and maximum weld sizes.**
 - Minimum Fillet Weld Size: 3/16"
 - Maximum Fillet Weld Size: 1"
- Qnect increases fillet weld size as required to account for gaps between connecting parts.**
 - At conditions where the gap will allow the use of an increased fillet weld, do you want Qnect to provide effective weld size only instead of weld size equal to effective weld size plus the gap?
 Yes No
- Minimum Fillet Weld Size at Shear Plate to Support:** 5/8 tp
- Note:** Qnect increases fillet weld size as required to account for gaps between connecting parts.
- At skewed shear plate to support weld, can Qnect bevel the shear plate at support to avoid gap in order to allow a greater use of fillet welds (up to a 30 degree skew from square) instead of PJP welds?**

Buttons for 'View Reports' and 'Job Completion Status' are visible in the top right corner.

FIGURE 15. JOB REQUIREMENTS FOR WELDS

The screenshot shows the 'Job Form Submitted' confirmation page for the 'C-6 Beam-Col' connection (contract: Sample-001). The page features a 'View Reports' button and a message: "Thanks, the Job Requirements for Welds page has been successfully submitted. Choose the next section you would like to add/edit below."

The 'Job Completion Status' section is expanded, showing a list of completed sections with checked boxes:

- Basic Information
- Minimum Job Requirements
- Fabricator's Connection Type Preferences
- Fabricator's Detailing Preferences
- General Bolt Preferences
- Job Requirements for Welds

The left sidebar shows the navigation menu with sections: Basic Information, Connection Types, Forces, Advanced (Minimum Job Requirements, Fabricator's Connection Type Preferences, Fabricator's Detailing Preferences, General Bolt Preferences, Job Requirements for Welds), and Optional (Beam to Beam, Beam to Column Flange, Beam to Column Web).

FIGURE 16. JOB COMPLETION STATUS WITH ALL REQUIRED PAGES COMPLETED

Running the Qnect Job

Qnect connection design uses the Tekla model and the Qnect job information. Open the Downers Grove model in Tekla. For this example, locate the first-floor beam-column connection at grid location C-6. Holding the SHIFT key, click to select the column and a beam connecting to the column flange (Figure 17). Click on Qnect in the toolbar and select button **QnectExport**. Sign in to Qnect when prompted by the pop-up window. In the next pop-up window, select the job name and enter a session name; there may be multiple sessions for the same job and any unique name can be used for the session (Figure 18). An e-mail notification will prompt you to select **QnectImport**; in the pop-up window, select the same job and session. [Note: with only one connection selected, the job is typically completed before the e-mail is received.]

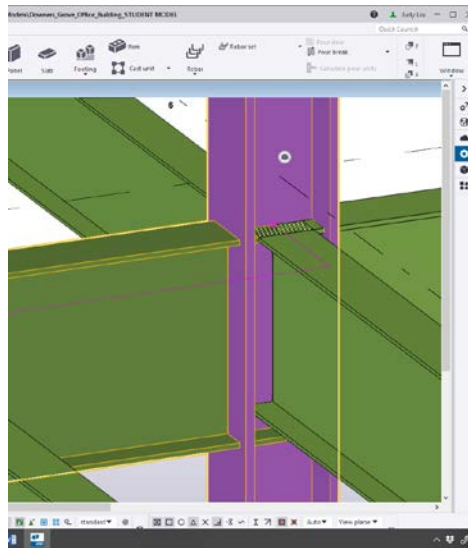


FIGURE 17. SELECTED COLUMN AND BEAM AT GRID LOCATION C-6

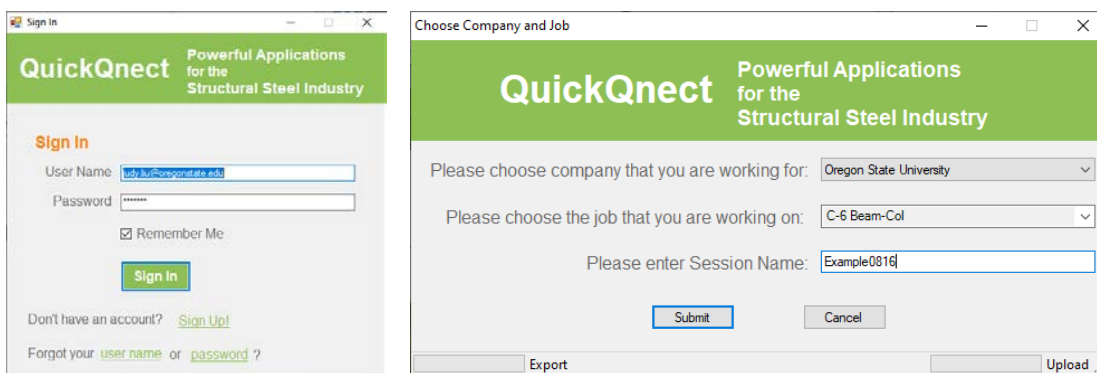



FIGURE 18. (A) QNECT SIGN-IN, (B) CHOOSING COMPANY, JOB, SESSION NAME

At gridline C-6, there is now an all-bolted double-angle connection with the TC bolts staggered on the beam side (Figure 19). Double-clicking on the connection will open a pop-up window with job and connection information (Figure 20). Hyperlinks for the “Double Angle Reports” will

change the information in the summary table at the bottom of the window. Clicking on the hyperlinked connection number in that table will open a summary of the calculations. Note that links for the other types of connections will bring up “No results found” or “Vertical bracing feature is off”; “No” was selected for the preference optimization. For sessions with many connections,  InspectQnect provides a method for navigating through Qnect results, with summaries and alternate views of connections (Figure 21).

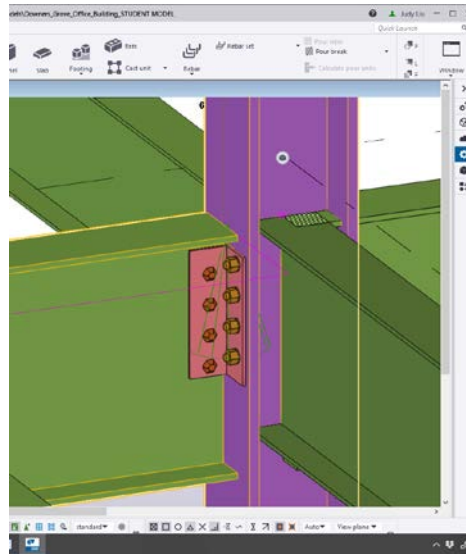


FIGURE 19. QNECT-DESIGNED CONNECTION AT GRID LOCATION C-6

QnectConnection

Connection: 1

Notify help desk.

Double Angle Specs Report

Company: Oregon State University
Job Title: C-6 Beam-Col
Session Title: Example0816
Session Date: 2020-08-16 18:36:44
Model Name: Downers_Grove_Office_Building_STUDENT_MODEL.db1

B+Op Status: B+Op was disabled
Building Code: AISC-14
Design Type: LRFD
Unit System: Imperial

Weld	Shear Plate	Angle	Bm Web Doubler Plate	Stabilizer Plate	Gusset Plate
E70	A572-GR.50	A572-GR.50	A572-GR.50	A572-GR.50	

Summary Reports: [Job Standard Summary](#) | [Job Sample Calcs Report](#) | [B+Op Comparison Report](#)
[Job Preferences Report](#) | [No Connections Summary](#) | [No Connections Detailed](#)

Shear Plate Reports: [Specs](#) | [Strengths \(Shear Only Connections\)](#) | [Strengths \(Shear & Axial Connections\)](#) | [Welds](#) | [Doublers](#)
Single Angle Reports: [Specs](#) | [Strengths \(Shear & Axial\)](#) | [Welds](#) | [Doublers](#)
Double Angle Reports: [Support Side Specs](#) | [Beam Side Specs](#) | [Strengths \(Shear & Axial\)](#) | [Welds](#) | [Doublers](#)
Vertical Bracing Reports: [Specs](#)

[Click here for Double Angle Diagrams](#)

Bolted Bolted connection(s), showing only beam side specs. [Click here for support side specs](#)

Connection (click link for full calcs)	Count	Filler Beam	Support Girder/Col	Connection Condition						Integrity Checks		Capacity		Bolts on I			
				Slope	Skew	Vertical Offset	Span	Reaction	Axial TC	NYC	IBC	Vertical Shear	Axial TC	Columns (Angle1/Angle2)	Rows (Angle1/Angle2)	Total (Beam Web)	Diameter
bcf.2bb.s.00001.00001		W24X62	W10X88	0.00	-90.00	0.00	30.00	75.00	0.00 \ 0.00	No	No	129.10	0.00 \ 0.00	1 \ 1	4 \ 4	4	0.75

FIGURE 20. DOUBLE ANGLE SPECIFICATIONS REPORT

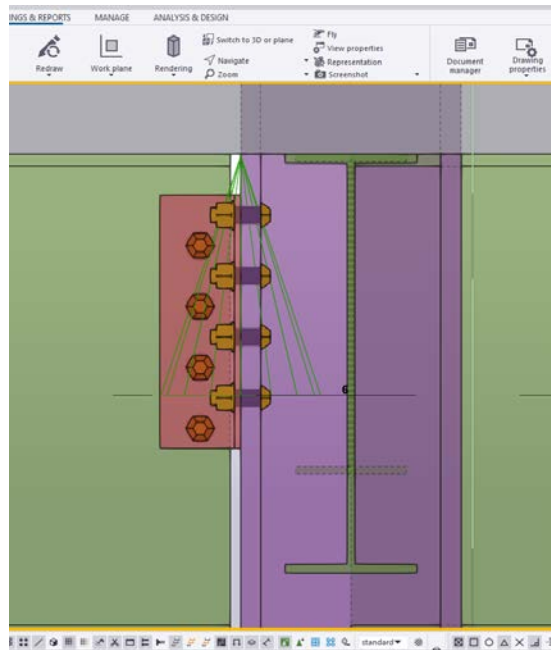



FIGURE 21. ALTERNATE VIEW OF CONNECTION THROUGH INSPECTQNECT


Use Qnect with the Integrated Design Project Problems

Qnect can be used to supplement Integrated Design Project problems. For example, Chapter 11 - Problem 43 first requires design of double-angle shear connections for the gravity beams and girders designed in Chapter 6. Then, students are instructed to reconsider the types of shear connections and design with single-plate connections. The second task can be accomplished in Qnect by moving the single-plate connections to the top of the preference order and running the job again on the unconnected beams and columns. Or, if only changing connections for one beam, the same task can be accomplished by right-clicking on the beam, selecting “User-Defined Attributes”, clicking on the “Qnect” tab, selecting new connection types for the start and end of the beam, and clicking “Modify” (Figure 22). Figure 23 shows the single-plate at grid location C-6.

Any number of variations with Qnect could be explored. Students could design double-angle and single-plate connections first by hand, and then compare to Qnect results for those connections with different preferences. Students might compare their own double-angle and single-plate designs for a select number of connections and then compare several others using Qnect. Students may choose to design all-bolted double angles and then compare to Qnect designs for welded-bolted and bolted-welded.

Regardless of the Qnect adaptation chosen, consideration of multiple designs can be accomplished by adding all connection types to the preference lists and choosing “Yes” for the Preference Optimization for the same job, “C-6 Beam-Col”. Note that this selection will automatically prompt the Bolt Optimization (variation in bolt spacing), as well. Again select the first-floor beam-column connection at grid location C-6 and select button **QnectExport**. Sign

in, choose the job and create a new session name. An e-mail notification will be sent for each connection design, prompting you to click button QnectImport.

The Tekla model will show just one connection, but details of all connections can be obtained through Qnect. The “Jobs” list will now include single-plate (SP) and double-angle bolted (DABB) versions of the “C-6 Beam-Col” job (Figure 24). Click on “View Reports”, select the session name, and click on the  button to move the session to the “Include List”. A dropdown menu and hyperlinks can be used to view the same types of reports (e.g., full connection calculations) accessed in Tekla. Optimization reports comparing costs for different options are also available.

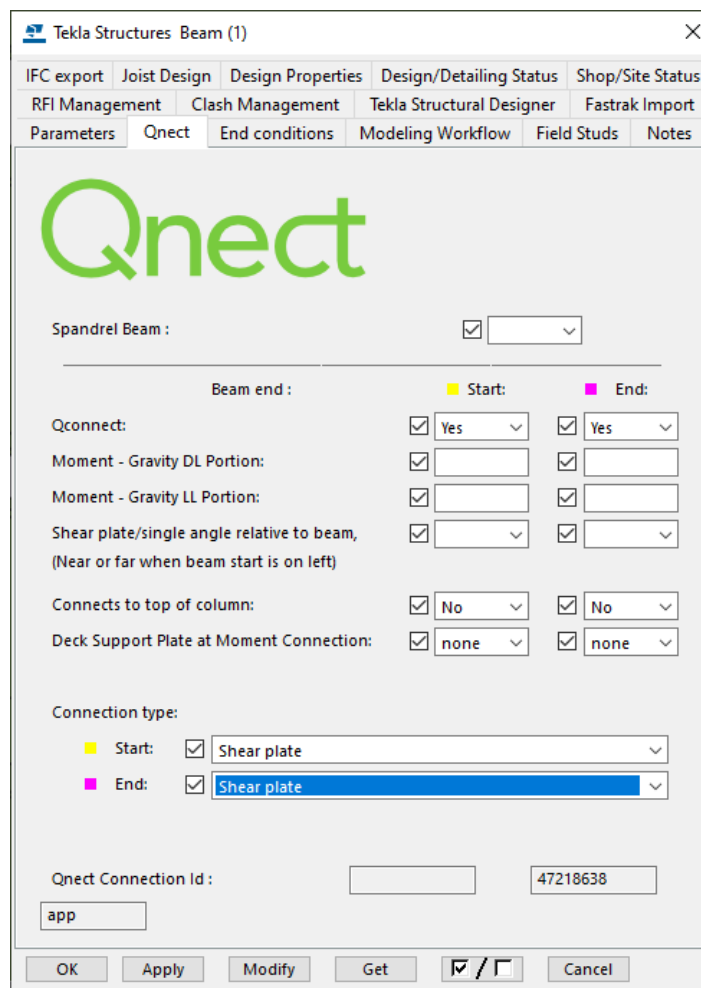


FIGURE 22. CHANGING CONNECTION TYPES AT ONE BEAM

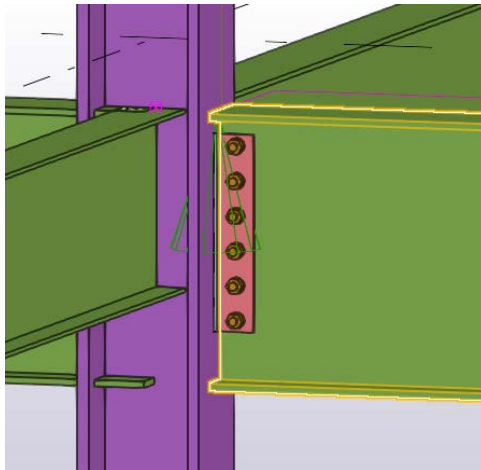


FIGURE 23. SINGLE-PLATE CONNECTION AT GRID LOCATION C-6

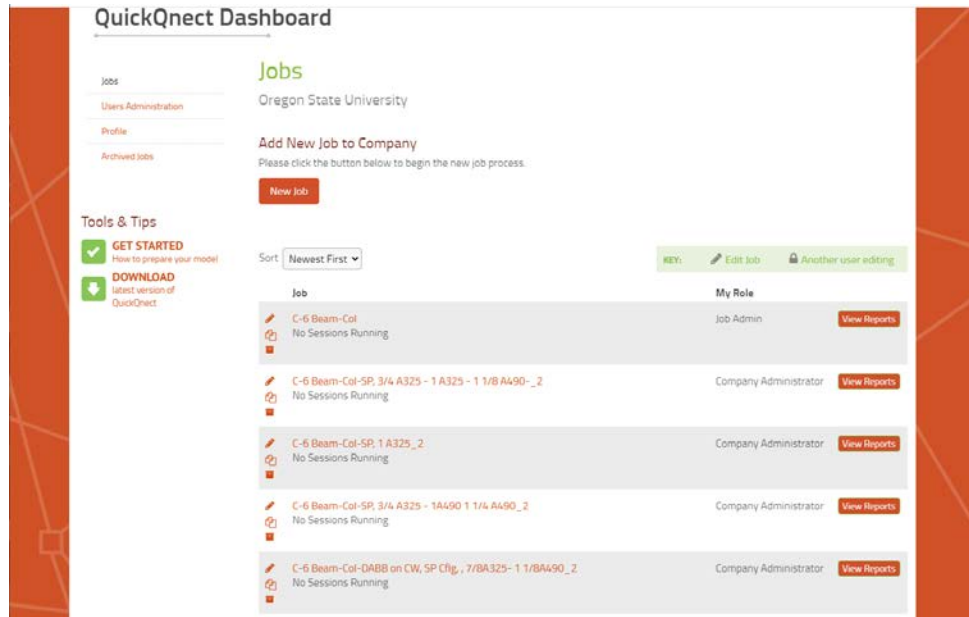


FIGURE 24. JOB LIST WITH MULTIPLE DESIGNS FOR PREFERENCE OPTIMIZATION

Additional Resources

Frequently-asked questions and help videos are available at www.qnect.com. Video topics range from how to get started to utilizing the moment connection capabilities.

The video modules from the University of Cincinnati reference the Downers Grove building but provide a broader perspective on connection design. The video and PowerPoint modules can be found at <https://www.aisc.org/education/university-programs/teaching-aids/>.