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Lessons Learned in Ramping Up Advance Steel on Your First Project

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When companies traditionally using 2D workflows implement Advance Steel into their drafting and fabrication work process, their existing work process must change to best leverage this new technology. In this presentation, attendees will learn how a large steel fabrication customer implemented Advance Steel on their first project. Lessons learned and best practices will be shared.

Learning Objectives

At the end of this class, you will learn about our companies:

- Challenges with current 2D process
- Best practices implementing Advance Steel and 3D workflow
- Benefits using Advance Steel on first major project
- Our vision for the future

About the Speaker

Graduate of the University of Waterloo, Civil Engineering. Over 25 years' experience in the Steel Building Industry. Current member of the CSA Technical Committee on the North American Design of Cold Formed Steel Structural Members and CSSBI Research and Design.

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A) Challenges with Current 2D Process

- **Manually created 2D ACAD layouts**
  - review engineering drawings and draw building to full scale
  - manually review interferences and discuss with engineer and/or customer
  - adjust design if required and re-draw layout
  - not all interferences are caught using 2D methods

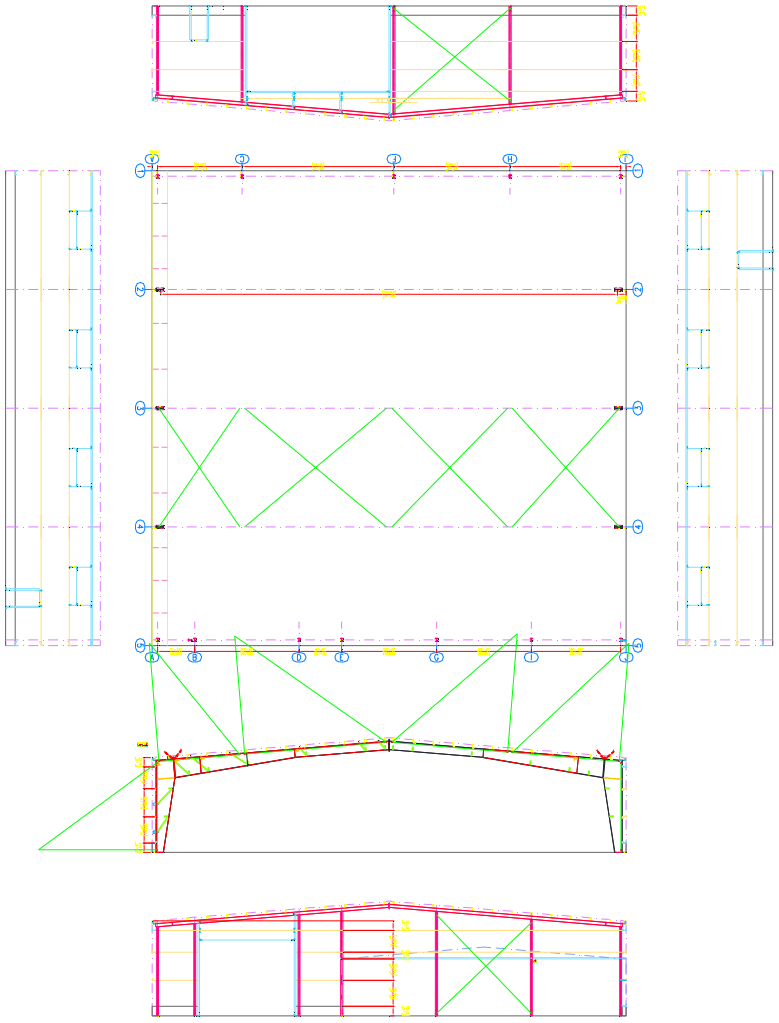


Figure 1: Example 2D layout

- **Many hours spent creating 2D approval drawings**
- **Difficult to visualize complex details in 2D**

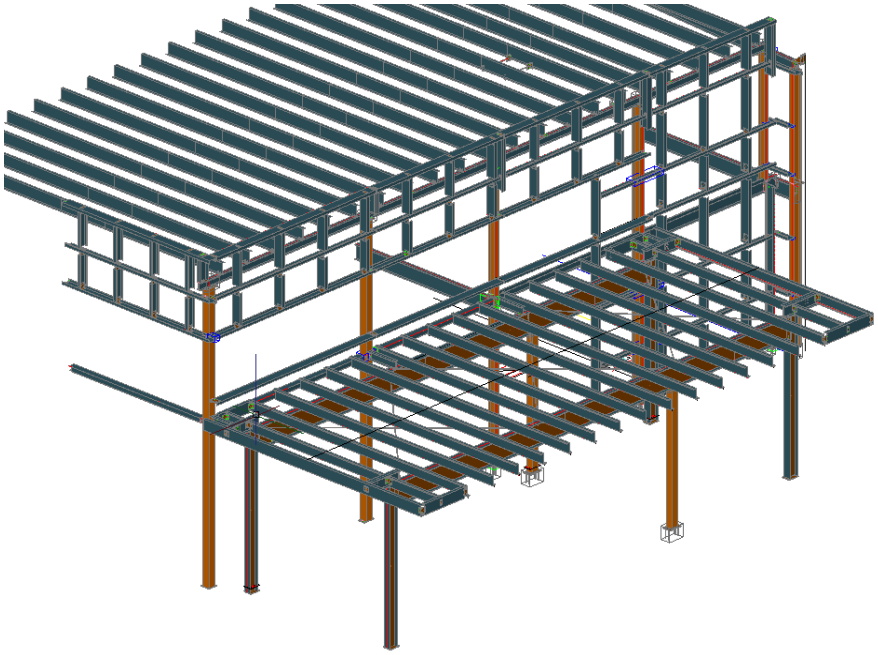


Figure 2: Example of complex framing details

- **Simple changes made by customers can cause hours of re-detailing**
  - e.g. Adding 2” of grout with leveling plate

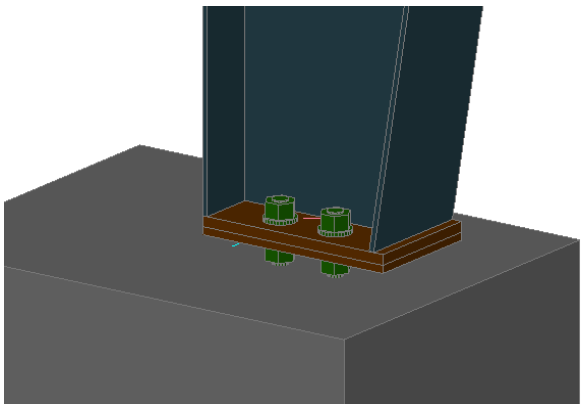


Figure 3: Example column grout with leveling plate detail

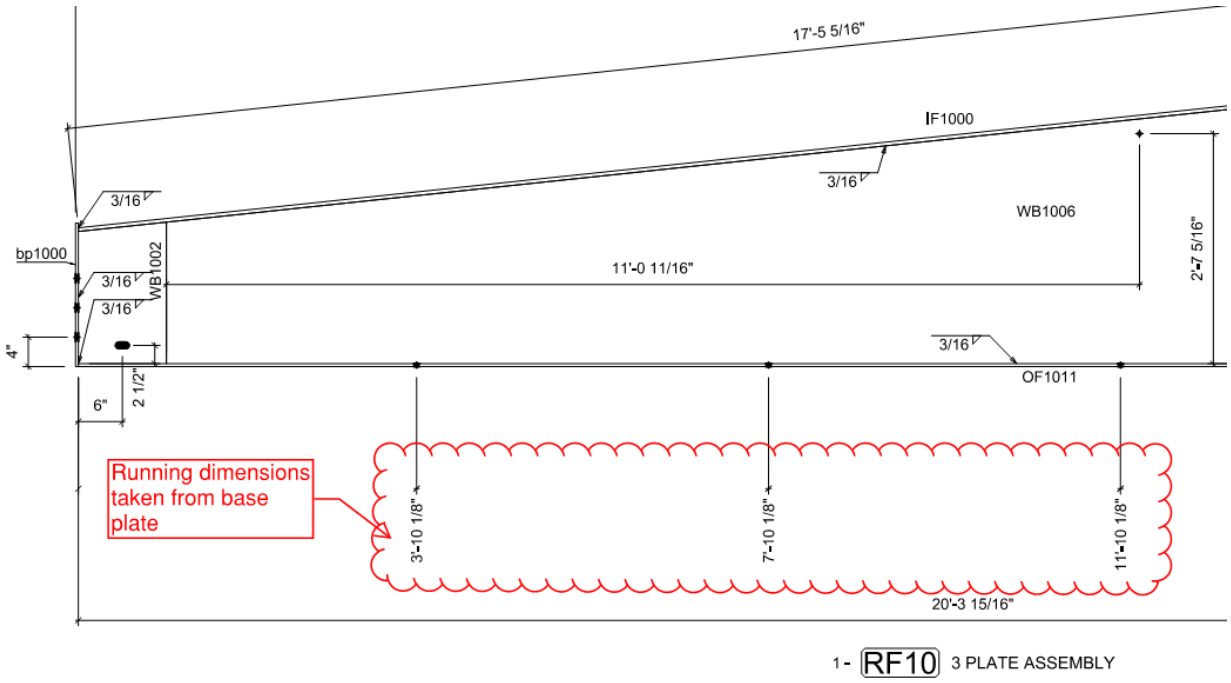


Figure 4: Example tapered column fabrication drawing

- **Major changes made by customer can cause days of delay**
  - e.g. Raising upper roof level due to duct work clearance issue

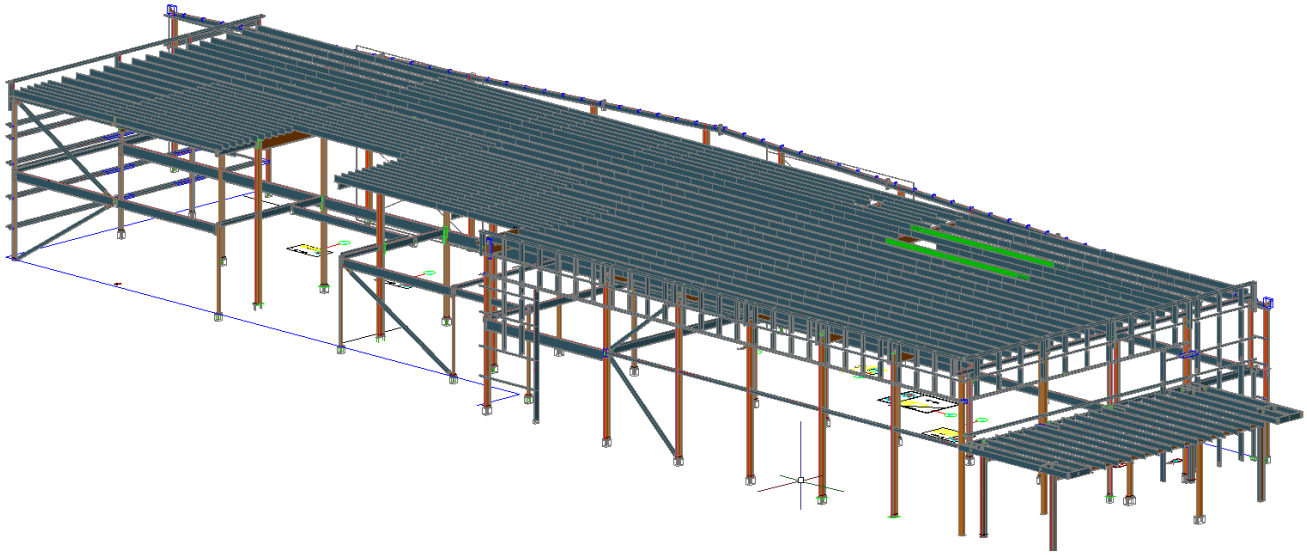


Figure 5: Raising roof elevation mid-way through modelling

- **Complex details difficult to review by engineer prior to shop drawings creation**
  - e.g. Exact copes and cuts are manually conveyed to engineer

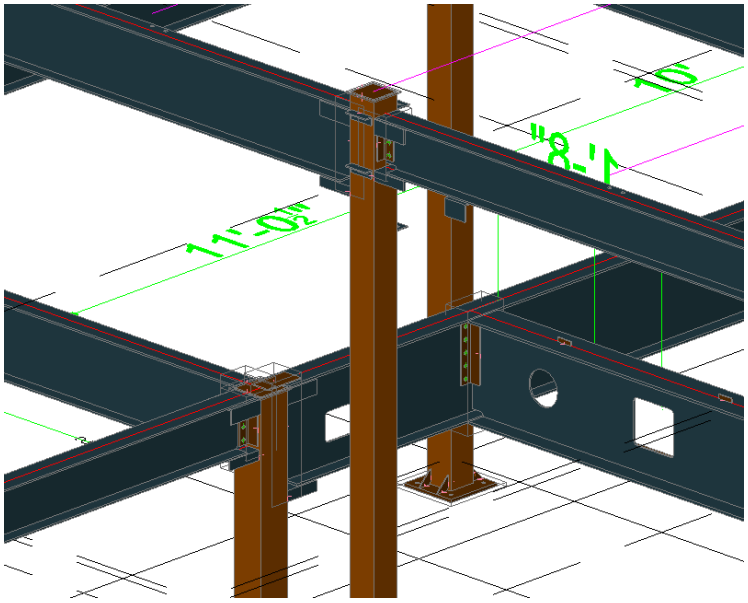


Figure 6: Example of beam copes, holes. Moment connections

- **Changes to beam sizes can require hours of manual re-work of connections by detailer**

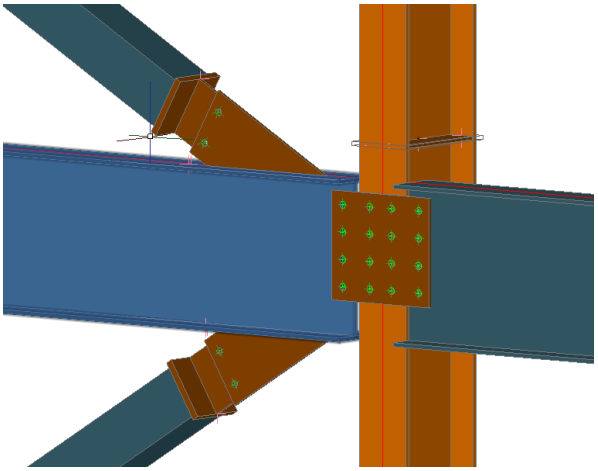


Figure 7: Example of special tube bracing

- **Dimensions for shop drawings manually transferred from 2D "static" layouts**
- **Changes to layout not reflected in shop drawings**
- **Bolt counts done manually**
- **Complex details difficult to manually draw on erections drawings**
  - can cause confusion in field and unnecessary re-work that is often charged back to the fabricator

B) Best Practices Implementing Software and 3D Workflows

- **Ensure you select a well-trained re-seller. Our support partner is Graitec Inc.**

- **Receive proper training on how to use the software. 1 week basic training, 2nd week advance training after you have used the software on a number of real life projects**
- **Select small group of technically competent staff to set-up software and test new workflows**
- **<u>Ensure additional resources are in place to allow dedicated team enough time to successfully implement software and test processes</u>**
- **<u>Allow for extra time to process initial projects using 3D workflows. It will take time to master the software and perfect new workflows</u>**
- **Outsource drawing style editing based on marked-up project drawings until one or more team members can be trained using the Advance Steel <u>Drawing Style Manager</u> (3 to 4 day specialized course)**

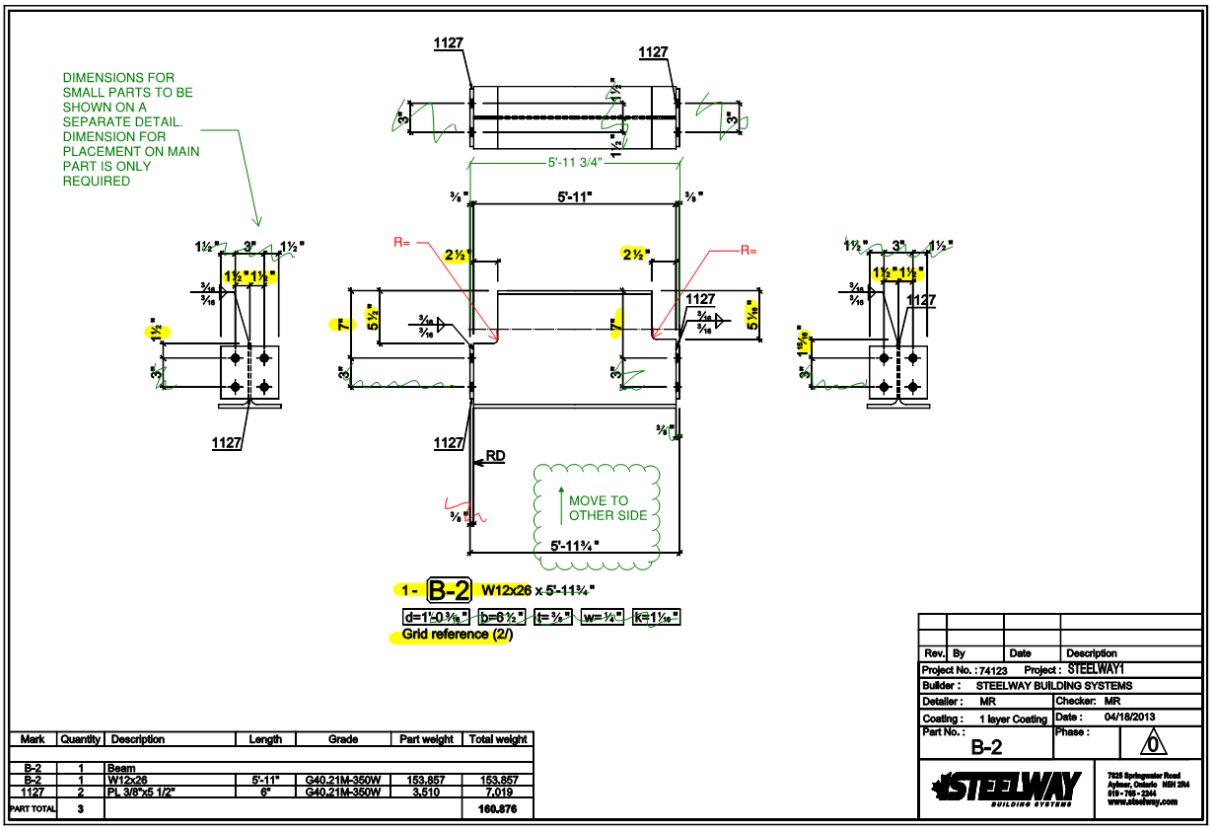


Figure 9: Marked-up fabrication drawing to show changes required in drawing style

- **Organize task list on Implementation Team's intranet site (we use Microsoft SharePoint)**

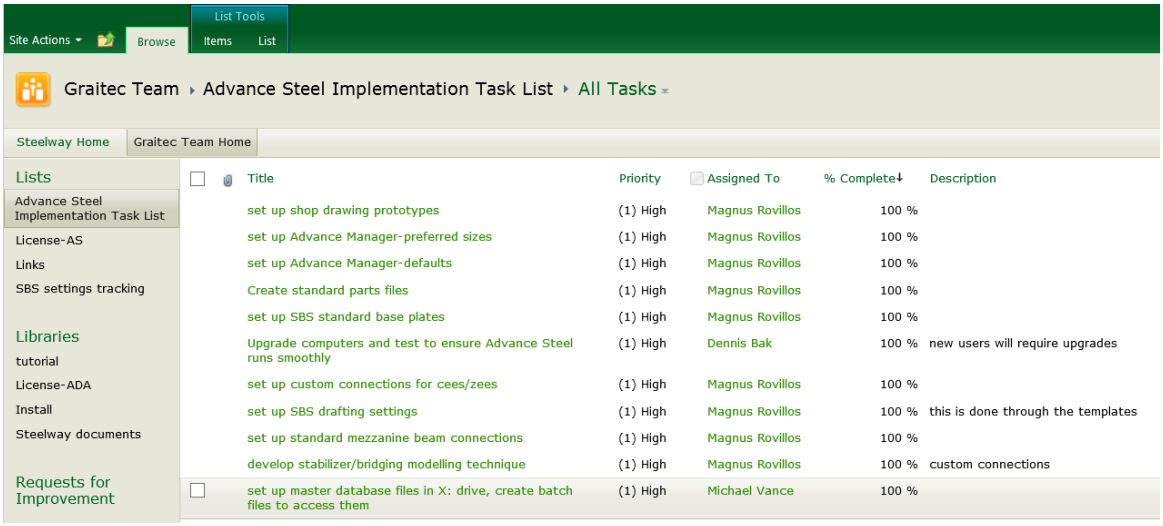


Figure 10: Screen shot of Advance Steel Implementation Team's SharePoint site

- **Prepare company specific best practice manual for Detailing/Checking**

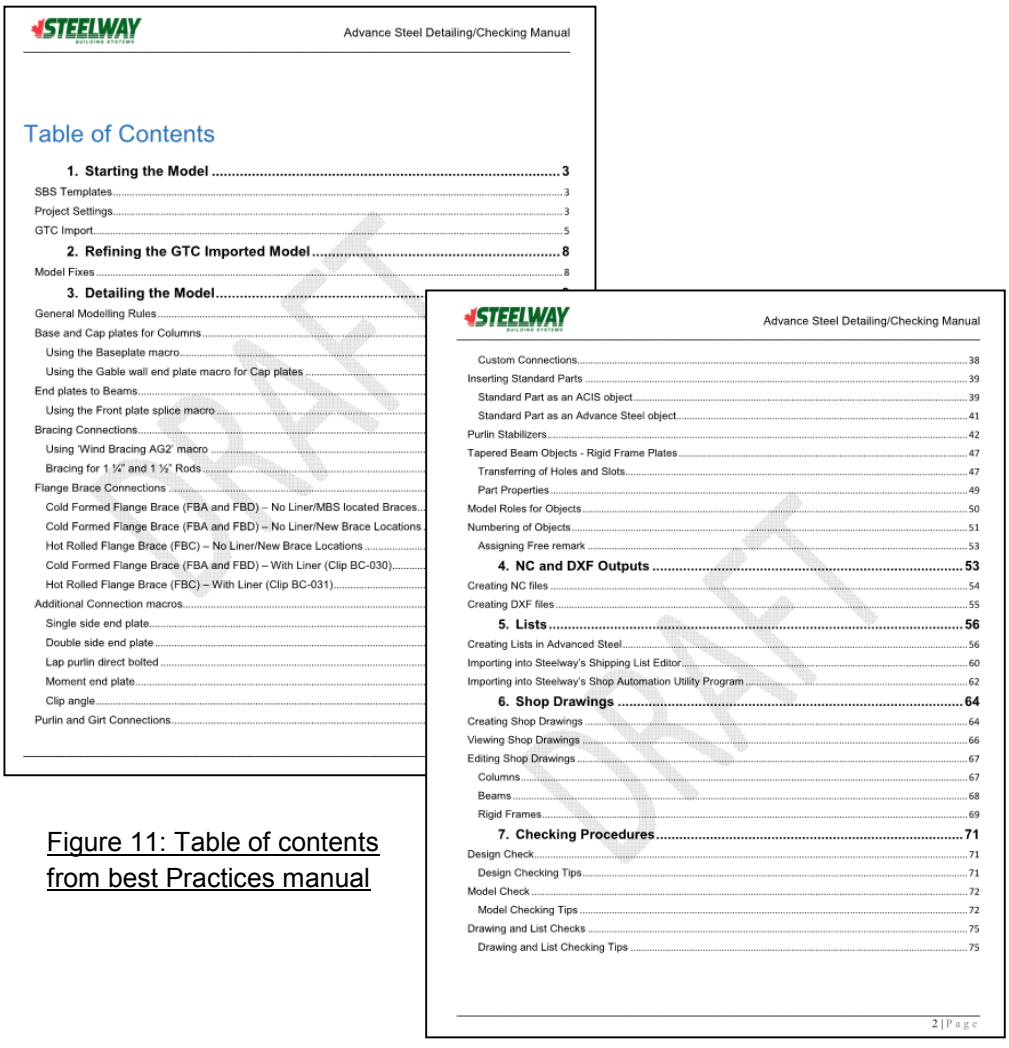
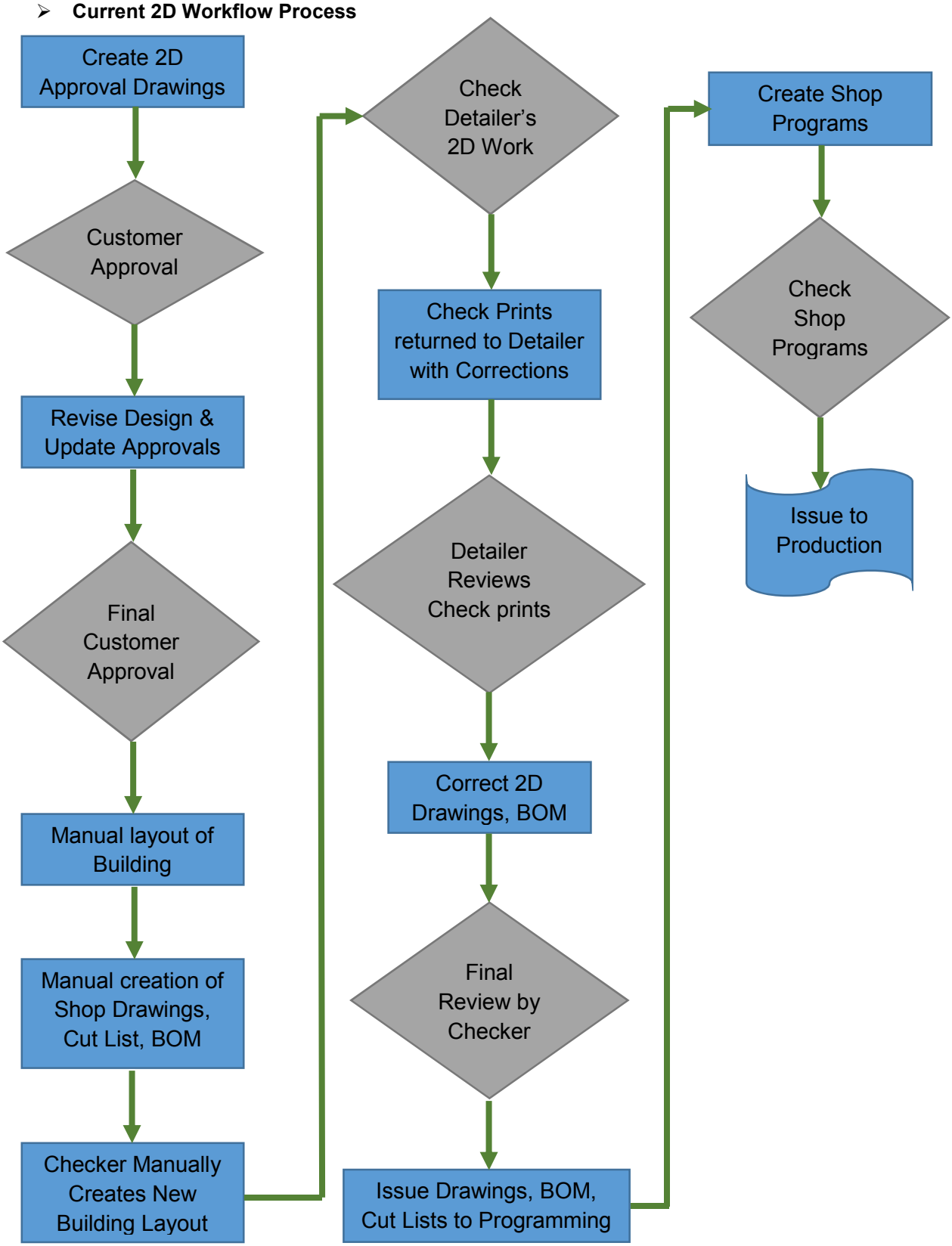
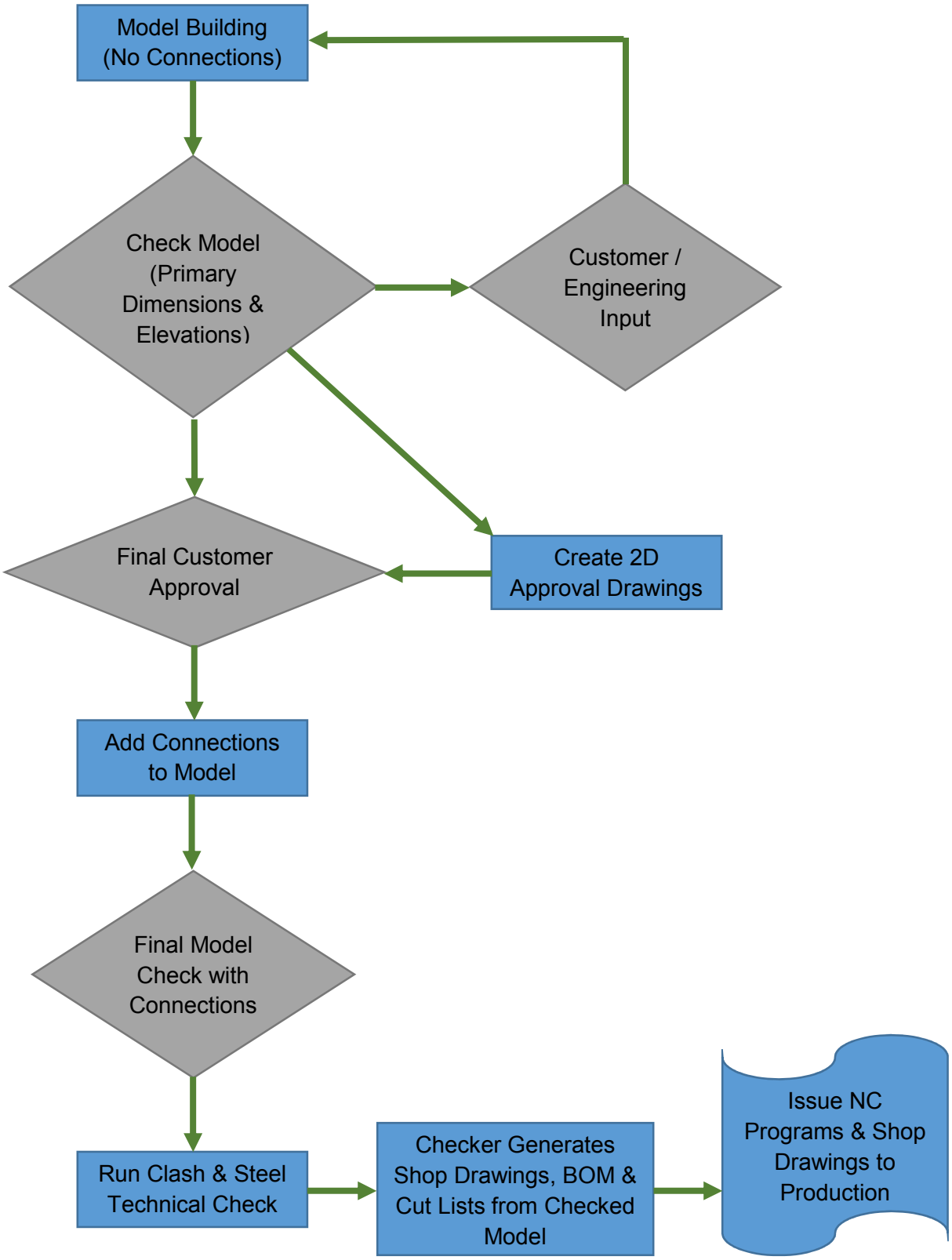


Figure 11: Table of contents from best Practices manual

➢ **Current 2D Workflow Process**



- **Streamlined 3D Workflow Process**



C) Benefits using Advance Steel on First Major Project

- **Total structural detailing and checking hours reduced by 15% vs. estimated (2D methods) on first project (490 tons)**
- **Above comparison included major change to roof elevation**
- **Easier review of details by engineer prior to shop release of fabrication drawings**
- **3D isometric details used on erections drawings to help erector on site visualize complex canopy details**

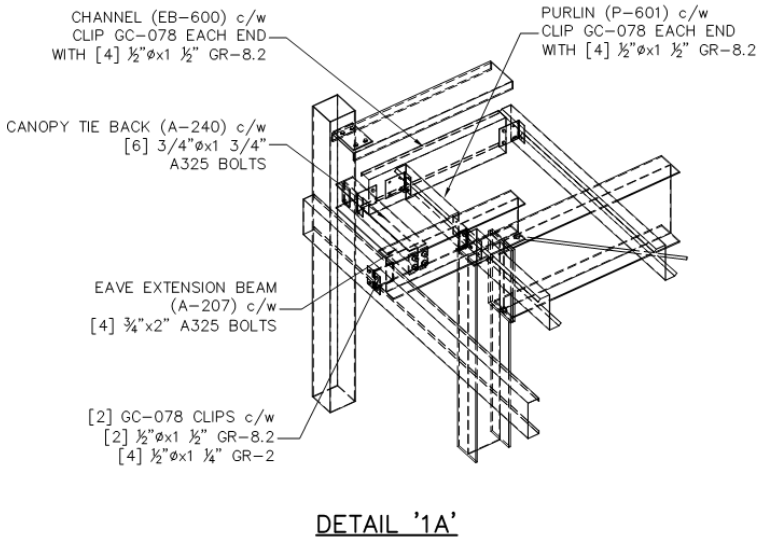


Figure 8: Example of ISO view from 3D model added to 2D erection drawings

- **No fit-up issues on site which lead to reduced erections time**

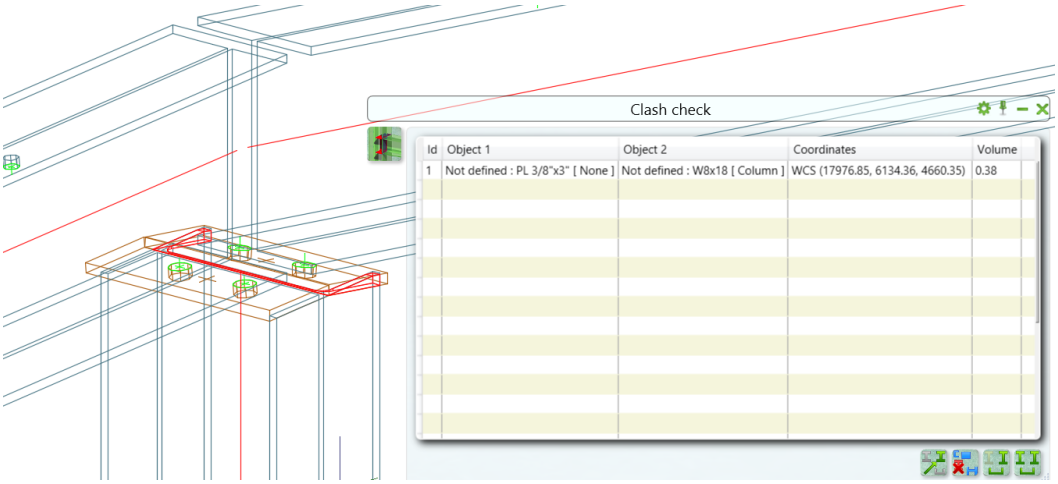
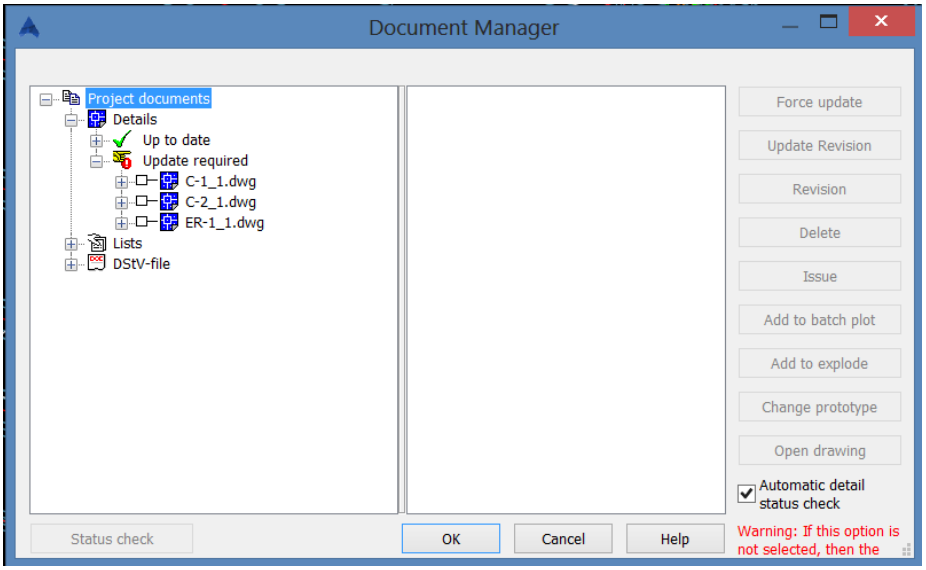
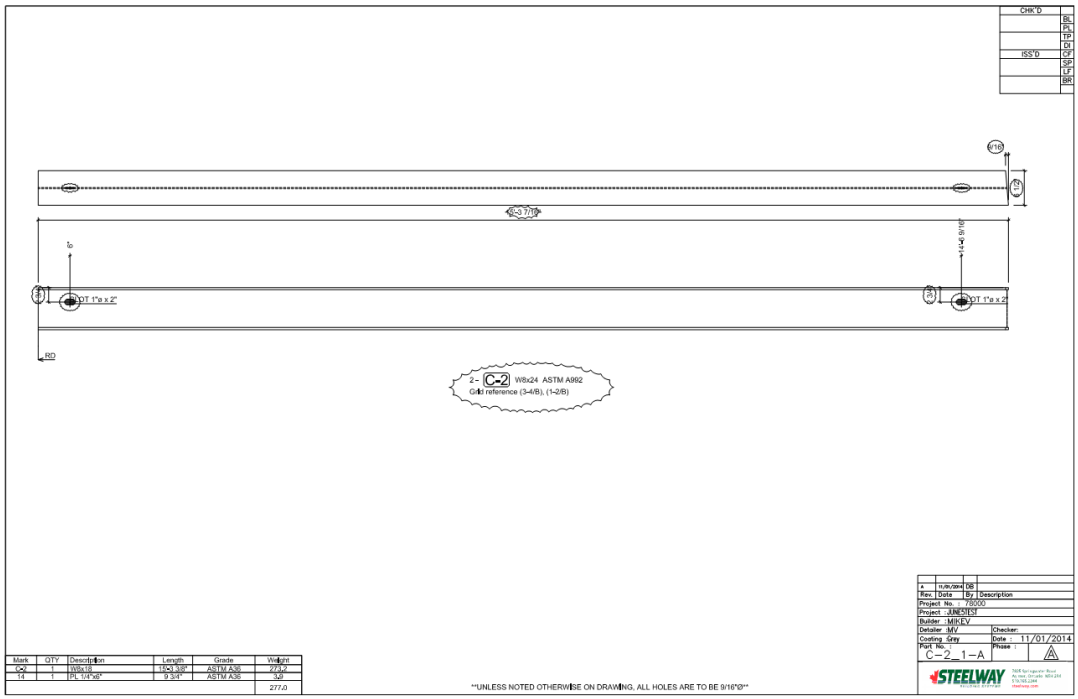


Figure 12: Screen shot of Advance Steel Clash check report

- **Change to 3D model automatically notifies detailer/checker that updates are required**



- **Shop drawings automatically linked to 3D model, including parametrically added dimensions**



- **Time invested customizing Advance Steel prior to starting first "live" project paid off**
- **Automatic generation of DSTV files by Advance Steel for Ficep beam line shop programs**
- **Project finished on schedule**

D) Our Vision for Future Development

- **Select local architectural/consulting firm that will work with us to develop effective links between Autodesk Advance Steel and Revit for building model approval (ie elimination of 2D approval drawings creation)**
- **Promote our industry via effective exchange of building models and details at the concept stage**
- **Select local builder/contractor that will erect building using 3D model via tablets from site**
- **Further implement paperless production facility to allow maximum paper sizes, reducing and in some cases eliminating shop drawing editing time**
- **Integration with robotic weld cell for tapered beams/columns**