

## MICE Hall, South Mezzanine Modification

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### ***Introduction***

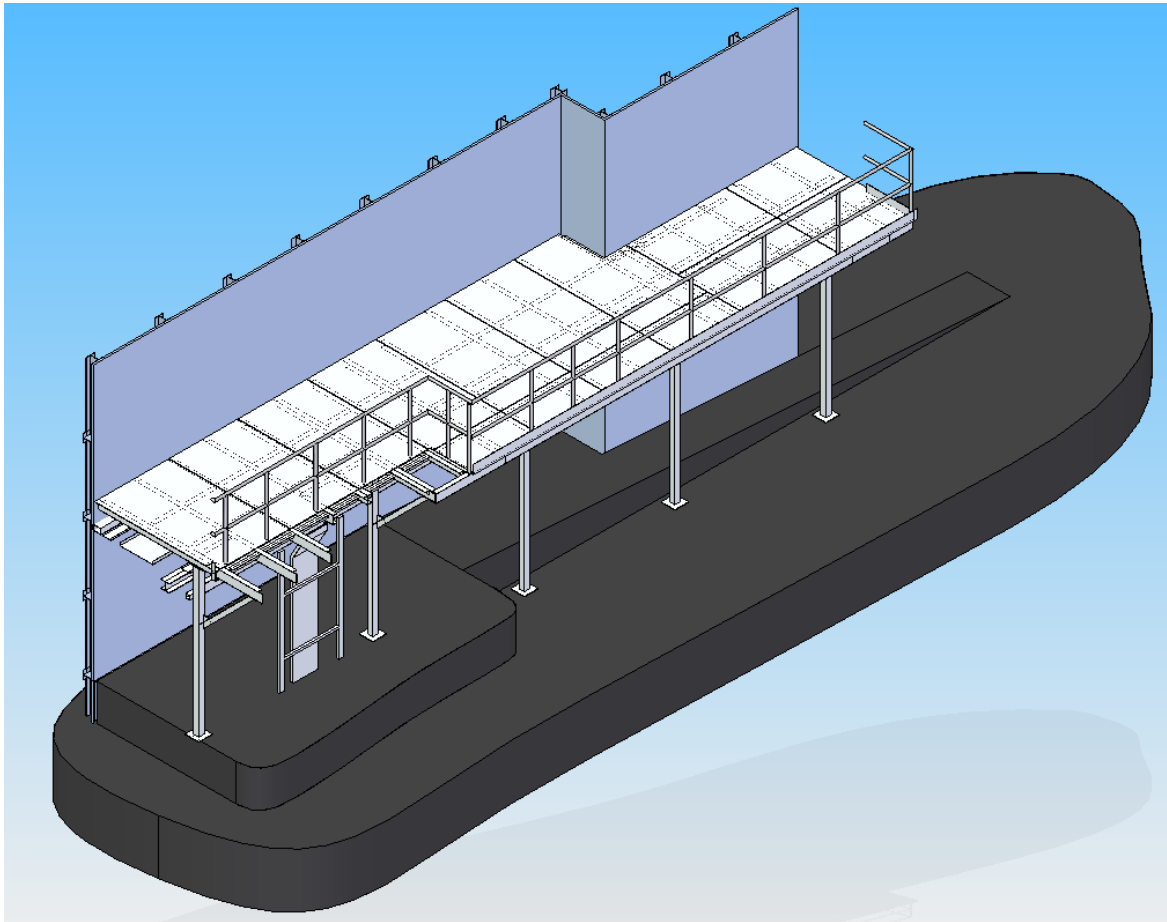
This document shows the work involved to modify the current South Mezzanine in the MICE Hall to the configuration required for installation of the MICE Cooling Channel Devices. The required configuration is compatible with the AFCs, RFCCs and the EMR (where there are currently issues for each) at all Steps.

Note this is not a specification for the modification but a general note on the complexity of the modification to gauge the work involved and the processes that will be used.

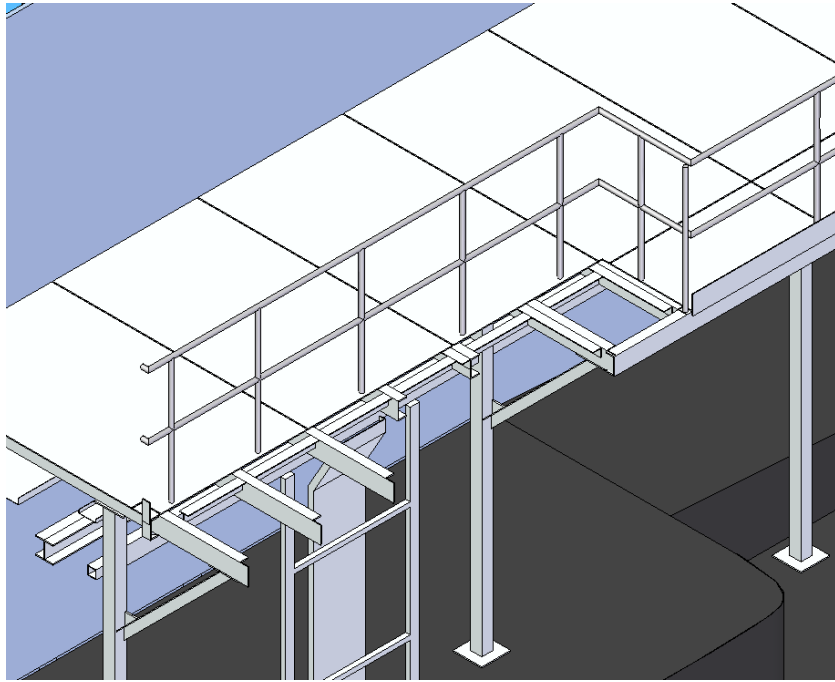
### ***Current configuration***

The South Mezzanine has been temporarily modified and looks as per the view below. The section that has been removed was to make way for craning in of the EMR detector at Step I. A major modification is required as currently the RFCC, the AFC and the EMR will all clash with the South Mezzanine during installation. The idea is to raise and shorten the front edge of the platform with platform sections that span between the uprights, thus allowing intermediate beams to be cut back giving additional room under the platform.

These platform sections will also be hinged to allow them to be lifted, this will move them back further for installation of the EMR into the KL trolley using the crane.



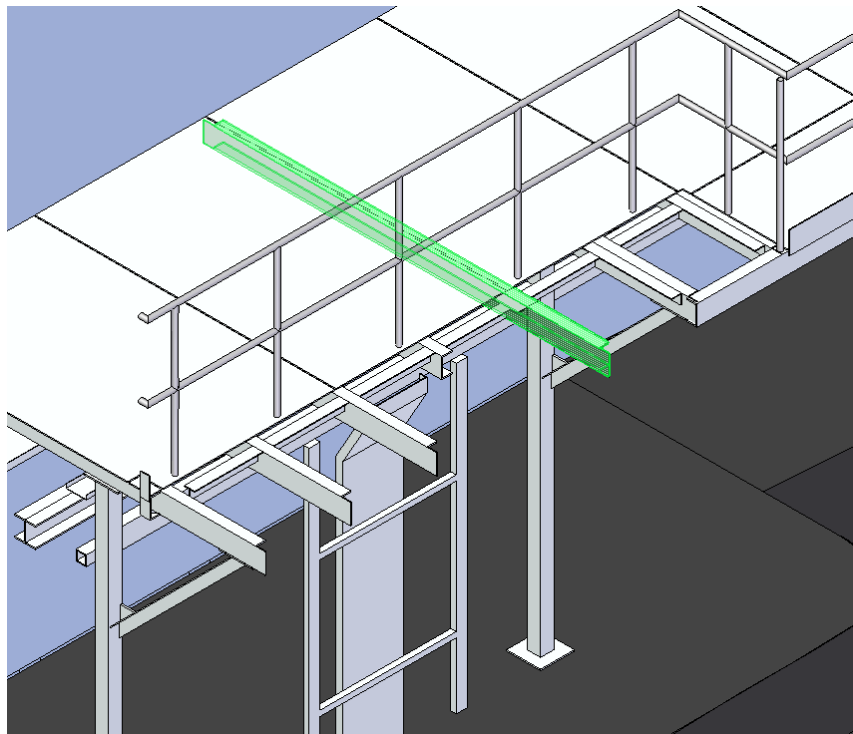
**General view of the South Mezzanine platform (shows only the section that protrudes, in line with MICE Cooling Channel)**



**Close up view of the missing section, note some of the intermediate beams have already been cut back.**

***Replace cut beam***

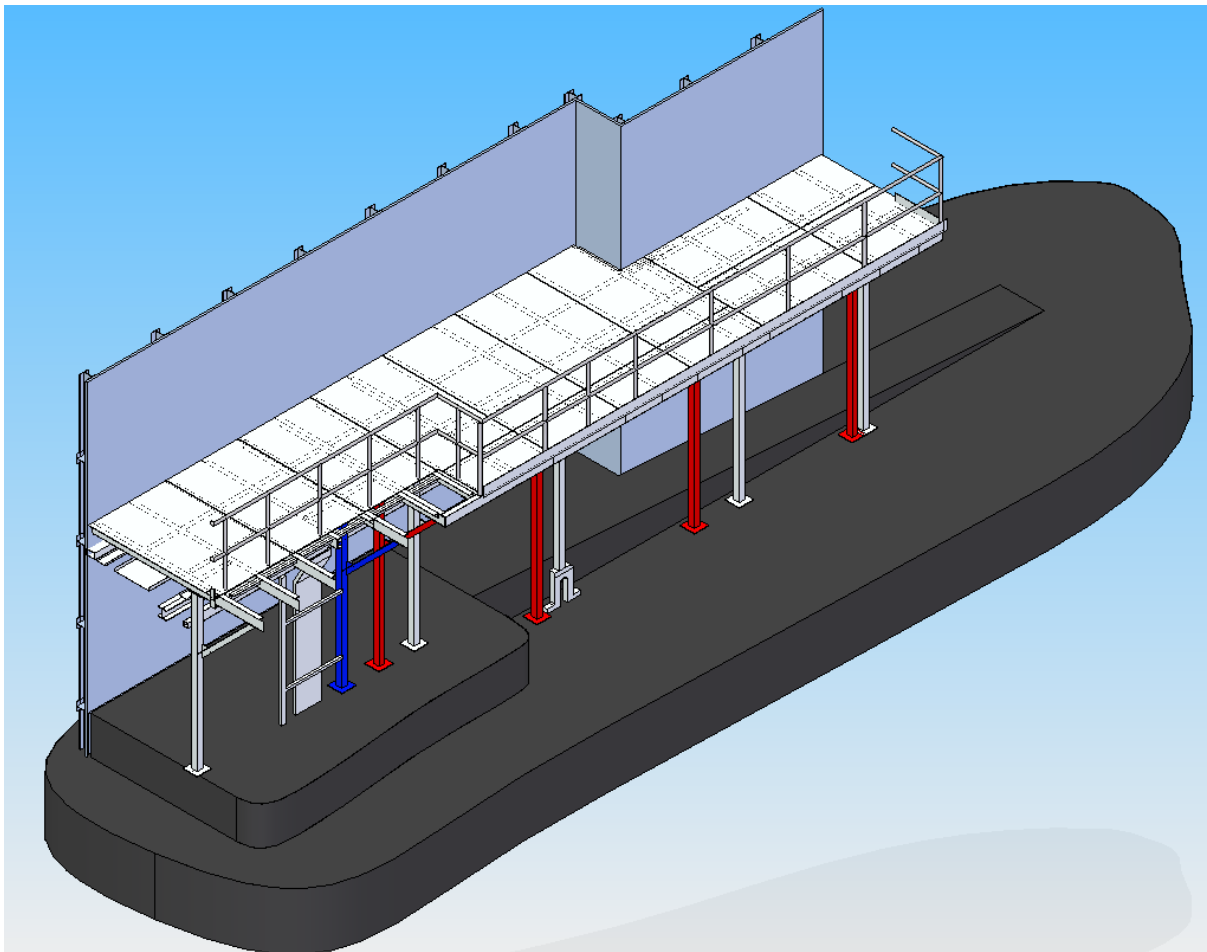
The first task is to replace the cut beam, this was cut to allow the EMR detector to be installed in the Step I position.



**Beam replacement in green**

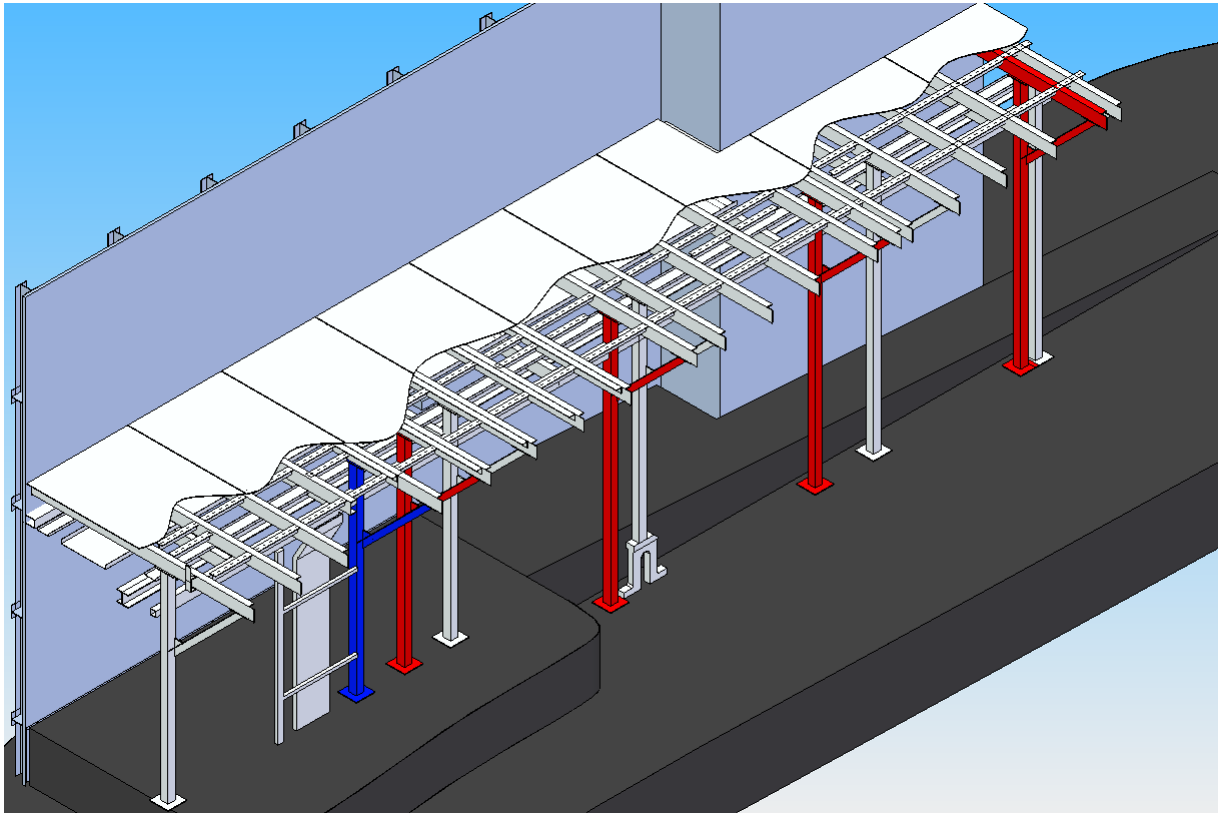
### ***Add & move uprights***

The AFC devices clash with 3 of the 5 uprights of the South Mezzanine. A fourth upright will clash with an EMR at Step 5 position. Also to prevent any of the platforms being overly long in their span, a 6<sup>th</sup> upright will be added.



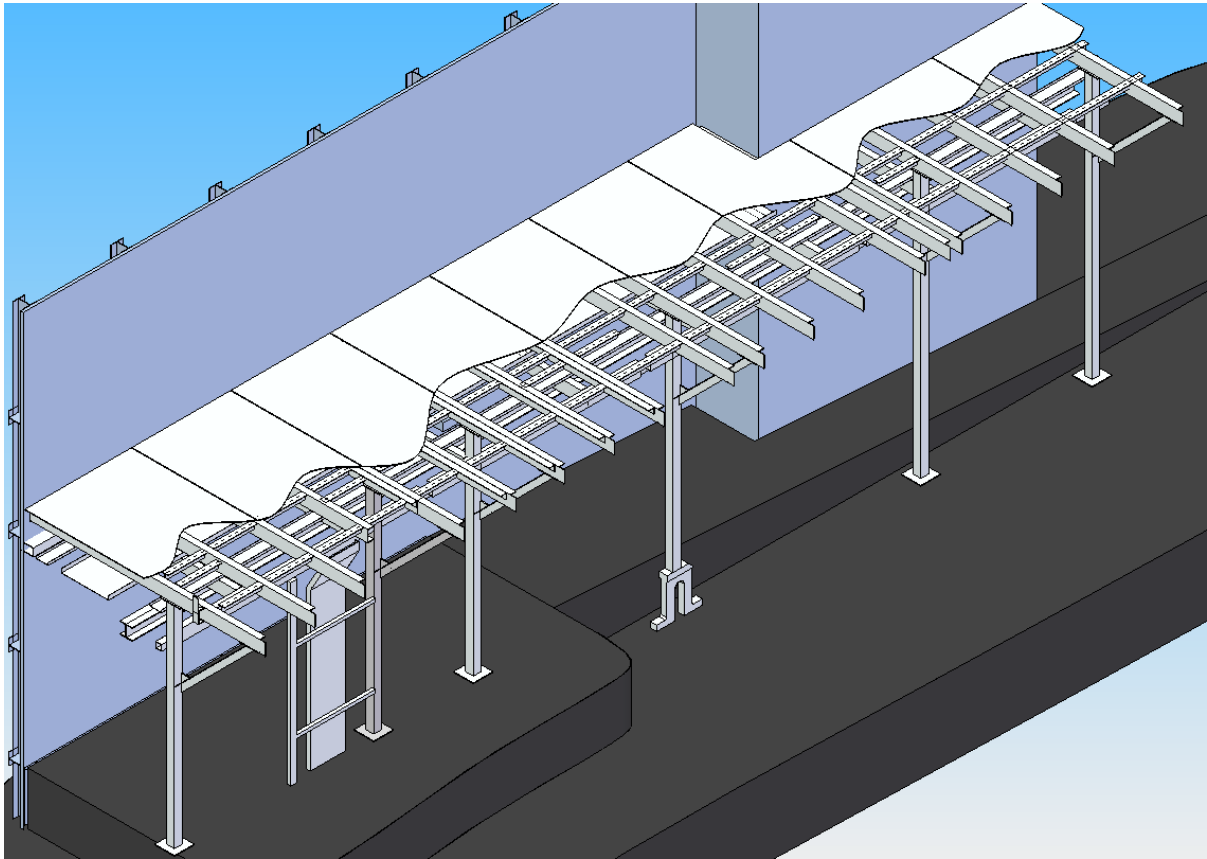
### **Uprights and beams to be added & moved**

The blue upright on the left is new. The next 3 uprights to the right (in red) are to be moved to another cantilever beam on the Mezzanine. The last upright in red can either be (preferably) moved with its beam over the small amount or a new beam installed which will be supported by the upright.



**Cutaway showing the uprights and beams to be added & moved**

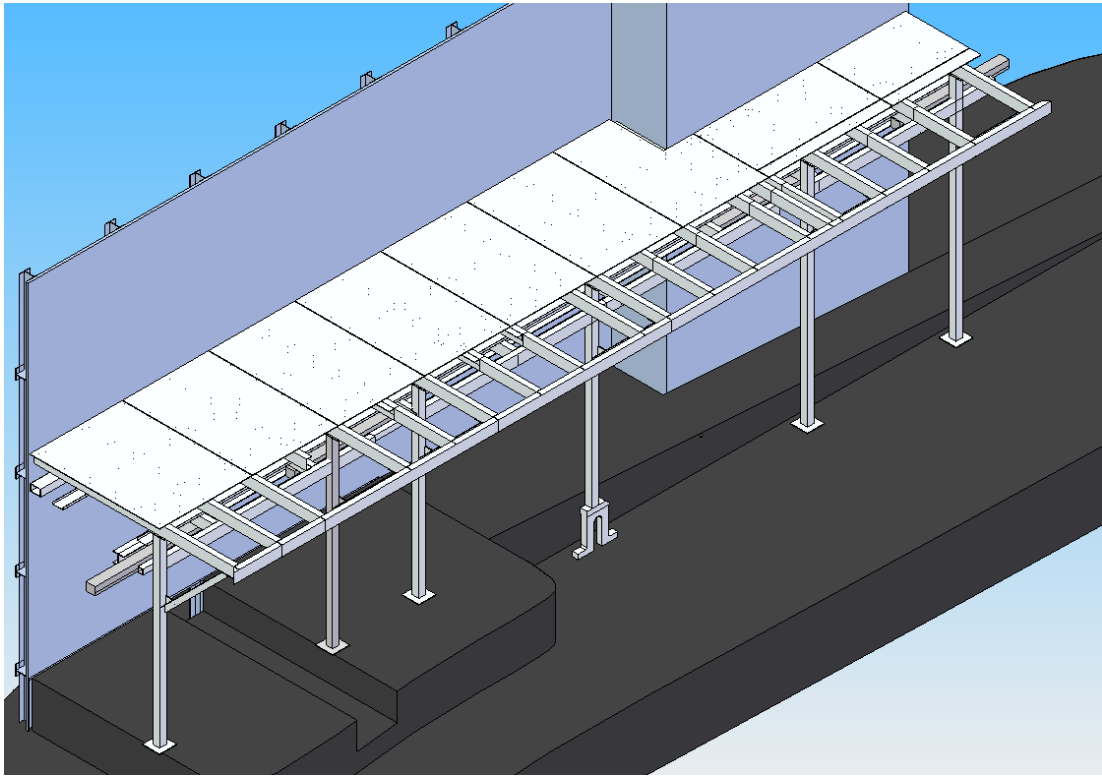
This cutaway shows the red beam on the far right that will be moved. (Note the front C channel that links the cantilever beams and the rail have been removed from this view for clarity)



**This shows the configuration after the modification**

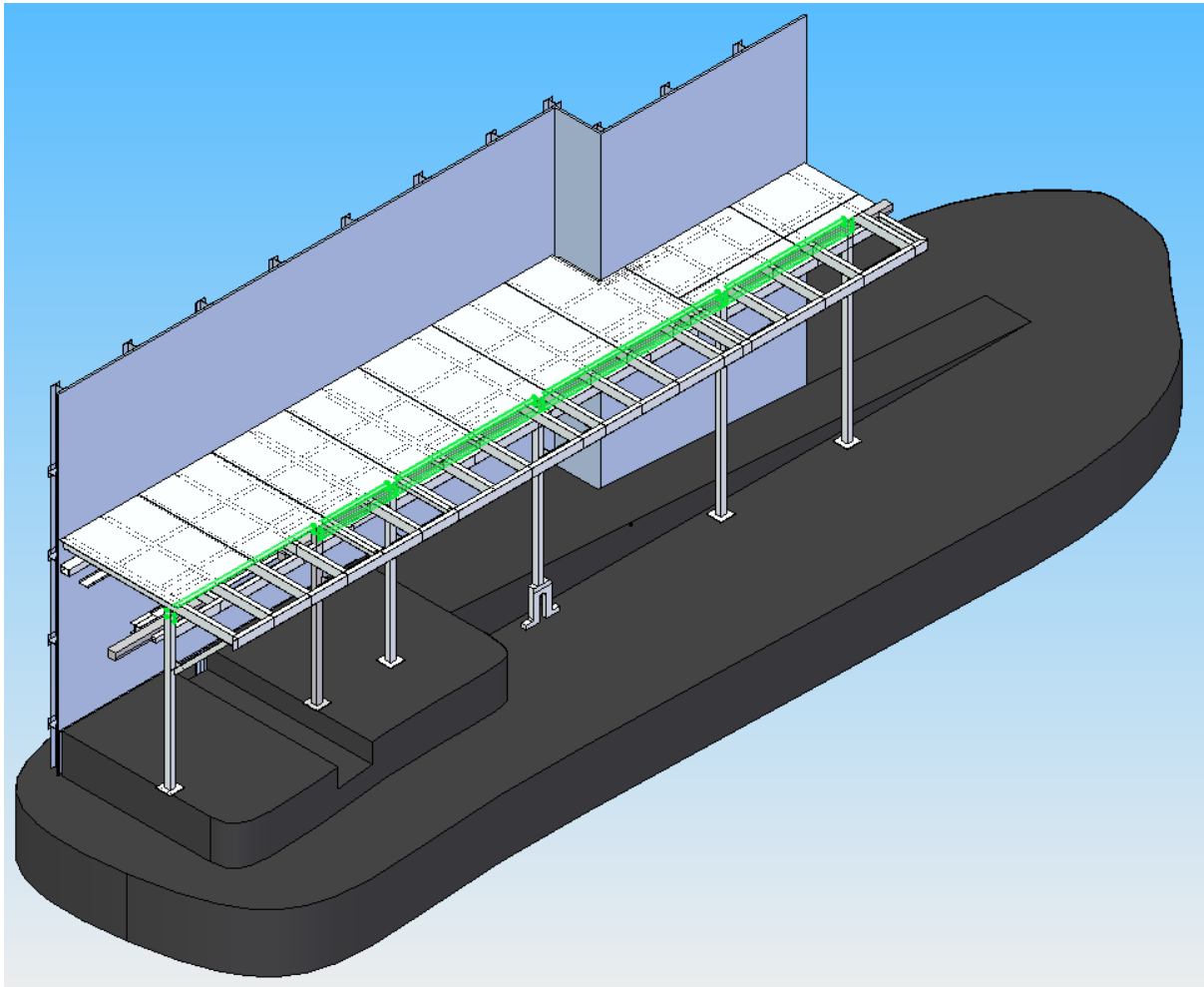
***Prep work for the platforms***

Once the upright beams are moved then the preparation work for the hinged platforms can begin. First is to cut back the top plates to expose the beams.



**Top tread plate cut back (the last piece of front C channel can be put back if necessary)**

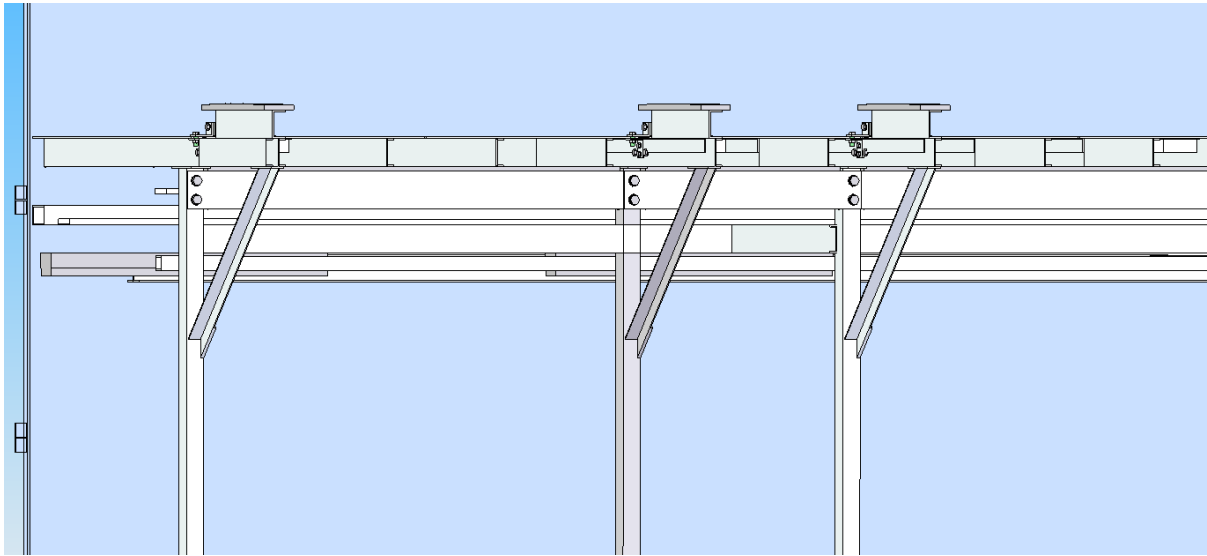
Add the support beams, highlighted in green below. Drilling of the upright legs will be required to suit. Bolt through the uprights to secure the support beams to them. Note that at uprights where the support beams meet, the support beams will overlap and share the holes in the uprights, it is suggested that the first support beam on the left, the middle and the far right hand support beams sit against the uprights, then the other two in between sit against the other support beams.



### **Support beams added (highlighted in green)**

The support beams will be placed below the intermediate cantilever beams by about 20mm and the connection will be made to the beams using fixed shims on the support beam. The shims can be fixed to the support beam before the support beam is added to the mezzanine, or packing with shims and the fixing of those shims can be done after the support beams are added.

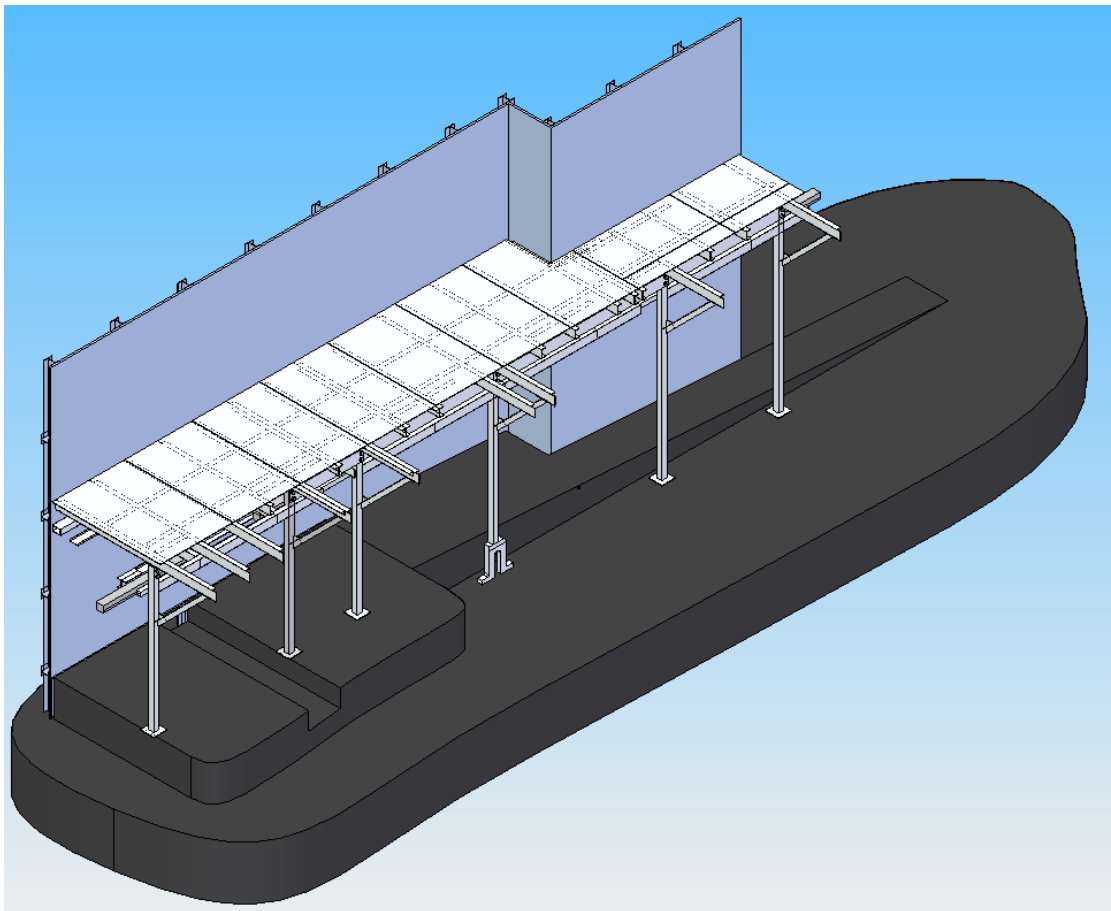




### Front view of support beams

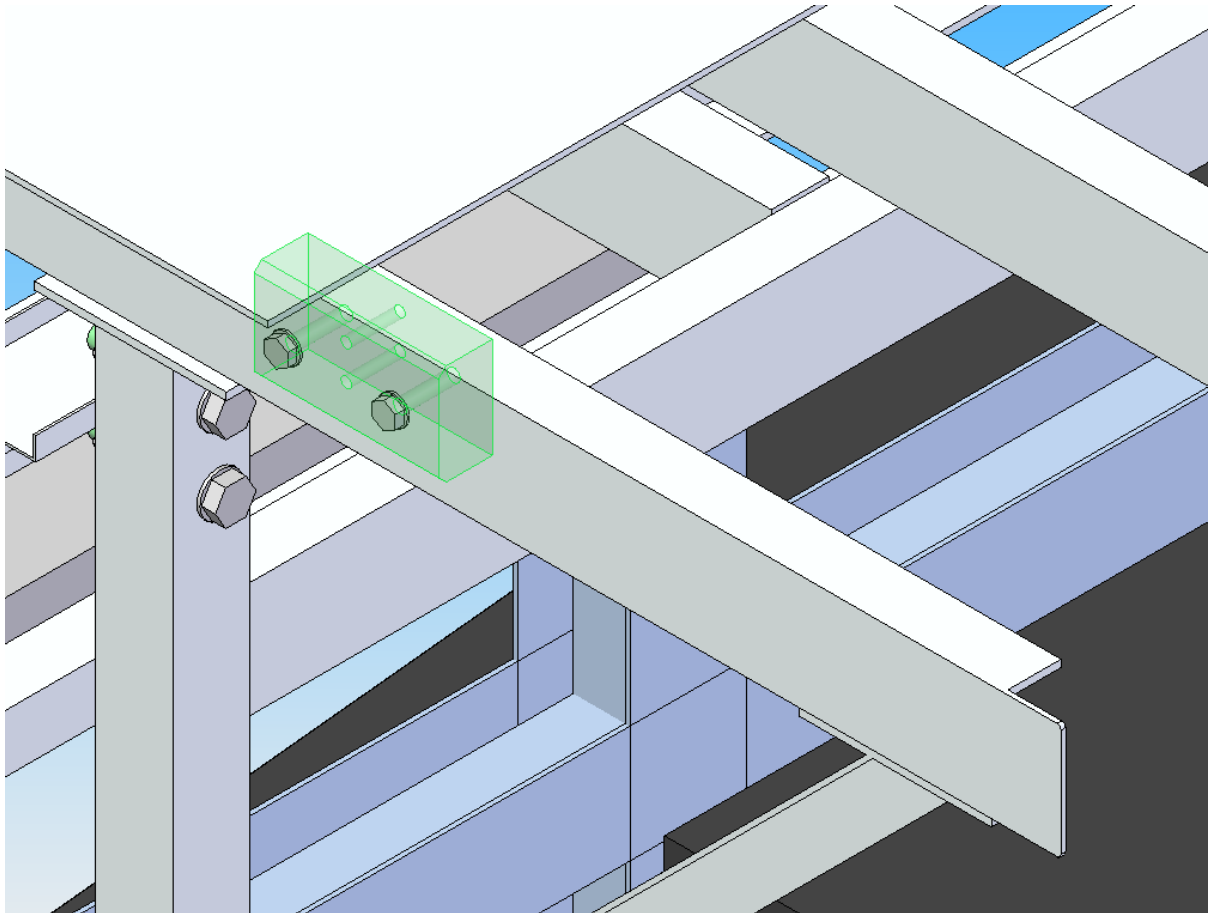
Brackets or bolted fixings will be added to fix the intermediate cantilever beams to the support beams.

The intermediate cantilever beams can now be cut back, they will protrude slightly out from under the floor plates to allow the hinged platforms to sit on them.



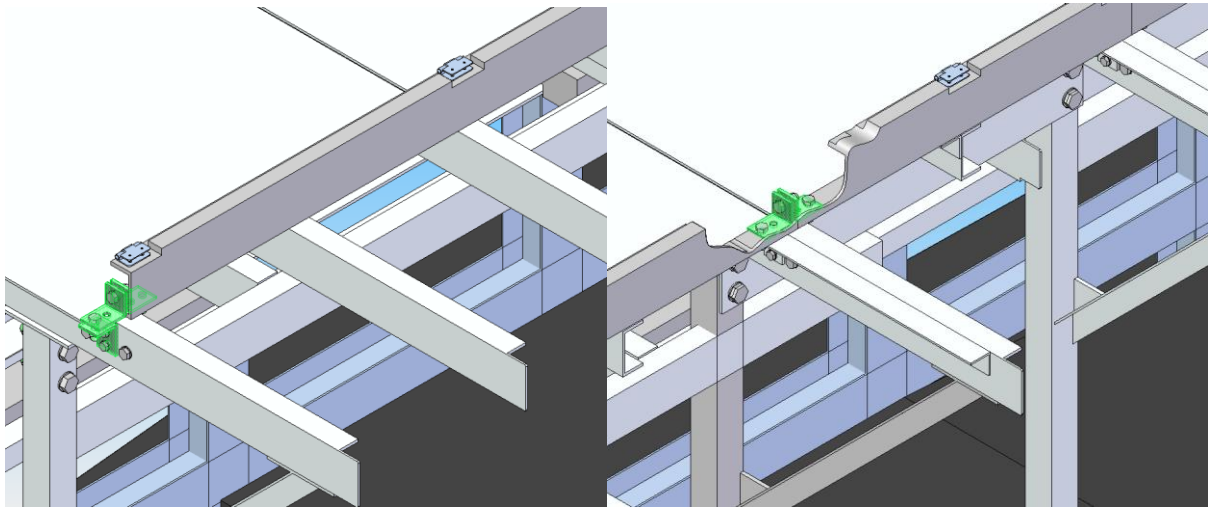
**View showing beams cut back (note they protrude slightly out from under the floor plates)**

The anchor plates will now be fitted to those cantilever beams supported by an upright. Drilling of the beams will be required. These plates will be fitted with the brackets that will take the back beams or hinged beams of the platforms.

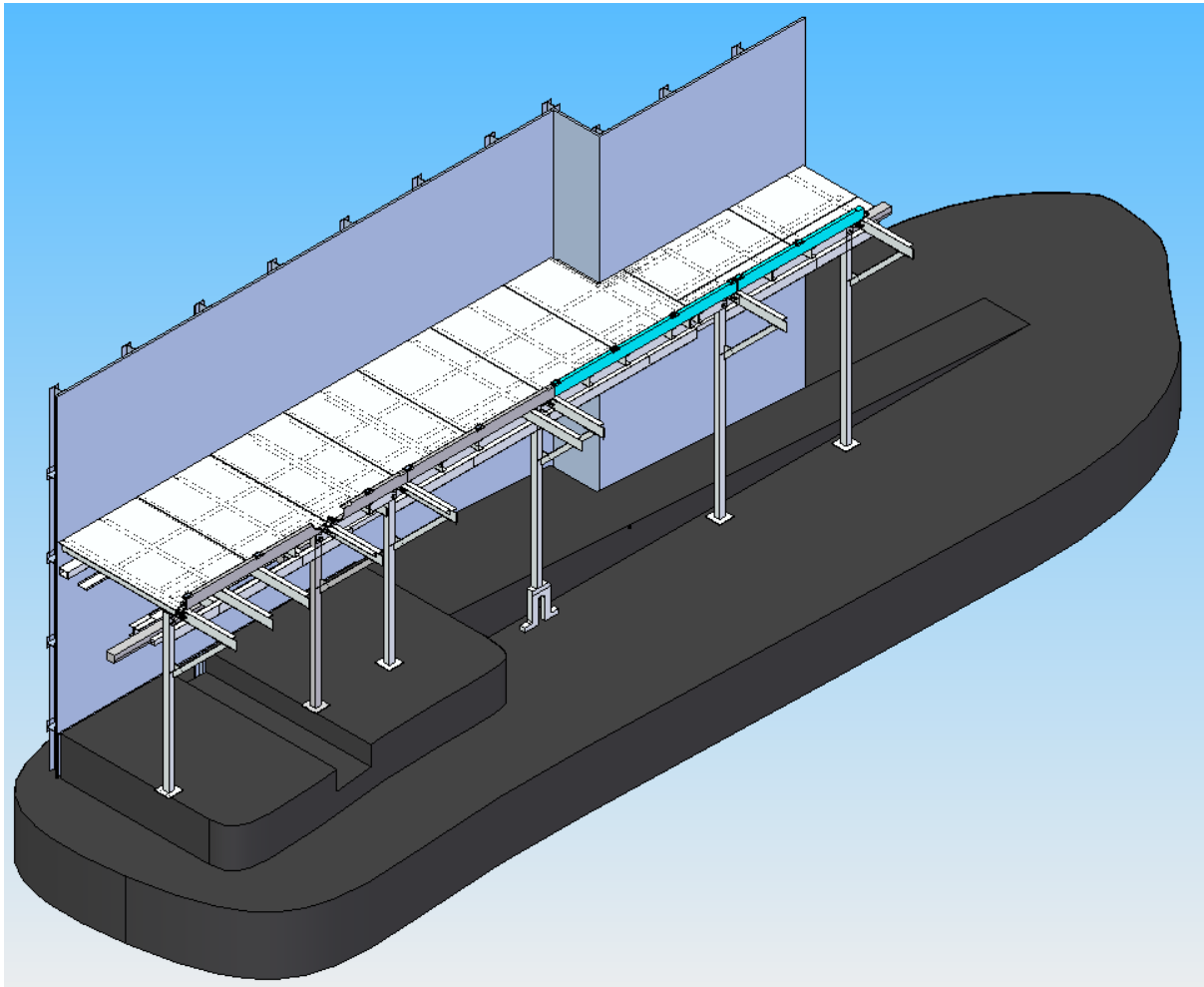


**Anchor plate hidden inside beam. Platform beam bracket holes and bolts highlighted on left hand side**

Next add beams and brackets for hinged platforms to span between those cantilevered beams that are supported by uprights. Drilling of the cantilever beams and the platform beams will be required to suit.

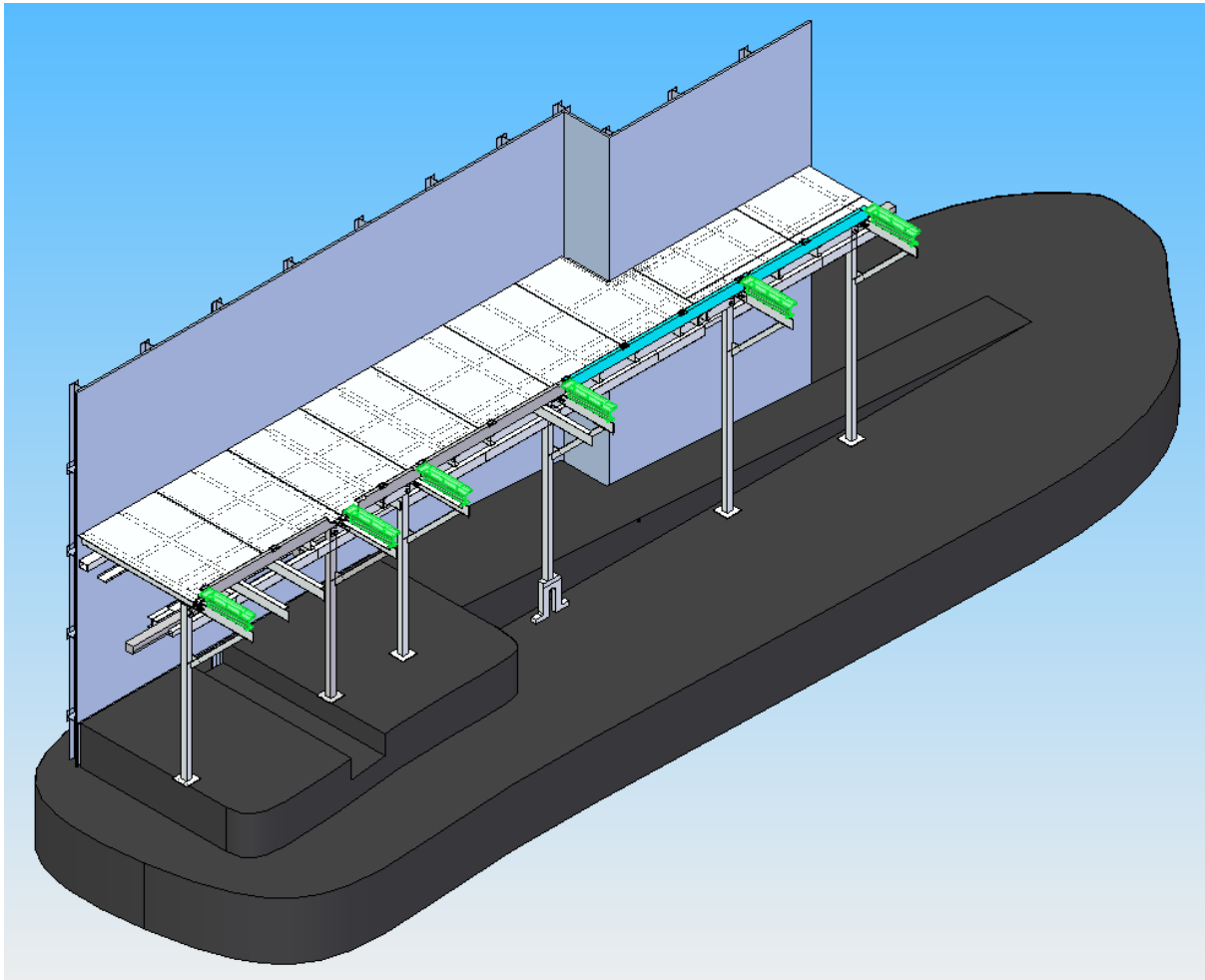


**Platform beam brackets look like this when assembled with platform beam  
(note the cutaway to show the brackets on the right hand view)**

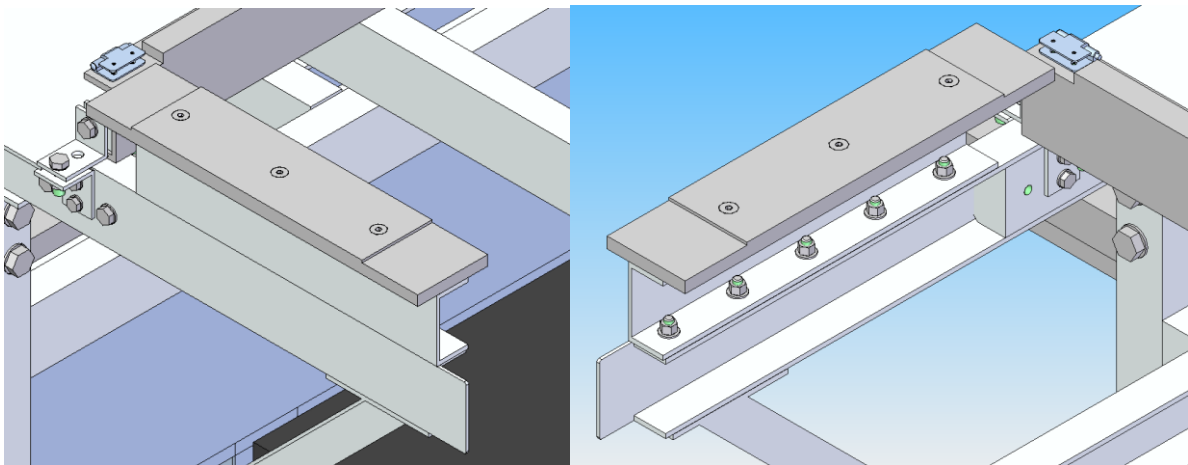


### **Platform beams and intermediate beam supports added**

Now add the platform shims that raise the platform (highlighted green in the view below). These are fitted to the cantilever beams that are supported by the uprights.



**Platform beams and intermediate beam supports added**

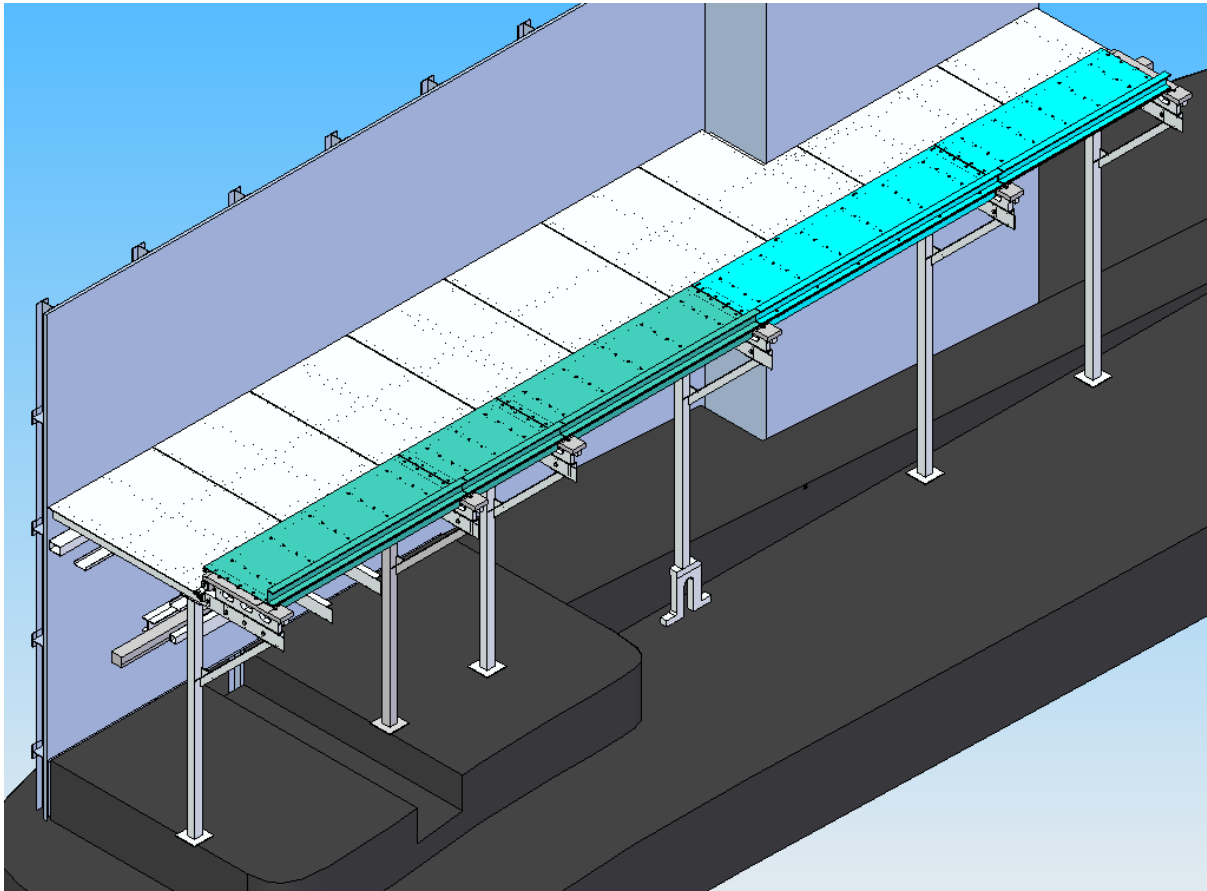


**2 views of the platform shims**

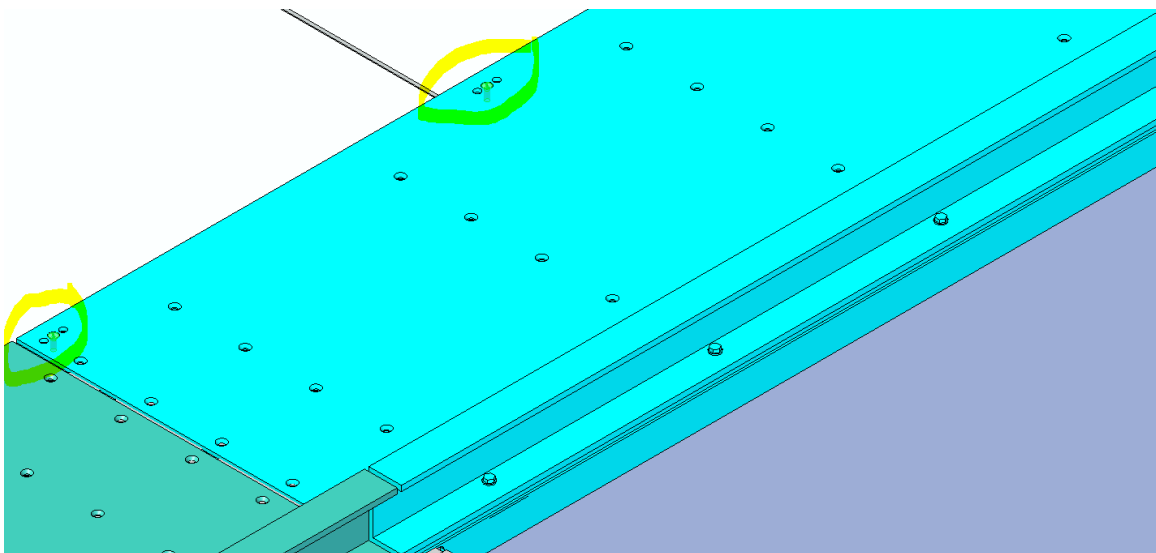
### ***Installing the platforms***

Now the components are in place to allow the installation of the hinged platforms. Fit the hinges to the platform beams and make sure the captive nut

at each hinge is in place. The platforms will be sited in final position, with the hinge closed, then add the fastener at each hinge through the top of the platform into the captive nut on the hinge.

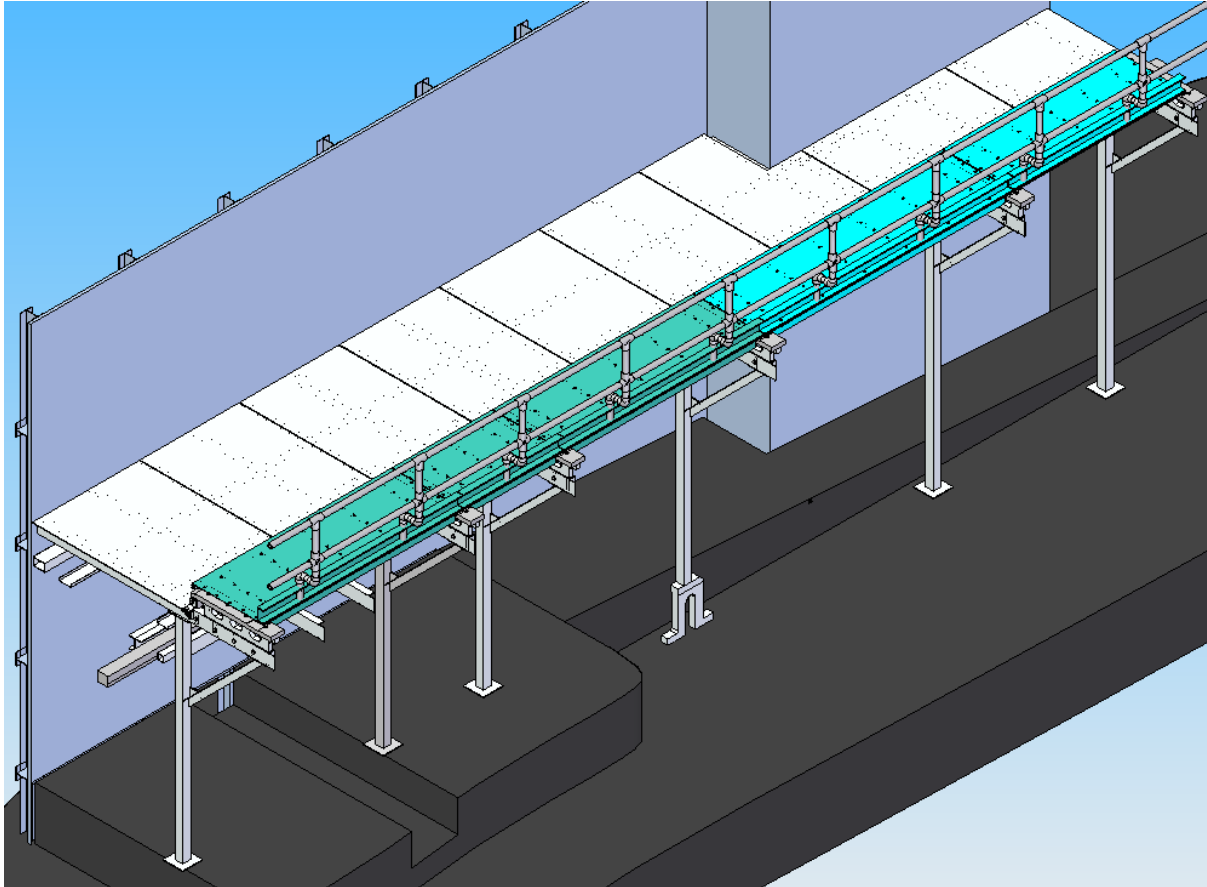


**Hinged Platforms all assembled**



**Single screw fixings at each hinge**

The handrails will be fitted to the hinged platforms next; this will require drilling of the 6" front beam / kickboard of the hinged platform.



### **Handrails added**

Note the offset in the handrails, this gives those on the platform more space to move without clashing with and of the cooling channel.