Final Public Review Comments
8/11/2020

Item	Section/ Chapter	Line/Fig./ Table	Author	Public Review Comment	Background / Rationale	Final AISC Committee Response	Final Reviewer Response (Unresolved Only)	Additional Committee Response from AISC
20	A4.1	120	SEAOSC Steel Committee – Peter Maranian	Further statement should be made. Recommend adding; "Degradation includes but not limited to corrosion, damage from past seismic or wind events (e.g. defective and/or damaged welds), fractures, local buckling, etc."	Regarding past seismic or wind events, an approximate assessment must be made as to the past significant events that the building has experienced. This is to establish the cyclic history for both high cycle (wind) and low cycle (seismic) occurrences to determine available fracture résistance based upon Fracture Mechanics procedures. Refer to Kanvinde et al (2018), Partridge et al (2000).	The existing language of the provisions in Section A4.1 sufficiently addresses the specific concerns raised by this comment.	Unresolved:\n\nThe existing language does not appear to address the issues raised.	The general provision in Item (a) covers the concern of degradation. To add more specifics would risk leaving possible condition states off the list.
21	A4.1	120	SEAOSC Steel Committee – Peter Maranian	Also, it needs to be determined, following a past event, if the building was inspected and if damaged how repaired. Thus add; "Determine if the inspected building was inspected and whether or not damage occurred following a past event. If damaged and repaired what was the extent of the damage and how repaired."	For example, some damaged buildings may only have involved restoring CJP welds for beam flanges to column flanges, others may have involved extensive repairs due to cracks through columns.\n\nRefer to Maranian and Dhalwala (2019).	The existing language of the provisions in Section A4.1 sufficiently addresses the specific concerns raised by this comment.	Unresolved:\n\nThe existing language does not appear to address the issues raised.	The general provision in Item (c) covers the concern of prior modification. The committee will consider adding provisions related to the inspection of buildings subjected to past seismic events in the next edition of these Provisions.
22	A4.2	139	SEAOSC Steel Committee – Peter Maranian	The title should be changed to "Condition Assessment". Add; "If the structure has experienced significant past seismic events and has not been inspected in accordance with FEMA 352, then an inspection shall be carried out in accordance with FEMA 352 including use of radiographic testing and/or ultrasonic testing."	The Term Visual Assessment may not be sufficient.	The term visual assessment is consistent with terminology in ASCE 41 and should be retained. Regarding the proposed sentence, FEMA documents should not be referenced in the provisions of this consensus standard. This information will be considered for addition in a future edition of the Commentary.	Unresolved:\n\nThe writers look forward to consideration in the next addition of the item raised.	Given the reviewer's latest comment, we believe this comment is resolved.
25	A4.4	157	SEAOSC Steel Committee – Peter Maranian	Add: "… including size of copes, access holes, back up plates, reinforcing fillets, alignment of continuity plates with flanges and the like."	Refer to Maranian and Dhalwala (2019).	The scope set by the current language of this section is sufficient, including direction to determine the size and thickness of connecting materials.	Unresolved:\n\nThe writers consider these important issues. Refer to Maranian and Dhalwala (2019).	The general provisions in (a) through (d) cover these concerns. To add more specifics would risk leaving possible condition states off the list.
27	A4	After 186	SEAOSC Steel Committee – Ashwani Dhalwala	Component properties can be established by use of non linear continuum mechanics software provided a reasonable estimate can be made of the upper and lower bounds of the material constitutive properties.	Such software is routinely used in simulations in the aerospace and other important industries and is considered reliable.	Dictating the specific analysis methodology / type of analysis is outside the scope of AISC 342.	Unresolved\nRefer to NIST.GCR.17-917-45 Section 4.4 which recommends the use of continuum models. Its not a dictation of a specific methodology.	The Provisions intend to accommodate a wide range of analysis possibilities, from very simple to very complex. The engineer should determine which level of detail is right for a given project. Adding this specific change would require a level of analysis that would put the standard out of reach for a large percentage of the engineering community.
28	A5	After 222		Upper bound material properties are also required.	This is because one frame may have lower bound properties and the opposite frame may have upper bound properties. This in turn increases both lateral and torsional forces in the system.	AISC 342 is following ASCE 41 strategy of accounting for material variability by considering expected and lower-bound strengths.	Unresolved\nBased upon structural mechanics principles, considering lower bound strength alone is not acceptable. Upper bound strength needs to be considered as originally explained.	Use of upper bound properties is not required by either AISC 342 or ASCE 41. The implementation of upper bound properties is at the discretion of the engineer.
29	A5	After 383	SEAOSC Steel Committee – Ashwani Dhalwala	Additional testing, as required for using material constitutive models for non linear analysis using continuum, mechanics models should be performed.	Most material constitutive models already exist in continuum mechanics software; however, some may require fine tuning to further improve simulation of the joints.	Dictating the specific analysis methodology / type of analysis is outside the scope of AISC 342.	Unresolved\nRefer to NIST.GCR.17-917-45 Section 4.4 which recommends the use of continuum models. Its not a dictation of a specific methodology.	AISC 342 establishes minimum requirements for testing. Extending testing beyond the minimum required is at the discretion of the engineer.
30	A5.2	After 185 (page A-5)	SEAOSC Steel Committee, Ashwani Dhawala	Upper bound of default values for parallel frames located at opposite sides of the lateral force resisting system may also be required.	Recommended in order to establish worst case scenario as this will result in higher forces and in the frame with upper bound of default material properties.	AISC 342 is following ASCE 41 strategy of accounting for material variability by considering expected and lower-bound strengths.	Unresolved\nBased upon structural mechanics principles, considering lower bound strength alone is not acceptable. Upper bound strength needs to be considered as originally explained.	Use of upper bound properties is not required by either AISC 342 or ASCE 41. The implementation of upper bound properties is at the discretion of the engineer.
38	A5.4.c	399	SEAOSC Steel Committee – Peter Maranian	A section should be added addressing repairs to damage/defects found during inspection and testing. Reference should be made to AWS D1.7. Repairs should also include the Weld Overlay Repair method.	(Anderson et Al (2000) and Simon et al 1999). Weld overlays provide significant performance improvement of the joint by minimizing fracture.\n\nAWS D1.7	There is not sufficient test data to support the use of weld overlays as a retrofit solution. Repair is outside the scope of AISC 342.	Unresolved.\n\nThe response did not address the first item in the comments regarding repairs to damage/defects. Regarding the Weld Overlay Repair Method, see the response to Item D5.	Recommending specific repair strategies is not within the scope of these Provisions.
39	B1	After 403	SEAOSC Steel Committee – Ashwani Dhalwala	Recommend non linear analysis with continuum mechanics models to better assess and improve the simulation of joint performance and simulation local buckling in the post yield range.	Non-linear analysis using continuum mechanics based non linear solid elements provides a significant improvement over the other models as long as reliable constitutive material models. The software is used by Lawrence Livermore Laboratories and other agencies for accurate simulation of structural systems and joints.	Dictating the specific analysis methodology / type of analysis is outside the scope of AISC 342.	Unresolved\nRefer to NIST.GCR.17-917-45 Section 4.4 which recommends the use of continuum models. Its not a dictation of a specific methodology.	The Provisions intend to accommodate a wide range of analysis possibilities, from very simple to very complex. The engineer should determine which level of detail is right for a given project. Adding this specific change would require a level of analysis that would put the standard out of reach for a large percentage of the engineering community.
40	B2.3a	720	SEAOSC Steel Committee – Peter Maranian	Add: "Deformation Controlled actions should account for potential variability of material strengths affecting the actions."	For example, whether or not panel zones yield in a steel moment frame connection can significantly affect its performance. A beam with upper bound strength connected to a column with a lower bound strength can cause yielding in the panel zone whereas the opposite may not.	AISC 342 is following ASCE 41 strategy of accounting for material variability by considering expected and lower-bound strengths.	Unresolved.\n\nBy doing so, this may result in not capturing all potential forms of joint performance including those which may result in adverse behavior..	AISC 342 is following ASCE 41 strategy of accounting for material variability by considering expected and lower-bound strengths.
42	B2.3a	725	SEAOSC Steel Committee – Peter Maranian	Add: "Upper bound strength of materials shall be used where it can be shown that the upper bound strength is detrimental to other components. An example is upper bound strength of girders affecting columns with lower bound strengths in moment frames causing yielding in the column rather than the girder".	It should be noted that to the best of my knowledge, no beam to column moment connections caused the column to yield and not the beam. Therefore, we do not know if the connections work or not should column yielding occur first.	AISC 342 is following ASCE 41 strategy of accounting for material variability by considering expected and lower-bound strengths.	Unresolved.\n\nThe potential for column yielding before beam yielding remains essentially untested and thus performance is unknown. Further development/ investigation including testing is strongly recommended.	AISC 342 is following ASCE 41 strategy of accounting for material variability by considering expected and lower-bound strengths.
47	C3	After 628	SEAOSC Steel Committee – Ashwani Dhalwala	Recommend non linear analysis with continuum mechanics models to better assess and improve the simulation of joint performance.	Non-linear analysis using continuum mechanics based non linear solid elements provides a significant improvement over the other models as long as reliable constitutive material models. The software is used by Lawrence Livermore Laboratories and other agencies for accurate simulation of structural systems and joints.	Dictating the specific analysis methodology / type of analysis is outside the scope of AISC 342.	Unresolved\nRefer to NIST.GCR.17-917-45 Section 4.4 which recommends the use of continuum models. Its not a dictation of a specific methodology.	The Provisions intend to accommodate a wide range of analysis possibilities, from very simple to very complex. The engineer should determine which level of detail is right for a given project. Adding this specific change would require a level of analysis that would put the standard out of reach for a large percentage of the engineering community.
48	C5	Table C5.1	SEAOSC Steel Committee – Peter Maranian	Beam to weak axis columns with moment connections need also to be addressed.	Many buildings have these.	AISC 342 directs the user to use strong-axis parameters for weak-axis columns. (See description of WUF in Table C5.1.) There is insufficient data to provide separate classifications of strong-column and weak-column connections.	Unresolved.\n\nThere are many buildings that include weak axis connections, Therefore, this issue should be addressed.	Future research needs to take place to fully address weak-axis connecions. Right now, the treatment of weak-axis connections welded to the continuity plates is treated as a WUF (pre-1995 connection).
50	C5	After 799	SEAOSC Steel Committee – Ashwani Dhalwala	Recommend non linear analysis with continuum mechanics models to better assess and improve the performance of existing connections.	Non-linear analysis using continuum mechanics based non linear solid elements provides a significant improvement over the other models as long as reliable constitutive material models. The software is used by Lawrence Livermore Laboratories and other agencies for accurate simulation of structural systems and joints.	Dictating the specific analysis methodology / type of analysis is outside the scope of AISC 342.	Unresolved\nRefer to NIST.GCR.17-917-45 Section 4.4 which recommends the use of continuum models. Its not a dictation of a specific methodology.	The Provisions intend to accommodate a wide range of analysis possibilities, from very simple to very complex. The engineer should determine which level of detail is right for a given project. Adding this specific change would require a level of analysis that would put the standard out of reach for a large percentage of the engineering community.

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51	C7	After 919	SEAOSC Steel Committee – Ashwani Dhalwala	Non-linear analysis using continuum mechanics based non linear solid elements provides a significant improvement over the other models as long as reliable constitutive material models are used and is recommended.	Gusset plate performance can be significantly affected by out of plane performance and fracture due to pulse effects. This mechanism is not being considered and may significantly degrade performance of the gusset plate connection. The software is used by Lawrence Livermore Laboratories and other agencies for accurate simulation of structural systems and joints.	Dictating the specific analysis methodology / type of analysis is outside the scope of AISC 342.	Unresolved Refer to NIST.GCR.17-917-45 Section 4.4 which recommends the use of continuum models. Its not a dictation of a specific methodology.	The Provisions intend to accommodate a wide range of analysis possibilities, from very simple to very complex. The engineer should determine which level of detail is right for a given project. Adding this specific change would require a level of analysis that would put the standard out of reach for a large percentage of the engineering community.
52	D2	After 1173	SEAOSC Steel Committee – Ashwani Dhalwala	Analysis with solid continuum mechanics based elements is recommended. Non-linear analysis using continuum mechanics based non linear solid elements provides a significant improvement over the fiber based models as long as reliable constitutive material properties are used.	The software is used by Lawrence Livermore Laboratories and other agencies for accurate simulation of structural systems and joints.	Dictating the specific analysis methodology / type of analysis is outside the scope of AISC 342.	Unresolved Refer to NIST.GCR.17-917-45 Section 4.4 which recommends the use of continuum models. Its not a dictation of a specific methodology.	The Provisions intend to accommodate a wide range of analysis possibilities, from very simple to very complex. The engineer should determine which level of detail is right for a given project. Adding this specific change would require a level of analysis that would put the standard out of reach for a large percentage of the engineering community.
54	D3	After 1251	SEAOSC Steel Committee – Ashwani Dhalwala	Analysis with solid continuum mechanics based elements Non-linear analysis using continuum mechanics based non linear solid elements provides a significant improvement over the fiber based models as long as reliable constitutive material properties are used.	The software is used by Lawrence Livermore Laboratories and other agencies for accurate simulation of structural systems and joints.	Dictating the specific analysis methodology / type of analysis is outside the scope of AISC 342.	Unresolved Refer to NIST.GCR.17-917-45 Section 4.4 which recommends the use of continuum models. Its not a dictation of a specific methodology.	The Provisions intend to accommodate a wide range of analysis possibilities, from very simple to very complex. The engineer should determine which level of detail is right for a given project. Adding this specific change would require a level of analysis that would put the standard out of reach for a large percentage of the engineering community.
55	E2	After 1393	SEAOSC Steel Committee – Ashwani Dhalwala	Analysis with solid continuum mechanics based elements Non-linear analysis using continuum mechanics based non linear solid elements provides a significant improvement over the fiber based models as long as reliable constitutive material properties are used.	The software is used by Lawrence Livermore Laboratories and other agencies for accurate simulation of structural systems and joints.	Dictating the specific analysis methodology / type of analysis is outside the scope of AISC 342.	Unresolved Refer to NIST.GCR.17-917-45 Section 4.4 which recommends the use of continuum models. Its not a dictation of a specific methodology.	The Provisions intend to accommodate a wide range of analysis possibilities, from very simple to very complex. The engineer should determine which level of detail is right for a given project. Adding this specific change would require a level of analysis that would put the standard out of reach for a large percentage of the engineering community.
56	E2	After 1587	SEAOSC Steel Committee – Ashwani Dhalwala	Recommend use of a more accurate analysis using continuum mechanics software in order to assess out of plane local buckling and fracture.	Several failures and fractures of EBFs were observed in the aftermath of the Christ Church Earthquake. All of these were observed to be due to out of plane motions.	Dictating the specific analysis methodology / type of analysis is outside the scope of AISC 342.	Unresolved Refer to NIST.GCR.17-917-45 Section 4.4 which recommends the use of continuum models. Its not a dictation of a specific methodology.	The Provisions intend to accommodate a wide range of analysis possibilities, from very simple to very complex. The engineer should determine which level of detail is right for a given project. Adding this specific change would require a level of analysis that would put the standard out of reach for a large percentage of the engineering community.