

Problem:

Navisworks is a great tool for detecting clashes between building components and allows contractors, engineers and designers to effectively address these issues before construction begins. Navisworks however, only recognizes what we know as “pipes”, “conduit”, “duct” etc. as geometric shapes. When we run Clash Detective, Navisworks finds locations where these geometric shapes clash. We as the users, however, need to sort through the thousands of clashes that Navisworks reports and determine whether there are duplicates. How tedious!

Solution

As working professional in an increasingly competitive industry, we need to spend less time sorting through clashes and more time resolving them. Clashspheres is a two-part plug into Navisworks that can be embedded into each engineer’s workflow to help them effectively sort and organize clashes by location.

Part 1: Gridlines Appender: The Gridlines Appender appends the Clash Reports that Navisworks spits out with gridline locations for where the clashes occur. This allows the user to easily sort the clashes by gridline location and use this information to quickly determine whether multiple Navisworks generated clashes are duplicates.

Part 2: Clashspheres Generator: The Clashsphere’s generator is a visual aid that helps the user visually determine exactly where the clashes occur. Oftentimes, Navisworks generates viewpoints that do not make it very easy for the user to quickly determine the exact locations of the clashes. The user uses Clashspheres to generate spheres centered around locations of the clashes in the model viewer creating an effective visual aid for determining the exact location of the clashes.

The combination of these two tools helps to make clash detection more efficient and effective at communicating the problems that need to be resolved before the construction work takes place. The tools can be used together or independently depending on the needs of the user.

Download

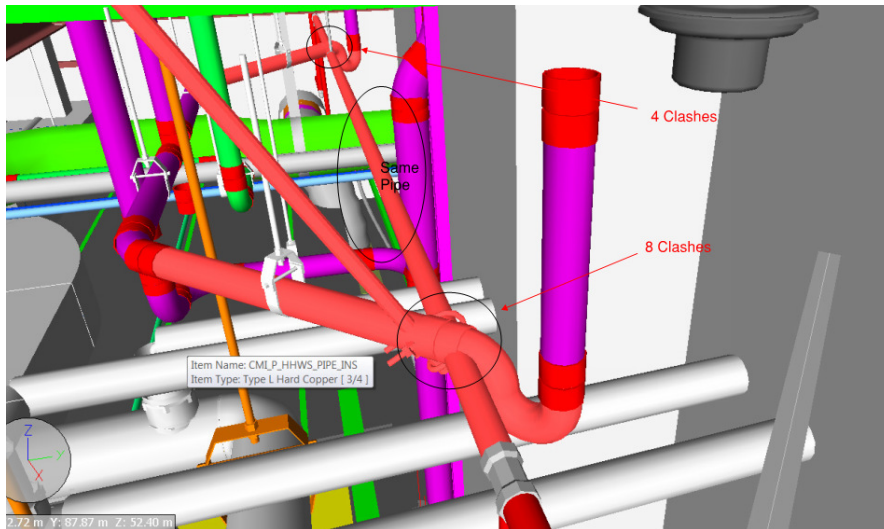
You can download the Clashspheres generator by requesting a link from Philip Lorenzo. The gridlines appender is customized per project, as each project has a different set of gridlines. Please e-mail Philip (philipglorenzo@gmail.com) with a link to your Navisworks project to have a customized plugin for your project.

Installation (new installation instructions to come)!

Instructions: Clash/Viewpoint Gridlines Appender

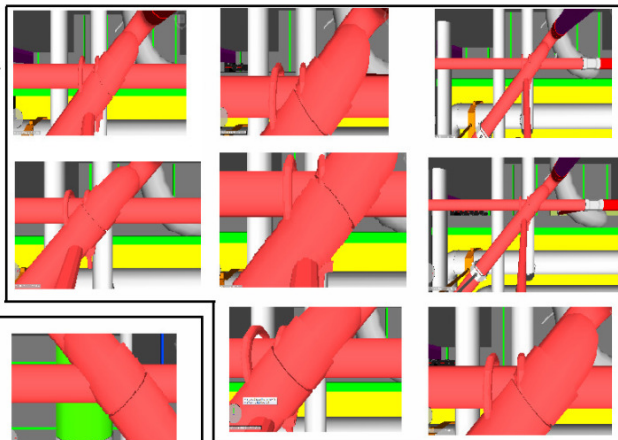
- 1) Open up a navisworks file.
- 2) You'll notice an "Add-Ins" tab. Click "Append Gridlines to Viewpoints" or "Append Gridlines to Clashes", depending on which action you'd like to perform. (Need to explain the difference; this may get confusing).
- 3) Shift-Select the clash report that you want to rename, and click "Rename"

Note: These clashes can then be “sorted” and organized neatly to aid in the identification and re-coordination of clashes. The XML files created in Navisworks 2013 is exportable and is compatible with users down to Navisworks 2010 (manage or freedom). Refer to attachment.



Classified as “one” clash to evaluate, since it is only one pipe

- 7DS.4W.4 Clash127
- 7DS.4W.4 Clash128
- 7DS.4W.4 Clash214
- 7DS.4W.4 Clash288
- 7DS.4W.4 Clash389
- 7DS.4W.4 Clash434
- 7DS.4W.4 Clash49
- 7DS.4W.4 Clash85
- 7ES.4E.4 Clash195
- 7ES.4E.4 Clash284
- 7ES.4E.4 Clash359
- 7ES.4E.4 Clash489



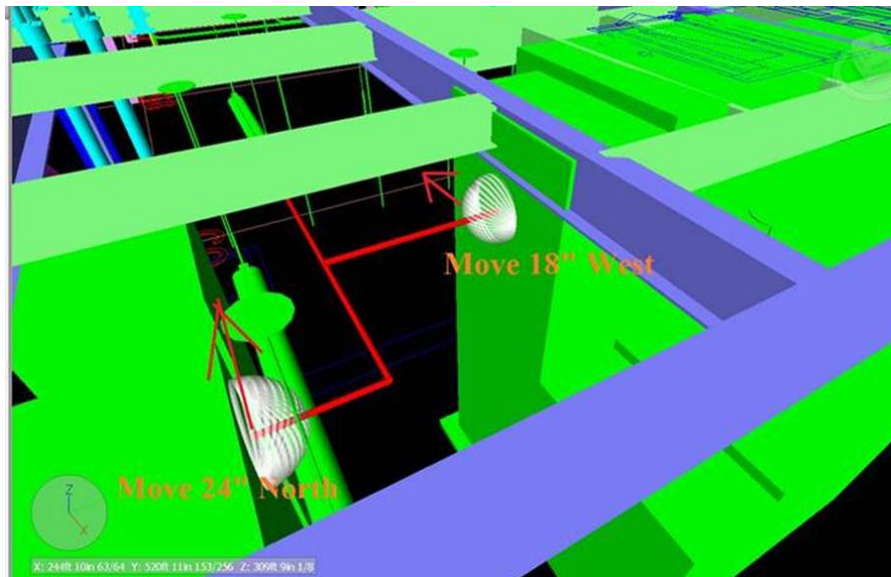
Instructions: Clash Spheres Generator

- 1) Open up a navisworks file.
- 2) Click the "Add-Ins" tab and then click "UserClashDetection"(we should call this Clashspheres to be consistent for what we have developed) to run the ClashSpheres plugin.
- 3) In the Clashsphere's window, check the box next to the clash report for which you'd like to generate spheres
- 4) **Click the “options” button** (the little gear). Change units to “Feet”, and click and drag the radius size bar to maximum. Change the color to your preference; white or red generally works well.

- 5) Next, **click the sphere button**, which will then generate the spheres
- 6) **Click the “Home” tab** in Navisworks, and **click the “Selection Tree” button**
- 7) Find the newly created file within the selection tree, which should show up as “ ‘name of current Navisworks file’ + Clashes_”today’s date.” Select the file with the **right mouse button** and **click “Units and Transformation”**
- 8) Change units to inches. Spheres should now appear at the clash locations.
- 9) Revisit the viewpoints window and open up the file where the new clash report was generated. Select one of the viewpoints. Each viewpoint should now have a sphere at the center of the clash location!

Note:

- The Clash Spheres Generator will allow you to encapsulate all clash locations within a transparent “sphere”, allowing for a more efficient method for reviewing clashes throughout a building.
- Open source .dxf files are also automatically created in the “C:/Clashes” folder that enables detailers or BIM Managers to import the spheres into their native drafting environment, such as AutoCAD MEP+/Revit/CADFAB. This can reduce the need to jump back and forth between Navisworks and AutoCAD.
- Other BIM Managers are already utilizing this method through a paid 3rd party website, engspider, which I’ve been told does require some “workaround” loading of files, and is not 100% reliable. This plugin stays within the Navisworks environment.



Questions/concerns/comments/suggestions, please feel free to contact Philip Lorenzo anytime at philipglorenzo@gmail.com