Agenda

Attendance

Opening Remarks

Approval of Agenda

New Business
   Roster Feedback
   Deflections
      Mission Statement: do we agree?
      Step 1: Web Survey* and Excerpts - our Discussion today
         Define Need for Contribution
         Identify Problem Areas
         Summarize current practices
      Step 2: Next Step? How do we answer the following:
         What are the implication of current methods on cost, member sizes, etc.?
         What is the suggested guidance from this committee
         What are the unanswered questions and items that will require future research?
   Control Group Members for next year?

Next Meeting

Review of action items resulting from this meeting.

Adjournment

*NOTE:
All comments in the web survey are only for the consumption of this committee at this time. No individual comments should be discussed outside the context of this work until such time as a more formal public document is developed.
Survey Summary and Selected Excerpts
by Ben Schafer - July 17, 2001

Respondents:
principal (3), consulting design engineer (5), manufacturer or engineer for manufacturer (2), academic (2)

Complete responses are in the back of this packet.

What specific problems have you faced (or are you aware of) related to accommodating **vertical** building deflections in cold-formed steel (CFS) systems?

- Communication problems between A/E with regard to horizontal control joints
- Improper roof drainage, “panel walk down”
- Not all details in current use actually accommodate vertical deflections
- Friction held clips that trap one flange are viewed negatively
- Assumptions about “movement of the screw” being enough to accommodate vertical deflections
- Framing systems deflection incompatible with finish system (not designed together = problems at joints)
- Builders and design professionals do not have reasonable estimates of expected deflections
- Deflection track designs are not tested or standardized
- No standards exist for proprietary tracks and clip angles that exist
- No accommodation for movement at wall/roof interface
- Stud framing (slip track below floor, studs start-stop between floors) w/o regard to cladding attached across floors
- No awareness of arch. or builders that vertical deflections need to be accommodated
- Truss uplift due to differential temperature in top and bottom chords
- Lack of guidance on when vert. deflections should be considered
- Lack of communication between arch/eng. when deflections must be accommodated
- Slip clips selected by EOR w/o discussion of anticipated floor to floor movement

What specific problems have you faced (or are you aware of) related to accommodating **lateral** building deflections in cold-formed steel (CFS) systems?

- Example: inter-story drift demand 5/8” service 3” zone 3 100yr EQ – CFS can be damaged, but should not fall off
- Masonry backup studs
- West coast problem, for now
- Vague designer requirements forced on the contractor – solutions costly, often not in original bid
- BOCA vs. eng. judgment on using drywall sheathing as part of lateral force system
- Under 1997 UBC demands are as high as 2% of story height, common systems do not work
- What to do at corners? (mentioned by several people)
- What standards exist to insure slotted deflection tracks will work (i.e., if too much friction, will they slide?)
- Interface of interior partition wall and exterior deflecting wall
- Lack of systematic analysis of shear wall of braced wall lateral deflections (in-plane)
- Performance of walls, not in a laboratory testing? How does one design for seismic loads – is AISI enough?
- Lack of understanding in specifying the intensity and result of transient load events

Is there a need for better guidance on this issue, why?

- No - AISC design guide 3 provides the relevant information
- Make design guide 3 required reading
- Yes - lack of standards, lack of specific performance requirements, lack of tested assembly data
- too much left to design engineer judgment
- Need one steel manual on CFS framing! AISI too broad.
- EOR should specify actual drifts based on building stiffness and give to wall system engineer
What is the best means of getting our collective guidance to practitioners?
(web page? CCFSS newsletter? SSMA tech note? ideas...)

any and all
asce? aisi? – asce --
SSMA, LGSEA may get to a wider group
technical bulletin advantageous (post it on the web), bound pub?
makes LGSEA write it based on our ideas
work with well distributed publications such as aisc or the codes

How do you currently determine the **vertical** deflection demands for a CFS system?

From EOR or L/360
AISC design guide 3
from building analysis
L/360 + judgment
CFS cannot be isolated from structure. Review of walls sections and details is essential
can primary frame materials creep?
stiffness of primary framing (changes between floors)?
Facility use and actual anticipated service loads vs. design loads

How do you currently determine the **lateral** deflection demands for a CFS system?

EOR
AISC Design Guide 3
UBC
EOR – whether the numbers are good or not

When do you consider the lateral movement of the building to be a significant design consideration? (i.e., At what demand drift do you consider the implications of the drift instead of just saying the system will "rack" and be o.k.?)

Good question… no easy answer
always a consideration
1/16"
Based on finish and wall cladding stiffness
does not drive the design, but is considered

Do you provide/require special details when drift demands are large?
Would you be willing to share those details with others?

yes, some interesting things are coming from EOR’s trying to accommodate UBC manufacturers provide details
canned details are dangerous, but we do have special details to accommodate some of the discussed issues
The metal building industry has liberal drift recommendations that can be accommodated with the right detail, but one should be careful when considering office space in the same building.
Stiffen framing system rather than use expensive specialized details
Accommodating Building Deflections in Secondary CFS Systems

Mission
"... develop a [brief] document dealing with how cold-formed steel framing systems should be designed to properly accommodate building deflections (vertical deflections and lateral drifts)." Email from Rob Madsen to Tom Miller, March 15, 2000

Commentary
The survey questions that follow will be used to (1) define the need for our contribution in this area (2) identify particular problems in this area and (3) summarize current practices in this area.

As stated above the issue of concern is how to accommodate vertical and lateral deflections in a secondary cold-formed steel framing system. It is not intended to address out-of-plane deflection of the cold-formed steel system, nor get into a lengthy debate as to the correct L/whatever limit that is appropriate for CFS-Masonry, CFS-EIFS etc

Initial Survey
Please enter your name

Please enter your background
(metal building designer, academic, principal of a structural design firm, etc.)

What specific problems have you faced (or are you aware of) related to accommodating vertical building deflections in cold-formed steel (CFS) systems?
(general comments and specific comments - bad details, etc. are both welcome)

What specific problems have you faced (or are you aware of) related to accommodating lateral building deflections in cold-formed steel (CFS) systems?

Is there a need for better guidance on this issue, why?
What is the best means of getting our collective guidance to practitioners? (web page? CCFSS newsletter? SSMA tech note?.. ideas...)

How do you currently determine the **vertical** deflection demands for a CFS system?

How do you currently determine the **lateral** deflection demands for a CFS system?

When do you consider the lateral movement of the building to be a significant design consideration? (i.e., At what demand drift do you consider the implications of the drift instead of just saying the system will "rack" and be o.k.?)

Do you provide/require special details when drift demands are large? Would you be willing to share those details with others?

The answers to this survey will be compiled and used to further sharpen our focus so that we can move on to answering the second set of questions:
- What are the implications of current methods on cost, member sizes etc.?
- What is the suggested guidance from this committee on these issues?
- What are the unanswered questions and items that will require future research?
Vertical_Deflection_Problems:

A typical problem that we run across is that the architect does provide horizontal control joints in the correct/required locations or there is a conflict with architectural and structural drawings. Otherwise the vertical building deflections are typically straightforward and easily understood by the CFS contractor.

Lateral_Deflection_Problems:

We have recently seen a project where the EOR has specified a 5/8" lateral drift requirement (floor to floor) for serviceability and a 3" lateral drift requirement (floor to floor) for a 100 year design earthquake event (seismic zone 3) where the CFS system can be damaged but should not fall off the building. Also, the lateral deflection requirements at building corners are typically overlooked.

Need_for_Guidance:

Yes, it appears that there is a lack of standards, specific performance requirements, and tested assembly data for connections that allow for vertical and/or lateral drifts and it is left to the design engineer of the CFS system to make judgements on how to account for these deflections.

How_to_disseminate_info:

Both the CCFSS newsletter and the LGSEA tech notes are good sources.

Demands:

If the vertical deflection requirement is not provided directly to us by the EOR or spec, we will typically assume the deflection as L/360 of the span (live load condition).

lateral_deflection_demands:

The floor to floor lateral deflection demands are provided to us (or requested by us) from the EOR.

Too_much_drift:

Good question... it will depend on the type of wall system being used; do the studs frame floor to floor or are the studs continuous by the floor system; is the exterior finish flexible or brittle; are the connections ductile enough?

Detailing:

Yes. In some cases these details are specified (schematic) by the EOR. We have seen some recent projects (in UBC
seismic zones 3&4) where a threaded rod is welded/coupled to the perimeter beam such that it can take inward and outward wall loads (axial compression and tension), while allowing both vertical and lateral building movements by bending of the rod.

*********************************************************************************************
Name: James M. Fisher
Background: Principal of a Structural Design Firm
B1: Submit
Date: 18 Jun 2001
Time: 05:27 PM

Vertical_Deflection_Problems:

Improper roof drainage, "panel walk down"

Lateral_Deflection_Problems:

Masonry Backup Studs

Need_for_Guidance:

No, See AISC Design Guide 3

How_to_disseminate_info:

All of the Above

Demands:

AISC Design Guide 3

lateral_deflection_demands:

AISC Design Guide 3

Too_much_drift:

Always

Detailing:

Yes

*********************************************************************************************
Name: Edward di Girolamo, P.E.
Background: Connector Manufacturer, Structural Designer
B1: Submit
Date: 27 Jun 2001
Time: 11:22 AM

Vertical_Deflection_Problems:

Our company The Steel Network produces solutions for all configurations (problems) when isolating secondary structure from primary frames, floors and roofs that deflect. http://www.steelnetwork.com/Products/Products.html

Problems I am aware of are due to a lack of design and or installation of deflection connections. Known failures often occur during construction but are often found after years of service. When deflection is not handled properly problems ranging
from overall stud failure to large cracks in finishes that further causes a loss of weatherproofing and/or fire rating. Several (bad details) devises (clip) that have allowed for deflection in the past were not tested and some are still in use (our test conclusively show that they do no work). I would like to see an end to friction held clips that often transfer a load in the web (shear mostly) by holding onto or trapping one flange.

Lateral_Deflection_Problems:

Again, The Steel Network produces solutions for drift configurations. Most known problems are isolated to the west coast of the US, occurring when designers provide vague requirements that are forced on the contractor during construction. Solutions are often very costly and subcontractors have not considered the expense in the original bid.

Need_for_Guidance:

Guidance is needed. We have put effort into supporting the engineers as a product technical service at TSN. Applying knowledge simply avoids failures, many of which will not occur until a structure sees the design load.

How_to_disseminate_info:

Collective guidance? All avenues that will distribute good information improve the readership and validate the source. CCFSS news is great. What about ASCE, AISI?

Demands:

Deflection demands are determined by the maximum deflection expected in the primary frame component that the secondary member is attaching to.

lateral_deflection_demands:

Lateral demands are determined by the maximum drift expected in the primary frame component that the secondary member is attaching to... that’s complex. I believe UBC states .0025” per foot measured vertically.

Too_much_drift:

1/16”

Detailing:

Yes... see http://www.steelnetwork.com/Products/Products.html for downloadable CAD details.

******************************************************************************

Name: Richard Lindenberg
Background: Formerly at an A/E firm for 3.5 yrs, currently a grad student at UIUC
B1: Submit
Date: 22 Jun 2001
Time: 10:40 AM

Vertical_Deflection_Problems:

I am having trouble remembering, but there was one. I believe it had to do with curtain walls and deflection track. I had encountered a situation where it was
suggested that if deflections were small enough that one could forego a deflection track and that movement of the screw would accomadate the deflection. I believe that Dietrich stated that some of the design engineers (outside designers) had used this approach. Unimast on the otherhand was always much more conservative.

Lateral_Deflection_Problems:

With curtain wall systems with brick masonry, what is the allowable deflection of the wall system. I think that the brick industry (can't remember the trade name) recommends 1/600. All other indications was that 1/360 was acceptable.

As far using CF as the main wind force resisitng system, I did that on one project which was a single story structure. It ended up being very expensive since we used strapping. Plywood turned out not to be an option because of fire rating. I think we wondered in hindsight if allowing the drywall sheathing to take the lateral forces would of been better, as allowed in BOCA. This remained unresolved since we were not terribly comfortable using drywall as sheathing.

Need_for_Guidance:

Everything in the CF industry needs better guidance. While AISC steel manuals provides good guidance for construction of heavy steel structures, AISI steel manual is extremely broad. I would like to see a manual that is very analogous to the AISC steel manual -- very focused on CFS framing. I have 3-3.5" binders full of reference material from Steel Framing Alliance, LGSEA, to ACOE none of which are as good as one steel manual.

How_to_disseminate_info:

For formal communication I would suggest a tech note. Anything that has standing to be called out in a specification represents value to an engineer that he or she will seek it out. A web page would help support this endeavor as well as be a resource for informal communication.

Demands:

I only was concerned about curtain wall systems. I don't recall it to be a big concern on our projects. In the numerous shop calculations that I reviewed, I never saw it discussed either.

lateral_deflection_demands:

I think that we approached it with more of a wood design approach, where we installed lateral systems such as strapping or sheathing, with very limited calculation. I think I used a lot of different resources to determine this such as "Prescriptive Method for Residential Cold-Formed Steel Framing", "Shear Wall Design Guide", and other references.

Too_much_drift:

No comment

Detailing:

No comment

Dr. Schafer: I apologize but it has been a year since I have looked at any cold form issues, so it is difficult to remember the answers to the questions. In part that is why I was reluctant to answer the survey. I hope I have helped, and would like to continue to do so.
Vertical_Deflection_Problems:

1. Matching the vertical deflection system in the framing with the architectural design. Many buildings are developed architecturally without consideration of the exterior framing and, for example, the joints in the finish (e.g. plaster, eifs, brick etc.) are not located in a way that fits the stud framing system required to support the finish.
2. Unreasonable expectations (from builders and design professionals) regarding how much vertical deflection should be considered. This can work both ways - sometimes unrealistically large deflections are specified and others, no deflection compensation at all is considered.

Lateral_Deflection_Problems:

1. To a large extent, the same 2 items as noted for the vertical system, but to an even greater degree.
2. Under the 1997 UBC, seismic lateral drifts can be as high as 2% of the story height. Many common framing systems that have been used historically (primarily allowing the wall system to rack) can't be shown to meet the 2% drift criteria and not present a safety hazard.
3. Accomodating drift along straight lines of a building can be accomplished in many cases without too much difficulty by letting the framing from each level slide relative to the level below. However, this presents a discontinuity at the building corners as one wall slides and the adjacent, perpendicular wall leans out.

Need_for_Guidance:

Yes - there is an need for better guidance on the issue - particularly in the design community (both architecture and engineering). For the building envelope to behave well over the long term, vertical and lateral structure movement and it's impact on the building shell must be considered.

How_to_disseminate_info:

Any of the above would be helpful. With regard to the CCFSS newsletter and similar publications, they go primarily to people who already have some appreciation of the problem. SSMA or LGSEA might be more effective and both publish technical 'newsletter' type material from time to time.

Demands:

If no vertical deflection criteria is set in the building contract documents (i.e. plans or specifications), we will typically look at the typical beam spans in the areas in which we are designing stud work. A good rule of thumb is that the perimeter members will typically be designed to deflect 1/360th of their length or less. We often temper the calculated value based on judgment considering such things as building usage, structural framing system (for example, with a tall concrete building the long-term creep may be factored in), finish etc.

lateral_deflection_demands:
Most of the design work we do is governed by the Uniform Building Code. As noted above, unless specified otherwise, the UBC indicates drifts of 2% of story height. Again, we temper this with some judgment - for example a short, steel framed building with concentric braces, we may go somewhat below the 2% value.

Too much drift:

We base this decision largely on the type of finish. In our judgment, an EIFS system can probably rack a bit and not pose a real danger whereas an adhered tile system may not have much ability to rack. Also, our judgment regarding drift magnitude (as described above) enters the picture.

It is also interesting that the stiffness of the wall cladding system (in the plane of the wall) is a consideration. This is because if you expect the wall to rack, the structure and the connection of the wall to the structure must develop enough force to cause the racking. A very stiff wall system on a flexible building could have serious connection problems if the drift is not properly addressed.

Detailing:

We do provide special detailing when appropriate. We could share those details to illustrate a way to solve certain problems. However, "canned details" can be dangerous if they are expected to work in every instance - Users need to understand how the systems work and what their limitations are.

From: webserver@betsy.ce.jhu.edu
Sent: Thursday, June 14, 2001 10:16 AM
To: schafer@jhu.edu
Subject: Data posted to form 1 of http://www.ce.jhu.edu/bschafer/asce-sei-cfs/questions1.htm

*******************************************************************************
Name: Matt Mettler
Background: Civil Engineer practicing Structural Engineering also in EE Consulting Firm (Power Trans. & Dist.)
B1: Submit
Date: 14 Jun 2001
Time: 10:16 AM

Vertical_Deflection_Problems:
None.

Lateral_Deflection_Problems:
None.

Need_for_Guidance:
Yes. There is limited information available regarding CFS. Further, CFS is not covered in great detail at the academic level or so it seems. As a professional in practice, I learned what I needed based on the demands of the project.

How_to_disseminate_info:

Technical Bulletins sound great. These could be made available through mailings (by order) and on-line. The advantage of tech bulletins over newsletters is you are not forced into constantly coming up with issues/articles to meet a press deadline. And lastly, a bound publication should not be ruled out.
Demands:

Make sure the column sections are adequately braced and stiff enough.

lateral_deflection_demands:

Follow guidelines established by industry and the UBC.

Too_much_drift:

Always.

Detailing:

I have followed and or improvised on suggested shear panel details as provided by CFS manufacturers and have made sure the elements and their connections through the lateral load path have adequate capacity. I must sadly admit that since joining SSR Engineers in the Fall of 1999, I have had little or no opportunity to design with CFS.

*******************************************************************************
Name: Tom Miller  
Background: Academic  
B1: Submit  
Date: 06 Jun 2001  
Time: 12:22 PM  

Vertical_Deflection_Problems:

Lateral_Deflection_Problems:

I've done lots of testing on out-of-plane deflections of gypsum-sheathed, cold formed steel wall studs to determine limiting heights and methodologies for predicting the stiffness of these systems. I know this is a very minor consideration in this discussion, but I can definitely provide more information if needed.

Need_for_Guidance:

There seems to be from our previous discussions. As an academic, I didn't have lots of practical design insight into these issues, Ben. That's one of the reasons I struggled with leading the group towards resolution, and preparation of a useful document. I really hope you get lots of good input on this and participation from the practitioners.

How_to_disseminate_info:

SSMA Tech Note or LGSEA or CCFSS newsletters may be the the best venues, but ASCE would like us to go through them I'm sure.

Demands:

lateral_deflection_demands:

Too_much_drift:

Detailing:
Vertical_Deflection_Problems:

For non-load bearing exterior wall systems we find that typically a project specification requires that the exterior walls be able to accommodate vertical movement of the main building without applying load to the non-load bearing wall system. This is true for interior non-load bearing walls also. Deflection track designs are not tested or standardized. Proprietary slotted tracks and clip angles are available. No standards have been established for these connectors.

Lateral_Deflection_Problems:

Corner Detailing? Often the exterior wall system has accounted for a drift requirements.... but once the wall system intersect a perpendicular wall at a building corner it breaks down.... or is not "movement" compatible with the perpendicular wall.

Slotted deflection tracks have a horizontal slot to allow for drift but we are not sure how it will perform, as there is no testing. Will the track fasteners be installed with too much friction to overcome before sliding occurs?

Need_for_Guidance:

Yes ... we find some projects will specify different drift requirements in their 5400 specifications. The secondary engineer for the wall system should be given the drift requirement directly from the engineer of record. The engineer of record for the project will be able to specify actual drifts as a function of the building stiffness rather than a conservative number which might not consider the building materials.

How_to_disseminate_info:

An LGSEA Tech Note the results of this ideas should be given to the LGSEA and they should be tasked with writing a Tech Note.

Demands:

The vertical deflection requirement is typically called out by the 5400 specification (architect and engineer of record) or actually found right on the plan details. The longest beam spans could be reviewed by the secondary engineer using a maximum live load deflection, but it would be most appropriate to have the performance criteria dictated by the engineer of record.

lateral_deflection_demands:

Typically it is given to us by the Engineer of Record.

Too_much_drift:

Detailing:
Yes: ... again, this is for non-load bearing wall systems. We have had projects that required as much as 4" of relative drift differential.

These are preliminary comments which I do not expect to go beyond the committee until we can have general discussion.

*******************************************************************************
Name: George A. Polard, P.E.
Background: Structural Engineer for manufacturer of metal panels
B1: Submit
Date: 24 Jun 2001
Time: 08:23 PM

Vertical_Deflection_Problems:

Two most common problems:

1) Failure to accommodate relative wall/roof movement at the interface of walls & roofs

2) Use of infill stud framing (slip track below floor slab, studs start and stop between each floor) without regard to exterior cladding materials attached to studs above & below the floor. Metal panels, EIFS, or masonry may be shown, in effect, bridging a vertical slip joint with no provisions made to accommodate differential vertical movement in the cladding material.

Lateral_Deflection_Problems:

No provision made to accommodate the interface of interior partition walls with laterally deflecting exterior walls. No consideration of relative movements of exterior or interior cladding materials at building corners.

Need_for_Guidance:

I was very happy to see the addition of Jim Fisher to our group. His publication "Serviceability Design Considerations for Low-Rise Buildings", is, in my opinion, the definitive guide for accommodation of building deflections and should be required reading for any design professional involved in the building design process. This publication clearly presents the pertinent issues and gives valuable guidance. The summary tables give clear and concise recommendations with adequate cautionary language which should make less experienced engineers think through what they are doing.

How_to_disseminate_info:

I think a technical bulletin carries more clout. If it were posted on the web, it would be widely available.

Demands:

Not a simple question. CFS systems can't be isolated from the building structure, exterior cladding materials, interior finish materials, etc., without regard for the interrelationships and dependencies. Review of wall sections and details is essential.

lateral_deflection_demands:

Critical items to consider are interior finish materials and how much deflection they can accommodate, tie-ins of interior partition walls to the CFS system, interfaces
with and supports for glazing systems, corner construction, type of CFS system (ground loaded or spandrel-beam supported). Various industry organizations have recommendations for framing supporting their material (masonry, finished drywall, metal panels, etc.)

Too much drift:

No magic number. See response to previous question.

Detailing:

The metal building industry has some of the most liberal drift recommendations, but large drifts can often be accommodated by more or less "standard" detailing in this industry. Red flags should go up, however, when we are no longer talking about unfinished manufacturing space, but are considering the finished office space in the same building.

*******************************************************************************
Name: Tim Roecker
Background: President of structural design firm
B1: Submit
Date: 11 Jun 2001
Time: 09:34 AM

Vertical_Deflection_Problems:

Lack of awareness by architects and builders of need for allowance of vertical deflections.

Lateral_Deflection_Problems:

Lack of systematic analysis of shear wall of braced wall lateral deflections (in-plane). Lack of a consensus on the magnitude of the lateral deflection or an appropriate methodology for determining the allowable magnitude for various conditions (out-of-plane).

Need_for_Guidance:

Yes, for the reasons stated above.

How_to_disseminate_info:

Work with well distributed publications, such as AISC or codes

Demands:

Based on a standard length over a coeff. and reasonable amount of deflection for the system it is being applied to.

lateral_deflection_demands:

same as above

Too much drift:

I consider it, but usually is doesn't seem to be a factor. Or at least not as large of factor as other design features.

Detailing:
Yes I would. But I have on had that condition yet.

*******************************************************************************
Name: C. Rogers
Background: Academic
B1: Submit
Date: 03 Jul 2001
Time: 03:50 PM

Vertical_Deflection_Problems:

Truss uplift either at truss ends or over interior supports (depending on what is hot and what is cold) caused by temperature differential in top and bottom chords. This issue is more important in wood trusses because the change in length of the chords is more dependent on the variation in moisture content than in temperature. Nevertheless, it still remains a problem in steel structures and non-structural details must be such that the truss movement is accommodated for.

Lateral_Deflection_Problems:

Simple problem. How does one design for seismic loads? A design guide is available from the AISI, however it is based on a limited number of tests. As far as I can tell the design guide does not reflect on the in situ performance of steel stud walls during seismic events. Are there any reports that exist on the shear performance of walls not in a laboratory setting?

Need_for_Guidance:

Lateral. Yes - more information is needed regarding lab tests of walls as well as real life performance.

How_to_disseminate_info:

Demands:

lateral_deflection_demands:

Too_much_drift:

Detailing:

*******************************************************************************
Name: Steve Walker
Background: structural engineer
B1: Submit
Date: 25 Jun 2001
Time: 10:03 PM

Vertical_Deflection_Problems:

Lack of clear guidance from the industry regarding when a light gauge system MUST accommodate vertical deflections (i.e. high live loads, flexible floor framing, high creep deflections) and systems which do not need to accommodate vertical deflections
(i.e. stiffly framed floor systems with light live loads, wall/roof junctions). An example of a detail that may cause a problem is one where the structural engineer has specified a slip clip at a wall/roof junction at a parapet, but he has failed to inform the architect that the roof system must be designed to accommodate the deflections anticipated in the clip hardware.

One other common problem is the specification of slip clip hardware by the engineer of record without a specification as to the amount of movement contemplated and discussion of relative movement from floor to floor.

Lateral_Deflection_Problems:

A problem that I see is a lack of a clear understanding on the part of the industry in specifying the intensity of transient load events. For example, is it reasonable to require that a flexible curtain wall system (i.e. EIFS) be designed for L/240 for a once in 50 year wind event so that the cracking of the drywall is controlled? I think if the owner was given the option of relaxing this serviceability state so that the system was cheaper (more competitive) that he would elect to do so.

Need_for_Guidance:

I think so.

How_to_disseminate_info:

LGSEA Tech Notes

Demands:

Items that I review are:

Properties of materials used for the primary frame. Is it creep susceptible?

Stiffness of the primary framing system. Also, changes in relative stiffness between floors may present problems, especially with creep-prone materials.

Use of the facility to allow me to make a realistic assessment of anticipated service loads.

lateral_deflection_demands:

I usually rely on the specifications of the engineer of record, whether they're realistic or not.

Too_much_drift:

In the market that I work in, (Southeastern U.S.) the demand drift is not usually a controlling service state. The only time I've been concerned about it is when a design team is trying to put a relatively rigid assembly (EIFS on metal studs) on a highly flexible primary system (pre-engineered metal building without a sway limitation criteria specified).

Detailing:

When the condition mentioned in the preceding response is met (EIFS on metal studs on flexible pre-engineered metal building) I attempt to persuade the design team to specify a more rigid sway criteria for the pre-engineered metal building...