

From: Darren Joyce
To: Crittall
Sent: **12 December 2011 16:29**
To: 'Ian Shepherd' **Cc:** 'Paul Smith'; 'Norman Burgess'; 'John Pyatt'
Cc: All members SWA W50 Focus Group
Subject: W50 development (CONFIDENTIAL - CWL & SWA W50 Focus Group)

CURRENT CWL/SWA DIFFERENCES:

1) CWL

Short leg SWA section v. CWL 'no leg' flush perimeter section: Whilst the SWA design does retain an 'I' beam configuration for rigidity and 'to assist with straightening sections post galvanizing', CWL consider that the 'no leg' design has merit, and could prove easier to process in regard to cropping and hole forming. Production tooling could be simplified (and therefore more robust), the additional support that tooling might give to the wider flat section, is likely to result in less deformation occurring during the production process pre-galvanizing, and therefore less work would be required post-galvanizing (easier to fettle etc).

SWA Response

Many of our members saw cut as opposed to crop so they will of course not have problems.

Whilst it is agreed that there is without doubt more chance of deformation during cropping with SWS design in lieu of flat legged CWL section it is not deemed to be a significant problem. This is best demonstrated by the similar procedure with W20 sections where short legs exist. No significant problems have been experienced with W20 although we do acknowledge that W20 sections are smaller front to back.

For tooling strength, it is believed that the strength of the new dies and tooling would be so increased due to extending out for a 50mm section over the already-strong 40mm section tooling for W40 – that no problems would exist. New tooling will be required whatever we decide to do so the expense is already there.

We believe the fettling process will actually be significantly less with legs. Fettling would not be required to any great standard between the small legs on the SWA design whilst the entire flat surface would need fettling down on the flat edges section.

We also reiterate that we must maintain the ability to directly glaze into the outer face of the outer frames – thus permitting small sightline and economical true multilight configurations and minimizing section numbers at the same time. We note on your drawing IS/SK 0332-B for the mid rail on the GGF (DSRW) windows that you have added an extra leg to make the section work. This would add to the number of section in the range.

We also feel the current step and channel in the CWL section would be more problematic in regard to cropping deformations (and post-galv deformations) than the "knuckle" we currently show.

2) CWL

The air-gap (cavity void area): The CWL design proposal features a 2mm wider cavity void than the latest SWA open out casement sections; this would (in our opinion) create greater flexibility and the potential to enable a wider choice of hardware and fittings to be accommodated, and would be useful where some pivot designs are considered. With regard to hinges, generally we would expect to use heavy duty projecting friction arms, as we are familiar with the variable geometry of these. Alternative hinge, lock mechanism and other hardware applications can be considered and evaluated at a later date in the development process – potentially with a view to standardizing ironmongery – whilst maintaining the ability to provide customized solutions.

SWA Response

We believe the 10.5mm clearance between moving frame and weathering leg on the CWL is not sufficient and does not give enough tolerance for required friction hinges and multi point locking. We use both on our W40 range which is set up at 11mm. 11mm is VERY tight on W40 and therefore we could not consider dropping this further to 10.5mm. Once manufacturing tolerances are taken into consideration for both inner and outer frames there would be more than a distinct possibility of non-operable windows being made.

We have set the weathering leg height at 9mm due to the stack heights of the Basta Parsons friction hinges. These would already be on spacers to reach the minimum arm clearance zone and so extending further to 12.5mm would present some real stability problems.

3) CWL

With regard to drainage, CWL can't see the 'shallow channel' feature you refer to, in the sections used for your Therm calculations, and sent to me in PDF and Therm file formats – there is a 1mm projection into the cavity void visible, that indicates that it could exist in the rebate. Please send us a dxf of pdf file of the actual section for further comment. In our opinion, the CWL proposal would offer comprehensive round frame drainage. However I accept this also has an effect on edge cover – we minimized for reasons of our thermal performance calculations (whilst still being acceptable from an engineering point of view), but consider that it could be increased within our design proposal if required, without unduly affecting the practicalities of site installation.

SWA Response

The shallow channel we refer to is the 1mm step on the front to back of the moving frame as you point out. This creates a small "I" beam configuration and creates a 44sqmm section channel for round frame drainage with enlarged front to back capture area. We feel this gives much more than the 9x4mm (36sqmm) channel offered in the CWL section with the added "I" beam anti-twist feature and larger capture area front to back. It should be noted that W40 currently has this zone completely flat and we have managed to secure excellent weathering performance standards so this would all be a bonus.

4) CWL

We suspect that either of these W50 proposals are close to the limits that Montanstahl can produce. We have some minor concerns with regard to the inner frame section thickening of the SWA proposal.

We also consider that the 23mm cavity void would be advantageous in terms of accommodating a wider variety of hardware options and is especially relevant to concealed pivots.

SWA Response

We are hoping that as the sections are not dissimilar to W20 or W40 but are also wider, then there would actually be more chance of Montanstahl being able to roll them (with some arm bending of course!).

We would be pleased to hear of your concerns regarding the "knuckles". As you know, these were present for many years on the original W20 + Universal moving frames without too many problems. Obviously there are strength benefits with this as well as benefits in regard to maintaining flat face straightness. We also think that Montanstahl will want to so heavily taper your channels to get the rolls in that they would end up much flatter than as you currently draw.

Ian,

Many thanks for the emails and constructive comments, and we have now had our meetings to discuss the next phase of W50 development.

I have listed below in this email all of your current concerns, and we have worked through them systematically round the table.

Could we kindly ask that you have a read through our responses to each of them and respond back to our comments.

For easy reference, I have again attached the overlay PDF showing both current designs.

We feel that we may be at a bit of a sticking point now. We have made what we strongly feel are good arguments why we are now at the design we are at, and why we do not share some of your concerns over the SWA design. That said, we all make windows differently, and all have differing views on manufacturing which is one of the positives over designing-by-committee! Therefore, can we recommend that if you cannot agree our basic design then we could petition Montanstahl to perhaps consider a compromise by rolling two additional sections:

The first would be the same as our current short leg outer frame but with the front-to-back web dropped to the perimeter by 4mm effectively losing the legs and increasing the fittings void to 25mm (21mm+4mm). This would hopefully then give you the flexibility of larger fittings void, ability to still use weld on door hinges that run "into" the fittings void (as opposed to between perimeter legs) and satisfy your concerns on the tooling and dies.

The second section would be the equivalent dropping of the web in a short equal leg fixed light sections in the same way.

We would though need to keep the same moving frames as we have detailed.

This is also based on Normans' original strategy of not purchasing the whole suite of new sections (i.e. only buying the short equal leg sections – or "no leg" versions!) and then applying inside, outside or both legs separately by mechanical means (a practice that we would not use due to problems already previously discussed). If you are going to buy the "whole" suite of outers then I do not think this compromise would be feasible for Montanstahl as there would simply add too many sections.

Over to you Ian and thanks for your continued invaluable efforts!.....

Regards,

Darren Joyce