

AASHTO SUBCOMMITTEE ON MATERIALS

Minutes

Mid-Year Web Meeting

Thursday, April 2, 2015

2:00 pm – 4:00 pm EST

Technical Section 4f/g

Structural Components and Concrete Reinforcement

1. Call to order and opening remarks – Merrill Zwanka (SC)
Meeting was called to order at 2:05pm EST.
2. Roll Call of members

Zwanka, Merrill E	zwankame@scdot.org	South Carolina Department of Transportation – Chair	Present	Voting
Blackburn, Lyndi D	blackburnl@dot.state.al.us	Alabama Department of Transportation – Vice Chair	x	Voting
Rothblatt, Evan	erothblatt@ashto.org	American Association of State Highway and Transportation Officials	x	Non-Voting
Malusky, Katheryn	kmalusky@ashto.org	American Association of State Highway and Transportation Officials	x	Non-Voting
Breth, Christopher	cbreth@amrl.net	AASHTO Material Reference Laboratory		Non-Voting
Lenker, Steven E.	slenker@amrl.net	AASHTO Material Reference Laboratory		Non-Voting
Uherek, Greg	guherek@amrl.net	AASHTO Material Reference Laboratory		Non-Voting
Knake, Maria	mknake@amrl.net	AASHTO Material Reference Laboratory		Non-Voting
Ingram, Steven	ingrams@dot.state.al.us	Alabama Department of Transportation		Non-Voting
Virmani, Paul Y.	paul.virmani@dot.gov	Federal Highway Administration		Voting
Duke, Steve M Lasa, Ivan: Proxy	Steve.Duke@dot.state.fl.us	Florida Department of Transportation		Voting
Wu, Peter	pwu@dot.ga.gov	Georgia Department of Transportation	x	Voting
Mueller, Matthew W. Chris Hand	Matthew.Mueller@illinois.gov	Illinois Department of Transportation		Voting
Kreider, Richard E.	richard.kreider@ksdot.org	Kansas Department of Transportation		Voting
Hood, Woodrow L.	whood@sha.state.md.us	Maryland Department of Transportation		Voting
Trautman, Brett Steven	brett.trautman@modot.mo.gov	Missouri Department of Transportation	x	Voting
Tedford, Darin P Olson Proxy	dtedford@dot.state.nv.us	Nevada Department of Transportation		Voting
Sheehy, Eileen	eileen.sheehy@dot.nj.gov	New Jersey Department of Transportation	x	Voting
Horner, Ron	rhorer@nd.gov	North Dakota Department of Transportation	x	Voting
Ramirez, Timothy	tramirez@pa.gov	Pennsylvania Department of Transportation	x	Voting

Lane, Danny L.	danny.lane@tn.gov	Tennessee Department of Transportation		Voting
Helmink, Heidi A	heidi.helmink@bekaert.com	Bekaert Corporation		Non-Voting
Kleinhans, Danielle D	dkleinhans@crsi.org	Concrete Reinforcing Steel Institute	x	Non-Voting
Schoen, Jim	jschoen@nucor-yamato.com	Nucor-Yamato	x	Non-Voting
Arnesen, Tore Olav	torea@vector-corrosion.com	Vector Corrosion Technologies, Inc.	x	Non-Voting

3. Approval of the minutes for the March 24, 2014 conference call / meeting.
The Chairman stated that last year the mid-year meeting was the only meeting of the technical section but that this year we would also have a face to face meeting in August. Motion to approve the 2014 Minutes: Georgia Second: North Dakota Unanimously passed.
4. SOM ballot items – cover during August 2015 meeting.
5. Technical Section ballot items

A. Reconfirmation ballots

- a. Reconfirmed M254-06, One comment
- b. Reconfirmed M277-06, No comments
- c. Reconfirmed M322M/M322-10, One comment
- d. Reconfirmed M329M/M329-11, One comment
- e. Reconfirmed T285-89, One comment
- f. Reconfirmed MP022-13, One comment

Comments will be forwarded to the Stewards of each standard to be addressed and covered at the August meeting.

Item Number:	1
Description:	TS reconfirmation ballot to reconfirm M 254-06 (2010)
	Affirmative: 12 of 14 Negative: 0 of 14 No Vote: 2 of 14
Agency (Individual Name)	Comments
Concrete Reinforcing Steel Institute (Danielle D Kleinhans) (dkleinhans@crsi.org)	We understand that efforts have been underway at the National Concrete Consortium (NCC) by the State Materials Engineers to propose modifications to this specification. I can email a redlined draft that I received if that would be useful.
Item Number:	2
Description:	TS reconfirmation ballot to reconfirm M 277-06 (2010)
	Affirmative: 12 of 14 Negative: 0 of 14 No Vote: 2 of 14
Agency (Individual Name)	Comments
	No comments
Item Number:	3

Description:	TS reconfirmation ballot to reconfirm M 322M/M 322-10	
	Affirmative: 12 of 14 Negative: 0 of 14 No Vote: 2 of 14	
Agency (Individual Name)	Comments	Decision
Concrete Reinforcing Steel Institute (Danielle D Kleinhans) (dkleinhans@crsi.org)	Section 1.3. Change Grade 300 to 280 (two places).	NA
	Table 1. Insert three more bar sizes 29, 32, 36 [9, 10, 11]. Also, insert new footnote "b" that reads:	
	^b No.29, 32, 36 [9, 10, 11] axle-steel bars only.	
	Section 2.2. Insert ASTM A751, Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products.	
	Section 2.3. Remove MIL-STD-163 because it has been canceled. Refer to ASTM A700 where needed.	
	Section 6.1, first line, after "carbon content", insert:	
	", in accordance with Test Methods, Practices, and Terminology A751,"	
	Table 2. Change 300 to 280 (two places), 600 to 620 and 400 to 420, all in the headings. Also, insert new line at end for elongations: "29, 32, 36 [9, 10, 11] â€¦ â€¦ â€¦ 7"	
	Table 3. Insert new line at end for bend tests: "29, 32, 36 [9, 10, 11] â€¦ â€¦ 7"	
	Section 14.1. Replace with verbiage from ASTM A996-14, Section 14.1	
Section 19.3.4. Change 300 to 280.		
Section 20.2. Replace with verbiage from Section 20.2 from ASTM A996-14.Recommend adopting current ASTM A996/A996M-14 because of following required revisions:		
Item Number:	4	
Description:	TS reconfirmation ballot to reconfirm T 285-89 (2010)	
	Affirmative: 12 of 14 Negative: 0 of 14 No Vote: 2 of 14	
Agency (Individual Name)	Comments	Decision
Concrete Reinforcing Steel Institute (Danielle D Kleinhans) (dkleinhans@crsi.org)	Insert following Section (based on AASHTO T244, Annex A9, Section A9.4.3.1): "5.3 Specimens containing identifying roll marking shall not be used."	NA
Item Number:	5	
Description:	TS reconfirmation ballot to reconfirm MP 022-13	
	Affirmative: 12 of 14 Negative: 0 of 14 No Vote: 2 of 14	
Agency (Individual Name)	Comments	Decision

Missouri Department of Transportation (Brett Steven Trautman) (Brett.Trautman@modot.mo.gov)	The Missouri DOT has used this type of material in an experimental bridge project.	Affirmative
Item Number:	1 (Addendum)	
Description:	TS 4f/g (Addendum) reconfirmation ballot 2015 to reconfirm M 329M/M 329-11	
	Affirmative: 11 of 14 Negative: 0 of 14 No Vote: 3 of 14	
Agency (Individual Name)	Comments	
Concrete Reinforcing Steel Institute (Danielle D Kleinhans) (dkleinhans@crsi.org)	Section 1.2. Change 300 to 280 (two places).	
	Section 1.3. Change 300 to 280.	
	Section 2.3. Remove MIL-STD-163 because it has been canceled. Refer to ASTM A700 where needed.	
	Section 4.1. Change "should" to "shall"	
	Section 4.1.10. ASTM has been making a conscience effort to remove these example ordering descriptions, so suggest removing Note 3 and renumber following Notes.	
	Section 4 should include: a requirement for the type of stainless being used for the cladding and a requirement for capping the ends of clad bars.	
	Section 5. What is "properly identified" mean in this section of the document?	
	Section 6.1. Remove word "preferably".	
	Section 6.2. Following comments were made under the assumption that the Purchaser analysis is optional. First sentence: change "may" to "shall be permitted to". Second sentence: (1) change beginning to "In which case, the product analysis . . .", (2) change "may" to "shall not", (3) change "by the percentages" to "by more than the percentages", (4) change Table B to Table A.	
	Table 3 does not match ASTM A706 requirements. Suggest table as follows:	
	Element	% element by weight
	Carbon	0.30 max
	Manganese	1.50 max
	Phosphorus	0.035 max
Sulfur	0.045 max	
Silicon	0.050 max	
Section 7.3.3 There should be a limit as to the coating thickness over the ribs. As written, the specification permits bars with no coating over the ribs. Perhaps something like: Cladding thicknesses over the ribs shall be a minimum of 0.02 mil determined by cross-sectional microscopy.		

	Section 7.4. Don't know where the 20 ksi comes from. Wouldn't the minimum bond strength of 140 MPa [20 ksi] vary by bar Grade? Is this sufficient to provide adequate pull-out strength? Suggest using similar requirements to ASTM A775 Relative bond strength in concrete “conducted using ASTM A944 with a requirement of 100% of companion unclad bars with the same deformation pattern.
	Table 4. Change 300 to 280 (three places) and change bar size 38 to 36.
	Tables 4 and 5. These two Tables are out of sync regarding Grade 520 [75]. According to footnotes "b", Grade 520 only comes in sizes 19 through 57, but in inch-pound system, Grade 75 only comes in sizes 11 through 18. Correct these two footnotes and the elongation requirements for Grade 520 [75].
	Section 10.2.3. Industry has adopted the 0.2% Offset Method for yield strength measurement. Revise first sentence accordingly.
	Table 6. Change 300 to 280.
	Tables 6 and 7. Similar comment as for Tables 4 and 5. These two Tables are not in sync regarding Grade 520 [75]. . Correct the bend test requirements for Grade 520 [75].
	Section 14.1. Simplify beginning of sentence to read "For all bar sizes, one tension . . ."
	Section 18.3.4. Change 300 to 280.
	Section 19.3. Replace with verbiage from Section 20.2 from ASTM A996-14.
	Pickling should be mandatory, as per ASTM A955. "Unless otherwise specified by the purchaser, after rolling, the bars shall be pickled to remove mill scale and surface oxidation. Note: Pickling has been shown to be needed for the corrosion resistance of most stainless-steel reinforcement.
	The specification does not identify bars that have incompletely filled cores. Is there a test that should be identified, such as section microscopy?

6. Task Force Report

- A. Task Force 2011-01: Investigate corrosion resistant steel and MP 18M/MP18. Definitions need clarifying and method of corrosion measurements needs to be established. Virginia (Babish), CRSI, Illinois, FHWA, Louisiana (Wintz), Pennsylvania, and South Carolina. [See reconfirmation ballot comments below and the red-lined version of MP18.](#) **The Chairman stated that the Task Force Report would be covered under Item #7 below.**

7. Standards Requiring Reconfirmation or Provisional Standards Requiring Extension

- A. Provisional Standards Requiring Extension – [MP18 \(also see Task Force 2011-01\).](#)

Bill Bailey (VA) was asked to review all the comments submitted. Most issues were addressed in a conference call. Bill addressed the meeting – most comments were addressed in the Task Force call on Monday of this week. Only 4 major comments remain to be addressed. Comments were addressed as indicated below.

Test methods and mix designs were discussed. Annex A3 had significant revisions proposed based on the negative from Pennsylvania. Pennsylvania agreed that these revisions did answer the questions

that they had. Pennsylvania is looking at the Annex A3 test would be for product approval and required as 3rd party testing for producers wanting their product approved for use by the state. Mix design would still need to be discussed to make a standard so there isn't a lot of unnecessary testing required of a producer and so that results were comparable. The Chairman mentioned that since this standard is provisional it will go to ballot again this year and for the next several years or until it's made into a full standard.

Florida's comment on whether this A3 test should be in the annex or appendix. The Chairman asked "How does the TS view this information which is currently in the Annex?" An annex is mandatory and an appendix is non-mandatory.

Alabama Lyndi – indicated that since the statement was included that the Annex information was only mandatory if specified by the purchaser that the information should probably be located in an appendix and then each state could then just specify as desired and a qualifying statement would not be needed.

Chris Hand (IL) - These tests are not short that can be accomplished in a relatively short amount of time and do lend themselves more to being an appendix

Illinois – Dan ?, had this situation and this information should be in the appendix. Also believes that as an appendix is a better method to go.

AL, IL, and FL believe it should be Appendices.

Pennsylvania withdrew the negative - based on the editorial paragraph added which clarifies their questions on the testing and the work continuing that Annex A3 needs more details and changing the annex information to appendix.

Bill Bailey (VA) will go back and make the editorial changes for publishing this year and will go ahead and prepare new technical revisions to include a generic mix design and moving the annexes to appendices for this year for a technical section ballot and discussion in August. Mix design was considered as technical and should be removed for now but needs to be included in the future.

Lousy mix design is what we need to focus on and to be worked on next year.

PA Tim Rameriz Where do epoxy coated re-bar fall? Bill suggested that Tim call him later.

SOM ballot to revise MP18, "Uncoated, Corrosion-Resistant, Deformed and Plain Chromium Alloyed, Billet-Steel Bars for Concrete Reinforcement and Dowels. " See Section 5.2.6 of the minutes and page 12.

*45 Affirmative/1
Negative/8
Comments*

Agency	Comments	Decision
Kentucky Transportation Cabinet (Allen H Myers) (allen.myers@ky.gov)	<p>In Section 2.2, why are ASTM A 510 and A 510M listed as separate documents?</p> <p>In Section 2.5, a reference to AWS D1.4 is needed to cover the information in this standard involving plain steel.</p>	Affirmative

<p>Answer to comments</p>	<p>Both of these are good comments. Section 2.2 ASTM A 510 and the metric A 510M should be listed together. In section 2.5 AWS D1.4 should be added to cover plain steel. Combined ASTM A510 and ASTM A 510M with one description in section 2.2 and inserted a reference to AWS D1.4 in section 2.5.</p>	<p>Incorporated into MP 18</p>
<p>Missouri Department of Transportation (Brett Steven Trautman) (brett.trautman@modot.mo.gov)</p>	<p>Recommend an affirmative vote with the following editorial comments:</p> <p>1) In Section A3.3.6, the fourteenth line, it states "steel in the Test specimen must come...". The letter "T" in Test needs to be a lowercase "t". Incorporated this comment in MP 18</p> <p>2) Add a line between Sections A3.5.3 and A3.5.3.1. Incorporated this comment in MP 18</p> <p>3) The letter "A" in "Figure A9" is bold and doesn't need to be. Incorporated this comment in MP 18</p> <p>4) Add a line between Sections A3.5.7 and A3.5.7.1. Incorporated this comment in MP 18</p> <p>5) In Section A3.5.7.1, the second sentence states "The water level in the tank should be six inches from bottom of specimen." For clarification, recommend the following, "The water level in the tank should cover the bottom six inches of the test specimen." Incorporated this comment in MP 18</p> <p>6) In Section A3.5.7.2, the second sentence states "The saltwater level in the tank should be six inches from bottom of specimen." For clarification, recommend the following, "The saltwater level in the tank should cover the bottom six inches of the test specimen." Incorporated this comment in MP 18</p> <p>7) In Annex B, lines need to be added between several sections in order to be consistent with the rest of the specification.</p>	<p>Affirmative Incorporated all comments into MP 18</p>
	<p>Incorporated this comment in MP 18</p>	
<p>Virginia Department of Transportation (Charles A. Babish) (andy.babish@vdot.virginia.gov)</p>	<p>In Table 6 and 7 under Section 10. Bending Requirements on p. 23 of 152, there is a footnote (c) that I did not see referenced in either Table.</p>	<p>Affirmative Incorporated all comments into MP 18</p>

	<p>Footnote (c) has been placed in the column for the high strength Grade 690 No. 43 and 57 in Table 6 and Grade 100 No.14 and No. 18 bars in Table 7.</p> <p>Other comments:</p> <p>In Section 1.3 Note 4 references AWS D1.6, the structural code for welding stainless steel. Immediately above that there are a few statements related to welding of the reinforcement. In these statements reference is made to both the AWS D1.4 and D1.6 welding codes. AWS D1.4 is the welding code for reinforcing steel, therefore I believe we should add a reference to AWS D1.4 along with the reference to AWS D1.6 in Section 2.5.</p> <p>Reference to AWS D1.4 has been placed in section 2.5.</p> <hr/> <p>Could Section 11.2.1, Note 7: "...whereas test A3 test is..." be written better?</p> <p>This has been incorporated into MP 18. See change in document.</p> <p>Paragraph A2.6.2 reads "Report the transpassive or pitting potential in mV vs. Saturated Ag/AgCl and vs. the reference electrode used in the test...", while paragraph A2.3.4 identifies saturated Ag/AgCl AS the reference electrode. Does this cause redundancy?</p> <p>The phrase "and vs. the reference standard" in paragraph A2.6.2 has been removed.</p> <p>In A2.6.2: open parenthesis between "mV" and "vs." has been deleted, but close parenthesis between "test" and "at" two lines down has not.</p> <p>Incorporated this comment in MP 18</p>	
<p>Michigan Department of Transportation (John F Staton) (statonj@michigan.gov)</p>	<p>Yes. Minor comments below.</p> <p>2.5: Add AWS D1.4</p> <p>Reference to AWS D1.4 has been placed in section 2.5.</p> <hr/> <p>Tables 6-7: Where is footnote c used?</p> <p>Footnote (c) has been placed in the column for the high strength Grade 690 No. 43 and 57 in Table 6 and Grade 100 No.14 and No. 18 bars in Table 7.</p> <p>13.2: All bars should be free of visible corrosion. Pickling should be option of purchaser. Hydrogen embrittlement may be a problem for higher grades.</p> <hr/> <p>Note 8 has been placed after Section 13.2 (...if required by ASTM specifications or specified by purchaser.) that reads as follows: Note 8 - Pickling may cause hydrogen embrittlement with higher grade steel strengths.</p>	<p>Affirmative Incorporated all comments into MP 18</p>

<p>Rhode Island Department of Transportation (Mark E Felag) (mark.felag@dot.ri.gov)</p>	<p>Date will be -15.</p> <p>A.3.3.6 references MMFX2. Don't we normally avoid specifying product brand names in standards?</p> <p>Changed reference from MMFX to ASTM A 1035.</p> <p>A.3.5.4 specifies solderless (crimp) connections. Why? While solderless connections are generally adequate, soldered connections are typically superior, especially when in the presence of an electrolyte. Silver-bearing solder would be appropriate and is readily available.</p> <p>The soldered connections are better. In performing the testing the connections are unplugged and replugged in several times so it was written with a quick release. Using quick release connections without soldering was thought to save time and be more convenient. We can place both in standard and allow Agency to choose. The new language in A3.5.4 reads: "The connectors can be soldered or solderless. Solderless connectors are used if the connections will be unplugged and plugged frequently. Examples of solderless connectors".....</p> <p>A3.5.10.4 requires measurement of the depth of the pits. This would seem to be difficult to measure accurately. There should at least be some guidance.</p>	<p>Affirmative Incorporated all comments into MP 18</p>
<p>After reporting that this could be changed to an observation instead of a measurement. It reconsidered and suggest the following: Pitting was localized. Record the number of pits observed and the average value for the pit depth measurements. Pit depth measurements can be facilitated by using a pit depth gauge.</p>		<p>Change from Task Force meeting</p>
<p>Arkansas State Highway and Transportation Department (Michael C Benson) (michael.benson@arkansashighways.com)</p>	<p>A3.3.6 According the current revision, the billet is to be embedded in concrete except that pozzolans are not allowed in the mixture. Cement is considered a pozzolan; therefore, a concrete without pozzolans is just aggregate. A recommendation for correcting this sentence is "The billets are to be embedded in concrete containing only cement and aggregates."</p>	<p>Affirmative Incorporated all comments into MP 18</p>
<p>We can make that change to: "The bars are to be embedded in concrete containing only cement and aggregates." actual change is: "except that the concrete shall only contain cement and aggregate."</p>		

<p>Pennsylvania Department of Transportation (Robert D Horwhat) (rhorwhat@pa.gov)</p>	<p>MODIFY Section A3.3.6 Test Specimens:</p> <p>Please create a comment to change the MP18, Section A3.3.6. Test Specimens “ The rebar tested will include, in addition to the candidate bar specimens, test specimens with types 316LN (UNS S31653), either XM-28(UNS S24100) or type 304 (UNS S30400), and MMFX2 #5 steel bars with each bar being in an as-received condition.</p> <p>to read:</p> <p>Section A3.3.6. Test Specimens “ The rebar tested will include, in addition to the candidate bar specimens, test specimens with types 316LN (UNS S31653), either XM-28(UNS S24100) or type 304 (UNS S30400), and ASTM A1035 #5 steel bars with each bar being in an as-received condition.</p> <p>To summarize: remove direct reference to MMFX product and substitute with ASTM designation.</p> <p>Changed reference from MMFX to ASTM A1035.</p> <p>NEGATIVE - Annexes on Corrosion testing:</p> <p>A negative needs to be filed on the proposed revision to the MP18 standard due to the need to consistently rank corrosion performance by each test. There are many steel alloys described in the updated standard but only one comparative test versus steel type.</p> <p>There are three corrosion test method types proposed:</p> <ol style="list-style-type: none"> 1.) Rapid etching with visual evaluation of microstructural changes (ASTM A262, A763 and A923). 2.) Linear polarization resistance and potentiodynamic polarization tests. 3.) Comparative qualitative corrosion characterization of steel bars used in concrete reinforcement (Florida Tombstone Test). <p>Are steel types presumed to rank as 0, 1, 2, or 3 based upon the Florida Tombstone Test?</p> <p>Yes, The ranking is up to the agency</p> <p>Or is the new steel type to be qualified by running the comparative test?</p> <p>Yes, The ranking is up to the agency and the new type of steel will fit into one of the four categories based on the agencies decision.</p>	<p>Negative made most of the asked for changes. Request TS decision on Note A3.1 and mix design in A3.3.6.</p>
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Is there such as thing as a 1.5 rating?

No, the proposed rating system is place steel in one of four categories (0, 1, 2, 3). There is not a linear relationship between categories. It is more like a ten- fold or better difference between categories. If an agency runs the test, the steels will over time be distinguishable by groups. The 0 group will have numbers/test values around the same as the control black steel. There will be some variability but these bars will be lower than the bars in Group 1, which have mild corrosion resistant by having approximately 9.2 % Chromium. There will be a spread or variability depending on what alloys and percentage of alloys are introduced into the steel but after a period of time (months or years) the group 1 bars will hover around the values for ASTM A1035, The same can be said for clad bars (rating of 2) and the high chromium steels 18% Chromium (stainless category rating level of 3). It is apparent to laboratories performing this testing that the black bar (steels without corrosion resistant alloys) separate quickly, the ASTM A1035 types separate slower and the clad bars and stainless take an extremely long time to show a difference or separate out. The speed of the test is related to quality of concrete and whether or not the concrete cracks.

DM comment following is a summary of the “ Florida Tomb Stone” test -- Note that chromium content for “Improved performers” Group was up to 21% for 2101

Corrosion Resistant Alloys for Reinforced Concrete – FHWA HRT 09-020 – W. Hartt, R. Powers, P. Virmani et. al – May 2009 (150 pages) This report documents the findings of a 6 year study of the corrosion resistance of various concrete reinforcing bars using four specimen types: simulated deck slabs (SDS), macrocell slabs (MS), 3 Bar tombstone columns (3BTC) and Field columns (FC) and three types of concrete mixtures: STD 1 (5 bag W/C 0.50), STD 2 (7 bag W/C 0.41) and STD 3 (7 bag W/C 0.50) Reinforcements included stainless steels: 316, 304, 2304, 2101, and 3Cr12 ; two types of 316 clad, AASHTO MP 13M/MP 13-04, and MMFX-2 (ASTM A1035); and BB (ASTM A615), with BB used a comparator. The report indicates: “The reinforcements, other than BB, were classified into two groups as either improved performance” ... (alloys with corrosion initiation during project) “or high performance” (alloys without corrosion initiation during project). “Improved performers were 3Cr12, MMFX-2, and 2101 These alloys ranked according to time for corrosion to initiate as BB < 2101 < 3Cr12 < MMFX-2.” “Chloride threshold for corrosion initiation of 3Cr12 and MMFX-2 reinforced SDS specimens was about four times greater than for BB specimens and slightly less than four times greater in the case of 2101 specimens. For STD2 MS specimens, however, Ti for MMFX-2 and 2101 was from

3.4 to more than 5.7 times greater than for BB (limited data precluded this determination for 3Cr12)."

Based on discussion with PENNDOT the above explanation of the rating system was placed in Note A.3.1

Further, the more rapid microstructural or polarization resistance tests should have a statement related to acceptance or rejection actions to be taken based upon the results obtained.

The polarization resistant test is pass or fail. A2.1.2 states: "...comparative qualitative corrosion performance of uncoated CRR alloy steel bars..."

Can the polarization resistance test be better defined to be used with a set of polarization values related to research findings to give a similar typing? Could a rank of 0,1,2, or 3 also be assigned to those results?

The polarization resistant test is pass or fail so the answer to both of these questions is no.

One should note that the polarization values cited were originally derived for the rank 1, MMFX2.

That is correct.

Assuming a type 0 is anything not meeting the bench mark cited, can't we also get good figures of merit for acceptance of a rank 2 or 3 steel from the same kind of test?

This is a correct statement stainless steels and stainless clad bars will pass this test. The polarization test is a qualitative not quantitative test. A pass or fail.

Summarize: Annex tests 1 and 2 do not indicate have any acceptance or even ranking is referenced. Given the intent and testing time, while tests 1 and 2 will likely to be used often, what result do we derive from this testing? The standard is currently unclear.

Annex test one is a pass/fail test for stainless steels. Annex test two is a pass/fail test for any steel alloy reinforcing bars.

QUESTION:

Given the fact that a large number of ASTM designated steels are now specified to this standard, can we assume that any steel meeting this standard will already have met the 'parent' specification requirements of the ASTM category they have been classified as ? (ie. Must a M-29 or 2205 stainless steel meet ALL the specification requirements of that designation as well as the requirements in MP-18?)

Yes, State can require this.

Florida Department of
Transportation (Timothy J.
Ruelke)
(timothy.ruelke@dot.state.fl.us)

(1) Changed the title and added in Section 6 a table with common stainless to allow a choice based on your environmental conditions. Recommend expanding Note 4 at end of Table 1 to, "Meet the requirements of ASTM A1035"

Note (4) now reads "Meet the requirements of ASTM A1035".

(2) Section 1 Note 2 and Note 4 was also edited: Review comment:: Modifications to both notes are satisfactory. However, AWS D1.4 should be added to section 2.5 as it is now referenced by the modification of the Notes.

Reference to AWS D1.4 has been placed in section 2.5.

(3) Edited in Section 11 but still need to resolve the reference to the Annex. Some states believe this material should be non-mandatory and therefore become an appendix. Review comment: Note No. 7: Editorial: Remove the word "test" after "Test A1 and A2" and "whereas Test A3".

Section 11 states "(Annex A is non mandatory and must be specified by the purchaser)" Unclear whether this should be written as Annex or Appendix will revise as suggested by TS 4g/4f. It is mandatory if specified. Appendix if not specified.

Additional comments:

(1) Section 13.5:: Reference to Section 13.2 is incorrect. Section 13.2 does no address any imperfections.

The correct reference should be Section 13.4 and not Section 13.2.

(2) Section 18.1:: Five days to report a failing tests is unreasonable. It would take 2 days at the project to perform inventory and sample. Transit of the sampled specimen to the laboratory may take another 2 days. Then testing depends on the laboratory workload.

Changed to 15 days.

(3) Section 20.1.5:: Expand title, ""Comparative Corrosion Resistance Test Results- Annex A""

Changed.

Affirmative made
all the changes
need TS decision
on Annex or
Appendix

	<p>(4) Annex A is not ready for publication. (a) Correct all references. Some have changed due to the introduction of new test. (b) Section A2.5: Need to describe placing of the test specimen. A sketch similar to that of Section A3 would be helpful. (c) Note A2.5; It describes a ratio but does not indicate ratio of what. Would this be a potential range instead of a ratio?? What are the units of the values indicated?</p> <p>(a) Reviewed the references and made corrections. (b) Inserted one picture to show the test setup. (c) The ratio is chloride concentration in a chloride free pore solution to a high concentration of chloride in the same pore solution. It is not a potential it is a ratio added [CL-/OH-] for clarification in Note A2.5.</p> <p>General: Gamry and MMFX products are mentioned. These are proprietary brand names. A generic description should be used.</p>	
	<p>Inserted reliable potentiostatic instrument instead of Gamry and inserted ASTM A 1035 instead of MMFX.</p>	

8. 2015 Subcommittee Ballot

- A. Standard review for equivalency with ASTM
 - a. M31 equivalency with A615 – Editorial comments
 - b. M169 equivalency with A108 – Editorial comments
 - c. M270 equivalency with A709 – Editorial comments
 - d. M292 equivalency with A194 – Discuss comments

Item Number:	100	
Description:	Concurrent ballot to revise M 31M/M 31-14 for equivalency with ASTM A 615/A 615M-12.	
	Affirmative:	46 of 53
	Negative:	0 of 53
	No Vote:	7 of 53
Agency	Comments	Decision
Missouri	Recommend an affirmative vote with the following editorial comments:	Affirmative
	1) In Section 9.1, "Table 3 [Table 4]" needs to be replaced with "Table 2". Done -Editorial	
	2) In Table 2, the superscript "a" is not required for grades 60, 75, and 80. The superscript "a" should be removed. Done - Editorial	
	3) In Table 2, the psi values need to be added for Grades 60, 75, and 80. Brackets need to be placed around the MPa values. Done - Editorial	

	4) It appears Section 9.2 was deleted by accident and re-added under Table 2. Add the following "9.1.1 The yield point or yield strength shall be determined by one of the following methods." and renumber the subsequent sections 9.1.1.1 and 9.1.1.2. Done - Editorial	
Georgia	There is a typo in section 9.1.2. 0.035 should be 0.0035. Done - Editorial	Affirmative
Missouri	1. In Section 9.1, "Table 3(Table 4)" needs to be replaced with"Table 2" Done - Editorial	Affirmative
	2. In Table 2 the superscript a is not required for grades 60,75,and 80. The superscript a should be removed. Done - Editorial	
	3. In Table 2 the psi value needs to be added for Grades 60,70,and 80. Brackets need to be placed around the MPa values. Done - Editorial	
	4. It appears that section 9.2 was deleted and readded under Table 2. Done - Editorial	
Georgia	There is a typo in Section 9.1.2, 0.035 should be 0.0035. Done - Editorial	Affirmative
South Dakota	The Tensile and Yield Strength are missing for the Grade 60, 75 and 80 for the english units in the new combined table 2.. - OK if those are fixed. Done - Editorial	Affirmative
Item Number:	101	
Description:	Concurrent ballot to revise M 169-09 for equivalency with ASTM A 108-13.	
	Affirmative:	46 of 53
	Negative:	0 of 53
	No Vote:	7 of 53
Agency	Comments	Decision
Missouri	Recommend an affirmative vote with the following editorial comments:	Affirmative
	1) Since this is an AASHTO specification, Notes 2 and 3 should reference the AASHTO specification and not the ASTM. As an example, instead of showing "Steel Bar: ASTM A108" recommend showing "Steel Bar: AASHTO T 169". Done – Editorial	
Missouri	1. Since this is an AASHTO specification, Notes 2 and 3 should reference the AASHTO specification and not the ASTM. Done - Editorial	Affirmative
Washington	Comment: There are several "Error! Main Document Only" statement contained in the document see Table A1 for example. Page 82 of 152 Should these be there? Done - Editorial	Affirmative

Rhode Island	Page 82 of 152 - Table A.1 - (In other areas as well) - Wording, 'Error! Main Document Only' is still included. Done - Editorial	Affirmative
Item Number:	102	
Description:	Concurrent ballot to revise M 270M/M 270-12 for equivalency with ASTM A 709/A 709M-13a.	
Decisions:	Affirmative:	45 of 53
	Negative:	0 of 53
	No Vote:	8 of 53
Agency	Comments	Decision
Missouri	Recommend an affirmative vote with the following editorial comments:	Affirmative
	1) In Table 5, the superscript "d" is being removed. Therefore, superscript "e" needs to change to "d". Done - Editorial	
Virginia	Yes. However, the silicon chemical requirements in table 4 could cause confusion because the table indicates that all silicon values are a maximum, but column 4 and 5 list a range. For clarity, it would be better to list "max" next to each individual value and nothing next to the values with a range. Done - Editorial	Affirmative
	1. In table 5 the subscript "d" is being removed, therefore subscript e needs to be changed to d. Done - Editorial	
Missouri	1. In table 5 the subscript "d" is being removed, therefore subscript e needs to be changed to d. Done - Editorial	Affirmative
Item Number:	103	
Description:	Concurrent ballot to revise M 292M/M292-13 for equivalency with ASTM A 194/A 194M-12a.	
Decisions:	Affirmative:	46 of 53
	Negative:	0 of 53
	No Vote:	7 of 53
Agency	Comments	Decision
Virginia	If the goal is to update M292 to the latest version of ASTM A194-14a, then consider the following:	Affirmative
	An ISO Standard is referenced in ASTM A194-14a but not referenced here. Agreed - will consider more recent ASTM revisions during a review in 2015	
	Other comments related comparing to ASTM A194-12a are:	
	In Comment Mp1: M292 should be modified to say "ASME/ANSI Specs", since the specs listed are shared between the two agencies. Done – Editorial	

	<p>In Paragraph 6.4.1: These changes are a deviation from the wording in the ASTM. If the intent is to bring this spec in line with the ASTM, is this a problem? Discuss with TS - left as is for the 2015 edition but do we want to match ASTM or keep AASHTO language? AASHTO wording: "6.4.1. Grades 6 and 6F nuts shall be tempered for a minimum of 1 h within the temperature range." ASTM wording: "6.4.1 Grade 6 and 6F nuts shall be tempered for a minimum of 1 h at the temperature."</p> <p>The Chairman asked the TS if anyone had a history on this temperature range. Chris Hand, ASTM cites only a minimum temperature. So they don't have a temperature range. No set reason. The Chairman asked Chris to send him wording that would fix this comment. Editorial in nature.</p>	
	<p>In Paragraph 8.1.3.1: The correction in this paragraph ("any one" to "anyone") is incorrect. The phrase "any one" refers to any single object within a specific set, in this case, any ONE nut. Done – Editorial</p>	
	<p>In Table 1, the word "percent" has been changed to the percent symbol (%), however, in paragraph 8.1.3.1, the word is spelled out in the correction. Also, in section S10, the symbol is changed to the word. Consistency should be practiced between the word and the symbol. Depends on the context - checked for correctness</p>	
Oklahoma	<p>Editorial comment. In Sec. 8.1.3.1, 'anyone' should be 'any one'. Done - Editorial</p>	Affirmative

9. Proposed New Standards

- A. Electrochemical Chloride Extraction – Tore O. Arnesen, Vector Corrosion Technologies

Tore gave a brief synopsis of this proposed standard and a brief history of what has happened with the chloride extractions for the last 20 years. He has a brief description summarizing this proposed standard that will be sent out.

States are using this method and there are draft specifications out there.

The Chairman requested a volunteer for champion for this standard. Rhode Island asked if there was a current ASTM standard. Tore was not sure but thinks there might be and there is possible a NACE standard. The Chairman asked Tore if he would research whether or not there is an ASTM standard. Tore will circulate it to the members if there is one.

Tore indicated that the most knowledgeable person is David Whitmore, who would know the history.
- B. AASHTO equivalency for ASTM A706, Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement. TS4h discussion. The Chairman just mentioned that this question came up in TS4h and that maybe this standard should belong to Technical

Section 4fg. Chris Hand (IL) will be proposing an AASHTO equivalent to ASTM A 706 in a few months and it will be oriented towards highway/transportation applications.

10. Open Discussion

11. Adjourn

New Jersey motion to adjourn. Second: Georgia Meeting adjourned 3:54pm.