

AON SPRINKLER CERTIFICATION



Aon New Zealand

Aon Sprinkler Certification
Building 3, 46 Maki Street
Westgate
Auckland 0814
Telephone: 0800-AONFIRE

Aon Sprinkler Certification Technical Note		
Note Number: TN21-50	Issue: 1.	Date: 26 February 2021
Subject	Off-shore Modular Construction Remote Inspections	
Notice: Aon Sprinkler Certification Technical Notes provide guidance notes which may be used in certification of sprinkler installations by Aon New Zealand. If sprinkler installations are being certified by any other Sprinkler System Certifier, these Technical Notes may not apply.		

The advent of offshore prefabrication, such as is being used for modular apartment buildings, or prison cells does not negate the requirement of NZS4541 to complete a first fix inspection by a Type A inspection body. Where offshore prefabrication of building modules is proposed there is a need to engage early with the Certifier to ensure a planned methodology of inspection will achieve the same outcome as an in-person inspection. To date three different methodologies have been attempted.

Method one is to complete an inspection once the module has landed in New Zealand by the use of access hatches and lighting cut outs.

Method two is to complete the inspection by way of a video call. The inspector based in New Zealand directs their surrogate at the offshore factory about the module. The inspector can view the sprinkler system within the module on their screen as the surrogate moves about the module. The quality of the video connection and clear communication between the surrogate and the inspector is necessary to achieve a suitable outcome.

Method three is to have an independent engineer visit the prefabrication factory as the inspector's proxy and document the system installed within the module. Documentation needs to include enough photos to satisfy the inspector that fixings, brackets and pipe joints have been correctly installed and that product substitution has not occurred. The proxy engineer needs to compare and contrast the installation drawings with the actual installation and document any differences.

When an independent engineer is used as the inspector's proxy it is the independence of the engineer from the factory that is important. Ideally the engineer would be employed by a firm that holds ISO17020, or equivalent, accreditation. The engineer may also be employed by the building owner as the clerk of works or the Building Consent Authority's local agent. The status and acceptability of the engineer proposed is a point to discuss and agree with the SSC during the inspection methodology development phase.

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In all three cases there is a clear need for installation drawings that detail the exact layout of brackets and braces, the exact products to be used for the brackets and bracing, and the exact model of fire sprinkler to be installed. The SSC may request confirmation that certain products have been supplied from the original equipment manufacturers to avoid the possibility of counterfeit product.

It is our experience to date that remote inspection is suitable for simple modules. Identifying obstructions in a complex module by way of a remote inspection is problematic should a space contain numerous building services.

Every module must be inspected as part of the offshore quality assurance process. It is not acceptable to inspect one or two units and assume the factory manufactures all the remaining modules the same. We have seen first-hand differences in the detail between modules.

Lastly, when remote inspection is utilised it is necessary to establish that the module being put forward for inspection the actual model claimed.

We have had several experiences with remote inspection and have learnt the following:-

1. Product substitution goes beyond just using an alternative supplier's product to complete redesign. This is especially the case with bracketing.
2. Despite the sprinkler installation drawings being identical for all of the same module type the factory sometimes lays the pipe or bracketing out different from one module to the next.
3. Use of liquid sealants, known as pipe dope, maybe employed by the factory to seal the pipe joints. The overapplication of this product can run into the body of the fire sprinkler head and obstruct the water way.
4. Products available in New Zealand, especially bracketing and bracing, may not be easily sourced at the factory.
5. The factory may not appreciate that moving a pipe 50mm could result in the sprinkler head also moving 50mm and no longer being in rule.

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6. Rework in New Zealand to correct faults is normally difficult due to shallow ceiling cavities which severely limits access.

7. When using a camera the camera operator has to get quite close to the work. What an inspector can see when standing on the ground 5m away a camera may need to be only 1m away. This does depend on the quality of the zoom function of the camera being used.

A handwritten signature in blue ink, appearing to read "S. Ridder", is positioned above the name and title of the signatory.

Stephen Ridder
Fire Protection Consultant

Further reading:

Conducting Remote Video Inspections (August 2018) by National Fire Protection Association.

NFPA 915 Standard for Remote Inspections. (Preliminary draft) by National Fire Protection Association