



Iowa Department of Transportation

MINUTES OF IOWA DOT SPECIFICATION COMMITTEE MEETING

April 8, 2004

Members Present:	John Adam, Director Tom Reis, Chair Jim Berger Roger Bierbaum Troy Jerman Larry Jesse Bruce Kuehl Doug McDonald Keith Norris Gary Novey John Smythe	Statewide Operations Bureau Specifications Section Office of Materials Office of Contracts Office of Traffic and Safety Office of Local Systems District 6-Construction Office RCE - Marshalltown District 2-Materials Office Office of Bridges and Structures Office of Construction
Members Not Present:	Mike Kennerly	Office of Design
From FHWA:	Lisa Rold	
Others Present:	Donna Buchwald, Secretary Dave Berryhill Will Stein	Specifications Section Office of Design Office of Design

Tom Reis, Specifications Engineer, opened the meeting. The following items were discussed in accordance with the April 2, 2004 agenda:

**1. Article 2301.04, E, Use of Fly Ash,
Article 2301.04, F, Use of Ground Granulated Blast Furnace Slag.**

The Office of Materials requested a change to Articles 2301.04, E and 2301.04, F, that would increase the allowable percentage of substitution for both fly ash and ground granulated blast furnace slag.

2. Section 2304, Detour Pavement (new section).

The Office of Design requested that a new Section 2304 be added to the standard specifications covering Detour Pavement which was previously covered by plan notes.

3. Article 2307.04, J, Traffic Control (Bituminous Seal Coat).

The Office of Construction requested a change to Article 2307.04, J, that would change the responsibility for providing traffic control signs on Bituminous Seal Coat projects from the Contracting Authority to the Contractor.

4. Article 2403.03, D, Use of Fly Ash and GGBFS.

The Office of Materials requested a change to Article 2403.03, D, that would increase the maximum allowable substitution rate for fly ash to 20% for Interstate, Primary, and Secondary projects.

5. Article 2412.02, Materials (New Concrete Floors on Bridge Decks).

The Office of Materials requested a change to Article 2412.02 that would increase the maximum allowable mineral substitution rate for new concrete floors on bridge decks on projects that are not on the Interstate, Primary, or Secondary road systems.

6. Section 2510, Removal of Pavement.

The Office of Design requested several changes to Section 2510 that would add bid items for the removal of intakes and utility accesses in order to align the Iowa DOT and SUDAS practices more closely.

7. Article 2513.03, Concrete Barrier.

The Office of Materials requested a change to Article 2513.03 that would change the gradation requirements for Concrete Barrier to align it with QM-C and also to allow fly ash to be used in winter work.

8. Section 4155, Guardrail.

The Office of Materials requested several changes to Section 4155 that would bring the Standard Specifications up to the current AASHTO Specifications and ASTM Standards.

9. Article 4161.03, Treatment (Preservative Treatment).

The Office of Materials requested a change to Article 4161.03 that would update the wood treatment specifications to meet current AWPA and other industry standards.

10. Section 4162, Untreated Timber and Lumber.

The Office of Materials requested a change to Section 4162 that would clarify the requirements and marking of lumber.

11. Section 4164, Treated Wood Posts.

The Office of Materials requested several changes to Section 4164 that would update the specifications to meet AASHTO, AWPA, and standard grading rules.

12. Article 4186.03, Reflective Sheeting.

The Specification Section requested several changes to Article 4186.03 that would clarify the intent of the specifications and make it more convenient to add new suppliers for sheeting.

13. Article 4195.02, Neoprene Bearing Pads.

The Office of Materials requested a change to Article 4195.02 that would align the Standard Specifications with the AASHTO Specifications and update the ASTM Standards.

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger/Todd Hanson		Office: Materials	Item 1
Submittal Date: February 18, 2004		Proposed Effective Date: October 19, 2004	
Article No.: 2301.04, E & F Title: Portland Cement Concrete Pavement		Other:	
Specification Committee Action:			
Deferred:	Not Approved:	Approved Date: 4-8-04	Effective Date: 10-19-04
Specification Committee Approved Text:			
2301.04, E, Use of Fly Ash			
<p>Replace the first and second sentences: For Interstate, and Primary, and Secondary paving, the maximum allowable fly ash substitution rate shall not exceed 15%. For all other paving, the fly ash substitution rate shall not exceed 20%. For all other projects, the maximum allowable fly ash substitution rate shall be 20% unless otherwise specified in the contract documents.</p>			
2301.04, F, 1			
<p>Add new third sentence. The total mineral admixture substitution rate shall not exceed 40%.</p>			
2301.04, F, 2			
<p>Replace "50%" with "40%" in the third sentence.</p>			
<p>Comments: This change will increase the fly ash limit for paving. Adding the last sentence will allow all non-Interstate and non-Primary projects to specify a lower rate if they believe it is necessary. The language may be added to projects this construction season; the Office of Construction will notify the inspectors of workability issue that might arise when using higher rates of fly ash.</p> <p>Note: Since the Specification Committee meeting, the Office of Construction has noted a potential problem in the changes approved in Article 2301.04. When the maximum substitution rate was 50%, 15% fly ash substitution with a Type IS cement was acceptable. Now that the change has been made to 40% maximum, a Type IS cement could have up to 55% substitution with 20% fly ash. Therefore, the Office of Materials requested that a third sentence be added to Article 2301.04, F, 1.</p>			
Specification Section Recommended Text:			
2301.04, E, Use of Fly Ash			
<p>Replace the first and second sentences: For Interstate, Primary, and Secondary paving, the fly ash substitution rate shall not exceed 15%. For all other paving, the fly ash substitution rate shall not exceed 20%.</p>			
2301.04, F, 2			
<p>Replace "50%" with "40%" in the third sentence.</p>			
Comments:			

Member's Requested Change (Redline/Strikeout):					
E. Use of Fly Ash					
For Interstate, Primary, and Secondary paving, the fly ash substitution rate shall not exceed 20 45%. For all other paving, the fly ash substitution rate shall not exceed 20%. Between October 16 and March 15, fly ash substitution will be allowed only when maturity method is used to determine time of opening.					
F. Use of Ground Granulated Blast Furnace Slag					
1.Type IS and Type I(SM) may be furnished according to Section 4101 and Section 4108. Fly Ash substitution rate shall be according to Article 2301.04, E.					
2. GGBFS may be substituted for Portland cement in concrete mixtures which do not contain blended hydraulic cement. The GGBFS substitution rate shall be not more than 35% by weight (mass). When GGBFS is substituted as a mineral admixture, fly ash will be permitted in ready mix concrete mixtures only, with a maximum total mineral admixture substitution rate of 40 50%. The mixing equipment shall meet the requirements of Article 2001.21, B.					
3. GGBFS substitution will be allowed from October 16 through March 15 only when maturity method is used to determine time of opening.					
Reason for Revision: Increase fly ash usage. Remove language relating to non DOT work					
County or City Input Needed (X one)			Yes	No	
Comments:					
Industry Input Needed (X one)			Yes X	No	
Industry Notified:	Yes X	No	Industry Concurrence:	Yes X	No
Comments: Met with contractors and cement producers on changes to be implemented. Contractors would like to try on day paving this construction season to determine how things will go.					

Submitted by: Mike Kennerly/Will Stein	Office: Design	Item 2
Submittal Date: March 24, 2004	Proposed Effective Date: October 19, 2004	
Article No.: Title: Section 2304 (new), Detour Pavement Article 2510.01, Description	Other:	

Specification Committee Action:

Deferred:	Not Approved:	Approved Date: 4-8-04	Effective Date: 10-19-04
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Specification Committee Approved Text:

SECTION 2304. DETOUR PAVEMENT

Add as a new section:

2304.01 DESCRIPTION.
This work shall consist of furnishing and placing a temporary hard surface composed of PCC or HMA to carry traffic during construction of permanent pavement.

2304.02 MATERIALS.
The Contractor has the option of using PCC or HMA for the detour pavement. The option used shall meet the following requirements:

A. PCC
The PCC option shall meet the requirements of Section 2301 for Class A PCC Pavement.

B. HMA
For projects with less than 10,000,000 total design year ESALs, the HMA option shall meet the requirements of Article 2303.02 for HMA 1,000,000 ESAL surface or intermediate course, 1/2 inch (12.5 mm) or 3/4 inch (19 mm). For projects with more than 10,000,000 total design year ESALs, the HMA option shall meet the requirements of Article 2303.02 for HMA 10,000,000 ESAL base course, 3/4 inch (19 mm).

The asphalt binder shall be PG 64-22.

2304.03 CONSTRUCTION.
Earthwork quantities are based upon the PCC option and will not be adjusted for additional HMA depth. Additional cut material may be used as earth shoulder construction.

A. PCC
The PCC option shall meet the requirements of Section 2301. Transverse joints, center tie bars, and sealing of the center longitudinal joint are not required.
Article 2301.16, B, C, and D, shall not apply unless stated otherwise in the contract documents.
Article 2316.01, B, shall apply.

B. HMA
The HMA option shall meet the requirements of Section 2303.

2304.04 METHOD OF MEASUREMENT.
The quantity of Detour Pavement constructed, in square yards (square meters), will be the quantity shown in the contract documents.

2304.05 BASIS OF PAYMENT.

The Contractor will be paid the contract unit price for Detour Pavement, per square yard (square meter). This payment shall be full compensation for furnishing all material, equipment, and labor to construct the detour pavement in accordance with the contract documents. Removal of Detour Pavement will be paid for according to Section 2510.

2510.01, Description

Replace the first sentence:

This work involves removal of PCC pavement including reinforcing, pavement widening, HMA pavement, detour pavement, and concrete curb and gutter.

2316.01, B, Exclusions

Replace the first paragraph:

Areas exclude from smoothness testing are detour pavement, crossovers, shoulders, and sections less than 50 feet (15 m) long.

Comments: The Specification Committee agreed that detour pavement should not be cored for thickness. This requirement is eliminated in Article 2301.34, A.

Detour pavement is not always temporary. If the detour is going to be in place for more than one construction season, the designer and District Office should discuss the requirements for the detour pavement and possibly using another type of pavement if in heavy traffic areas.

It was agreed that the only finish that will be required will be a burlap drag, as required in Article 2301.16, A; therefore the remainder of the article was written out but may be added if the pavement is going to be in place for an extended period of time or is under heavy traffic. The same applies to only using the bump cart checker for checking smoothness.

The use of HMA or PCC detour pavement will be the Contractor's option.

Specification Section Recommended Text:

SECTION 2304. DETOUR PAVEMENT

Add as a new section:

2304.01 DESCRIPTION.

This work shall consist of furnishing and placing a temporary hard surface composed of PCC or HMA to carry traffic during construction of permanent pavement.

2304.02 MATERIALS.

The Contractor has the option of using PCC or HMA for the detour pavement. The option used shall meet the following requirements:

A. PCC

The PCC option shall meet the requirements of Section 2301 for Class A PCC Pavement.

B. HMA

The HMA option shall meet the requirements of Article 2303.02 for HMA 1,000,000 ESAL Base, 1/2 inch (12.5 mm) or 3/4 inch (19 mm), or mix of higher quality.

2304.03 CONSTRUCTION.

Earthwork quantities are based upon the PCC option and will not be adjusted for additional HMA depth. Additional cut material may be used as earth shoulder construction.

A. PCC

The PCC option shall meet the requirements of Section 2301. Transverse joints, center tie bars, and sealing of the center longitudinal joint are not required.

B. HMA

The HMA option shall meet the requirements of Section 2303.

2304.04 METHOD OF MEASUREMENT.

The quantity of Detour Pavement constructed, in square yards (square meters), will be the quantity shown in the contract documents.

2304.05 BASIS OF PAYMENT.

The Contractor will be paid the contract unit price for Detour Pavement, per square yard (square meter). This payment shall be full compensation for furnishing all material, equipment, and labor to construct the detour pavement in accordance with the contract documents. Removal of Detour Pavement will be paid for according to Section 2510.

2510.01, Description

Replace the first sentence:

This work involves removal of PCC pavement including reinforcing, pavement widening, HMA pavement, detour pavement, and concrete curb and gutter.

Comments:

Member's Requested Change (Redline/Strikeout):

Add new section

SECTION 2320. Detour Pavement

2320.01 DESCRIPTION.

This work shall consist of furnishing and placing a temporary hard surface composed of Portland Cement Concrete or Hot Mix Asphalt to carry traffic during construction of permanent pavement.

2320.02 MATERIALS.

The contractor has the option of using Portland Cement Concrete or Hot Mix Asphalt for Detour Pavement.

The option used shall meet the following requirements:

- A. The P.C. Concrete option shall be constructed in conformance with Section 2301, Class "A" P. C. Pavement. Transverse joints, center tie bars, and sealing of the center longitudinal joint are not required. Thickness will be shown in the plans.
- B. The HMA option shall be constructed in conformance with Section 2303, HMA (1 M ESAL) Base, ½ inch (12.5 mm) or ¾ inch (19 mm), or mix of higher quality. Thickness will be shown in the plans. Earthwork quantities are based upon the PCC option and will not be adjusted for additional HMA depth. Additional cut material may be used as earth shoulder construction.

2320.03 METHOD OF MEASUREMENT.

The quantity of detour pavement constructed, in square yards (square meters), will be the quantity shown in the contract documents.

2320.04 BASIS OF PAYMENT.

The Contractor will be paid the contract unit price for detour pavement, per square yard (square meter). This payment shall be full compensation for furnishing all material, equipment, and labor to construct the detour pavement in accordance with the contract documents.

Reason for Revision: There are no specifications for detour pavement.

County or City Input Needed (X one)	Yes	No X
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Comments:

Industry Input Needed (X one)			Yes	No X	
Industry Notified:	Yes	No	Industry Concurrence:	Yes	No
Comments:					

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe/George Feazell	Office: Construction	Item 3
Submittal Date: February 20, 2004	Proposed Effective Date: October 19, 2004	
Article No.: 2306 and 2307 Title: Traffic Control	Other:	

Specification Committee Action:

Deferred:	Not Approved:	Approved Date: 4-8-04	Effective Date: 10-19-04
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Specification Committee Approved Text:

2306.09, Traffic Control

Replace the second paragraph:
~~The Contracting Authority~~ Unless stated otherwise in the contract documents, the Contractor will furnish signs and mounting devices including posts.

Replace the third paragraph:
The Contractor shall furnish and install these signs as follows:

2306.11, C, Traffic Control

Replace the entire article:
Traffic Control shall be lump sum for the contract. Article 2528.12 shall apply.

2306.12, B, Traffic Control

Replace the entire article:
For traffic control, the Contractor will be paid the lump sum contract price. This payment shall be full compensation for placing and maintaining all signs. Article 2528.13 shall apply.

2307.04, J, Traffic Control

Replace the second paragraph:
~~The Contracting Authority~~ Unless stated otherwise in the contract documents, the Contractor will furnish the signs and mounting devices including posts.

Replace the fourth paragraph:
The Contractor shall furnish and install these signs as follows:

2307.06, E, Traffic Control

Replace the entire article:
Traffic Control shall be lump sum for the contract. Article 2528.12 shall apply.

2307.07, E, Traffic Control

Replace the entire article:
For Traffic Control, the Contractor will be paid the lump sum contract price. This payment shall be full compensation for placing and maintaining signs as identified in Article 2307.04, J. It shall also include barricades, flaggers, pilot cars and other traffic control devices required for this work. Article 2528.13 shall apply.

Comments: The Specification Committee agreed that this change should not wait for the rewrite of the Traffic Control section because of the budget restraints that the Department is currently experiencing.

The contract documents may also state that the Contracting Authority will supply the signs because some local agencies will supply them.

Specification Section Recommended Text: None

Comments: The Specification Section recommends that changes to Articles 2307.04, J, and 2307.07, E, be incorporated in the current rewriting of Section 2528. Articles 2306.09; 2306.11, C; 2306.12, B; and 2307.06, E, should also be reviewed and incorporated into the rewrite of Section 2528.

Member's Requested Change (Redline/Strikeout):

Article 2307.04.J Construction (see page 301 current spec book)

J. Traffic Control

When the road is not closed for construction, normal traffic shall be maintained on the project at all times, and a detour will not be provided. Traffic shall not be delayed unnecessarily. Traffic maintenance during work on shoulders of multilane pavements shall be as shown in the contract documents.

Traffic control setups, which unnecessarily cause stopping or turning movements, generally will not be allowed.

The ~~Contracting Authority will~~ Contractor shall furnish the signs and mounting devices including posts.

The Contractor shall furnish and install these signs as follows:

1. "NO PAVEMENT MARKINGS NEXT ____ MILES" signs. These signs shall be placed at each end of the area where pavement markings have been obliterated, on each side of towns, and on each side of all intersections with Primary and Secondary Roads.
2. "LOOSE STONE - REDUCE SPEED" signs with a 35 mph advisory speed plate placed approximately 500 feet (150 m) in advance of the "No Pavement Markings" signs.
3. "DO NOT PASS" signs. These signs shall be placed on the right-hand side of the road at the beginning of each no-passing zone.
4. "PASS WITH CARE" signs. These signs shall be placed on the right hand side of the road at the end of each no-passing zone.

All signs shall be mounted on posts.

The ~~Contracting Authority will~~ Contractor shall place new pavement markings and remove the signs when the project is complete.

Article 2307.07 Basis of Payment (page 304 of current spec book)

E. Traffic Control.

For Traffic Control, the Contractor will be paid the lump sum contract price. This payment shall be full compensation for placing and maintaining signs as identified in Article 2307.04, J. It shall also include barricades, ~~flaggers, pilot cars,~~ and other traffic control devices required for this work.

~~Flaggers and pilot cars shall be paid for according to Article 2528.~~ Flaggers and pilot cars shall be paid for according to Article 2528.

Reason for Revision: Change responsibility for traffic control signs, mounting devices, & pavement markings from the Contracting Authority to the Contractor.					
County or City Input Needed (X one)			Yes	No	
Comments:					
Industry Input Needed (X one)			Yes X	No	
Industry Notified:	Yes	No	Industry Concurrence:	Yes	No
Comments:					

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger/Todd Hanson		Office: Materials		Item 4	
Submittal Date: February 18, 2004		Proposed Effective Date: October 19, 2004			
Article No.: 2403.03, D Title: Use of Fly Ash and GGBFS		Other:			
Specification Committee Action:					
Deferred:	Not Approved:	Approved Date: 4-8-04		Effective Date: 10-19-04	
Specification Committee Approved Text:					
Replace the entire article. The Contractor may use fly ash or GGBFS as a substitute for a portion of the Portland cement in structural concrete. The fly ash and GGBFS shall meet the requirements of Section 4108. For Interstate, and Primary, and Secondary projects, the maximum allowable substitution rates shall be 15% 20% for fly ash and 35% for GGBFS. For all other projects, the maximum allowable substitution rate shall be 20% for fly ash, with a maximum total mineral admixture substitution rate of 50%. For all other projects, the maximum allowable fly ash substitution rate shall be 20% unless otherwise specified in the contract documents.					
Comments: Increasing fly ash limit for structures and decks. Adding the last sentence will allow all non-Interstate and Primary projects to specify a lower rate if they believe it is necessary. The language may be added to projects this construction season; the Office of Construction will notify the inspectors of workability issue that might arise when using higher rates of fly ash.					
Specification Section Recommended Text:					
Replace the entire article: The Contractor may use fly ash or GGBFS as a substitute for a portion of the Portland cement in structural concrete. The fly ash and GGBFS shall meet the requirements of Section 4108. For Interstate, Primary, and Secondary projects, the maximum allowable substitution rates shall be 15% 20% for fly ash and 35% for GGBFS. For all other projects, the maximum allowable substitution rate shall be 20% for fly ash, with a maximum total mineral admixture substitution rate of 50%.					
Comments:					
Member's Requested Change (Redline/Strikeout):					
D. Use of Fly Ash and GGBFS. The Contractor may use fly ash or GGBFS as a substitute for a portion of the Portland cement in structural concrete. The fly ash and GGBFS shall meet the requirements of Section 4108. For Interstate, Primary, and Secondary projects, the maximum allowable substitution rates shall be 20 15% for fly ash and 35% for GGBFS. For all other projects, the maximum allowable substitution rate shall be 20% for fly ash, with a maximum total mineral admixture substitution rate of 50%.					
Reason for Revision:					
County or City Input Needed (X one)		Yes		No	
Comments:					
Industry Input Needed (X one)		Yes		No	
Industry Notified:	Yes	No	Industry Concurrence:	Yes	No

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger/Todd Hanson		Office: Materials		Item 5	
Submittal Date: February 18, 2004			Proposed Effective Date: October 19, 2004		
Article No.: 2412.02 Title: Materials			Other:		
Specification Committee Action:					
Deferred:		Not Approved:		Approved Date: 4-8-04	
				Effective Date: 10-19-04	
Specification Committee Approved Text:					
Replace the fifth and sixth sentence of the second paragraph:					
The fly ash and GGBFS shall meet the requirements of Section 4108. For Interstate, Primary, and Secondary projects, the maximum allowable substitution rates shall be 15% for fly ash and 35% for GGBFS. For all other projects, the maximum allowable substitution rate shall be 20% for fly ash, with a maximum total mineral admixture substitution rate of 50%.					
Comments: Clarification for uses other than those in Item 1 and Item 4. The language may be added to projects this construction season; the Office of Construction will notify the inspectors of workability issue that might arise when using higher rates of fly ash.					
Specification Section Recommended Text:					
Replace the fifth and sixth sentence of the second paragraph:					
The fly ash and GGBFS shall meet the requirements of Section 4108. For Interstate, Primary, and Secondary projects, the maximum allowable substitution rates shall be 15% for fly ash and 35% for GGBFS. For all other projects, the maximum allowable substitution rate shall be 20% for fly ash, with a maximum total mineral admixture substitution rate of 50%.					
Comments:					
Member's Requested Change (Redline/Strikeout):					
2412.02 MATERIALS.					
Materials used in concrete floors shall meet requirements for the respective materials in Division 41.					
Concrete used shall meet the requirements for C-4WR, and C-L4WR, and C-V47B concrete mixtures, as specified in Materials I.M. 529 . Coarse aggregate Gradation 3 or 5 shall be used. Fly ash and GGBFS substitution will not be permitted in concrete floors placed in the time period from October 16 through March 15. The fly ash and GGBFS shall meet the requirements of Section 4108 . For Interstate, Primary, and Secondary projects, the maximum allowable substitution rates shall be 15% for fly ash and 35% for GGBFS. For all other projects, the maximum allowable substitution rate shall be 20% for fly ash, with a maximum total mineral admixture substitution rate of 50%.					
Reason for Revision:					
County or City Input Needed (X one)			Yes		No
Comments:					
Industry Input Needed (X one)			Yes		No
Industry Notified:		Yes	No	Industry Concurrence:	
				Yes	No
Comments:					

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Mike Kennerly/Will Stein	Office: Design	Item 6
Submittal Date: March 24, 2004	Proposed Effective Date: October 19, 2004	
Article No.: 2510.02, 2510.04, 2510.05 Title: Removal of Pavement	Other:	

Specification Committee Action:

Deferred:	Not Approved:	Approved Date: 4-8-04	Effective Date: 10-19-04
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Specification Committee Approved Text:

2510.02, E, Removal of Intakes and Utility Accesses

Add as a new article:
 The top and sides of the structure shall be removed a minimum of 10 feet (3 meters) below the subgrade or 6 feet (1.8 meters) below the finished grade in other areas. All the pipes in the structure to be removed shall be plugged using Class C concrete. If the structure is more than 10 feet (3 meters) deep, the remaining structure shall be filled using flowable mortar. Place compacted fill over excavation.

2510.04, F, Removal of Intakes and Utility Accesses

Add as a new article:
 The Engineer will count the number of intakes and utility accesses removed.

2510.05, F, Removal of Intakes and Utility Accesses

Add as a new article:
 For the number of intakes and utility accesses removed, the Contractor will be paid the contract unit price. The cost of plugging pipes, filling remaining structures with flowable mortar, and placing compacted fill shall be included in the contract unit price for removal of intakes and utility accesses.

Comments: The Specification Committee is specifying Class C concrete to reduce inspection.

Specification Section Recommended Text:

2510.02, E, Removal of Intakes and Utility Accesses

Add as a new article:
 The top and sides of the structure shall be removed a minimum of 10 feet (3 meters) below the subgrade or 6 feet (1.8 meters) below the finished grade in other areas. All the pipes in the structure to be removed shall be plugged using 3000 psi (20 MPa) concrete. If the structure is more than 10 feet (3 meters) deep, the remaining structure shall be filled using flowable mortar. Place compacted fill over excavation.

2510.04, F, Removal of Intakes and Utility Accesses

Add as a new article:
 The Engineer will count the number of intakes and utility accesses removed.

2510.05, F, Removal of Intakes and Utility Accesses

Add as a new article:
 For the number of intakes and utility accesses removed, the Contractor will be paid the contract unit price. The cost of plugging pipes, filling remaining structures with flowable mortar, and placing compacted fill shall be included in the contract unit price for removal of intakes and utility accesses.

Comments:					
Member's Requested Change (Redline/Strikeout):					
Add to article					
2510.02 PAVEMENT REMOVAL.					
F. Removal of Intakes and Utility Accesses.					
The top and sides of the structure shall be removed a minimum of 10 feet (3 meters) below the subgrade or 6 feet (1.8 meters) below the finished grade in other areas. All the pipes in the structure to be removed shall be plugged using 3000 psi concrete. If the structure is more than 10 feet (3 meters) deep, the remaining structure shall be filled using flowable mortar. Place compacted fill over excavation.					
Add to article					
2510.04 METHOD OF MEASUREMENT					
F. The Engineer will count the number of intakes and utility accesses removed.					
Add to article					
2510.05 BASIS OF PAYMENT					
F. For the number of intakes and utility accesses removed, the contractor will be paid the contract unit price. The cost of plugging pipes, filling remaining structures with flowable mortar, and placing compacted fill shall be included in the contract unit price for removal of intakes and utility accesses.					
Reason for Revision: A request by AGC to bid pavement removal and intake removal similar to SUDAS Specifications.					
County or City Input Needed (X one)			Yes		No X
Comments:					
Industry Input Needed (X one)			Yes		No X
Industry Notified:	Yes	No	Industry Concurrence:	Yes	No
Comments:					

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger/Todd Hanson	Office: Materials	Item 7
Submittal Date: February 18, 2004	Proposed Effective Date: October 19, 2004	
Article No.: 2513.03, B, 3 and 5 Title: Concrete Barrier	Other:	

Specification Committee Action:

Deferred:	Not Approved:	Approved Date: 4-8-04	Effective Date: 10-19-04
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Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: No comments.

Specification Section Recommended Text:

2513.03, B, 3

Replace the entire article:
 Aggregates. The combination of aggregates shall be **uniformly well** graded in accordance with Materials I.M. 532 **meeting the following gradation limits**. The Contractor shall provide a target gradation and the following limits shall apply:

Sieve Size	Percent Passing
1 1/2 inch (37.5 mm)	100
3/4 inch (19.0 mm)	81-93
1/2 inch (12.5 mm)	67-79
3/8 inch (9.5 mm)	57-69
No. 4 (4.75 mm)	41-53
No. 8 (2.36 mm)	29-41
No. 16 (1.18 mm)	21-33
No. 200 (75 µm)	0-1.5

Sieves	Limits
No. 4 (4.75 mm) and larger	± 5%
No. 8 (2.36 mm) to No. 30 (600 µm)	± 4%
No. 50 (300 µm)	± 3%
No. 100 (150 µm)	± 2%
No. 200 (150 µm)	Maximum 1.5% Passing

A new target gradation will require approval by the Engineer.

2513.03, B, 5

Replace the entire article:
 Fly Ash and GGBFS. The conditions and allowable rates of fly ash and GGBFS substitution shall be in accordance with Article 2403.03, D. **Fly ash and** GGBFS substitution will not be permitted in slip form barrier rail placed in the time period from October 16 through March 15.

Comments:

Member's Requested Change (Redline/Strikeout):

3. Aggregates. The combination of aggregates shall be uniformly well graded in accordance with [Materials I.M. 532](#), meeting the following gradation limits. The contractor shall provide a target gradation and the following limits shall apply:

Sieves	Limits
No. 4 (4.75 mm) and larger	± 5%
No. 8 (2.36 mm) to No. 30 (600 µm)	± 4%
No. 50 (300 µm)	± 3%
No. 100 (150 µm)	± 2%
No. 200 (150 µm)	Maximum 1.5% Passing

A new target gradation will require approval by the Engineer.

Sieve Size	Percent Passing
1 1/2 inch (37.5 mm)	100
3/4 inch (19.0 mm)	81-93
1/2 inch (12.5 mm)	67-79
3/8 inch (9.5 mm)	57-69
No. 4 (4.75 mm)	41-53
No. 8 (2.36 mm)	29-41
No. 16 (1.18 mm)	21-33
No. 200 (75 µm)	0-1.5

4. Admixtures. Air entrainment shall be used. The air content of fresh, unvibrated concrete shall be 7.0%, as a target value, with a maximum variation of plus 1.5% or minus 1.0%. To improve workability and aid in air entrainment, water reducing or retarding admixtures may be used in accordance with [Article 2513.02, C](#).

5. Fly Ash and GGBFS. The conditions and allowable rates of fly ash and GGBFS substitution shall be in accordance with [Article 2403.03, D](#). Fly ash and GGBFS substitution will not be permitted in slip form barrier rail placed in the time period from October 16 through March 15.

Reason for Revision: Current aggregate gradation limits were specific to 1 1/2" aggregates only. Could not meet specifications with other aggregate sizes. This changes makes it similar to QMC. Also, re-allowing fly ash to be used in winter better slip forming - not allow ggbfs during winter.

County or City Input Needed (X one)	Yes	No
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Comments:

Industry Input Needed (X one)	Yes X	No
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Industry Notified:	Yes X	No	Industry Concurrence:	Yes	No
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Comments: Met with ready mix producer on changes needed for improved barrier rail.

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger		Office: Materials	Item 8
Submittal Date: March 2004		Proposed Effective Date: October 19, 2004	
Article No.: 4155 Title: Guardrail		Other:	
Specification Committee Action:			
Deferred:	Not Approved:	Approved Date: 4-8-04	Effective Date: 10-19-04
Specification Committee Approved Text: See Specification Section Recommended Text.			
<p>Comments: The crash test experts have recommended that steel posts only be used in our state in the transition sections because of the limited deflection. This recommendation is based on the bending reaction of the steel posts in cold weather. The allowable locations of the different types of posts are shown in the Standard Road Plans.</p>			
Specification Section Recommended Text:			
<p>4155.01 Description.</p> <p>Add as the second sentence. Guardrail posts shall be wood or steel as specified in the contract documents.</p> <p>4155.02 Formed Steel Beam Guardrail.</p> <p>Delete the fourth sentence: Anchor cable shall meet requirements of AASHTO M 30, Type II, Class A.</p> <p>4155.03 Cable.</p> <p>Replace the entire article: A. Cable Rail. Cable shall meet the requirements of AASHTO M 30, Type I, Class A.</p> <p>B. Anchor Cable. Cable shall meet the requirements of AASHTO M 30, Type II, Class A.</p> <p>4155.05 Steel Posts.</p> <p>Replace the entire article: Steel posts and plates blocks shall be galvanized meet the requirements of ASTM A 36/A 36M structural steel of the dimensions shown in the contract documents. Steel posts and blocks shall be galvanized in accordance with the requirements of ASTM A 123. Bolt holes shall be provided and welding shall be done as indicated and in accordance with Section 2408 Article 2408.39, B. Galvanizing shall be done after fabrication and after all bolt holes have been drilled.</p>			
Comments:			
Member's Requested Change (Redline/Strikeout):			
<p>4155.01 DESCRIPTION. Guardrail materials shall meet the requirements for the type of guardrail specified. <u>Guardrail posts shall be wood or steel as specified in the contract documents.</u></p>			

4155.02 FORMED STEEL BEAM GUARDRAIL.

Rail elements, and terminal sections shall meet requirements of AASHTO M 180. Thrie-beam rail shall be furnished when required. Rail elements and terminal sections shall be Class A, 12 gauge (2.67 mm thickness), Type I, unless a greater thickness is required. ~~Anchor cable shall meet requirements of AASHTO M 30, Type II, Class A.~~ Anchor bolts used to attach beam rail to bridge barrier rail shall meet requirements of ASTM F 1554, Grade 55, and shall be full-length galvanized. Washers shall meet the requirements of ASTM F 436. Nuts shall meet the requirements of ASTM A 563, DH, ~~and be~~ heavy hex, Class 2B. All other bolts, nuts, and washers shall meet the requirements of ASTM A 307, Grade A; ASTM A 563, Grade A, hex; and ASTM F 844; respectively. Galvanizing shall meet the requirements of ASTM A 153, Class C.

4155.03A CABLE RAIL.

Cable shall meet [the](#) requirements of AASHTO M 30, Type I, Class A.

4155.03B ANCHOR CABLE.

[Anchor cable shall meet the requirements of AASHTO M 30, Type II, Class A.](#)

4155.04 WOOD POSTS.

Wood posts shall be sawed to the dimensions shown in the contract documents and [shall meet the](#) requirements of Section 4164.

4155.05 STEEL POSTS.

Steel posts, ~~and blocks, and plates~~ shall [meet the requirements of be galvanized](#) ASTM A 36/A 36M structural steel [and](#) of the dimensions shown in the contract documents. [Steel posts, and blocks, shall be galvanized in accordance with the requirements of ASTM A123.](#) Bolt holes shall be provided ~~And welding shall be done as indicated and~~ in accordance with [Section 2408.39B](#). Galvanizing shall be done after fabrication [and after all bolt holes have been drilled.](#)

4155.06 ~~Spacer Blocks~~SPACER BLOCKS.

Wood spacer blocks shall meet requirements for wood posts. Steel spacers shall meet requirements for steel posts. Spacer blocks manufactured from alternate materials that have received FHWA approval for use on the National Highway System may be substituted for wood or steel spacer blocks. A list of approved spacer blocks is found on the World Wide Web at the following URL:
http://safety.fhwa.dot.gov/fourthlevel/pro_res_road_nchrp350.htm

4155.07 MISCELLANEOUS ITEMS.

Miscellaneous items and materials shall be of the type, size, and dimension shown in the contract documents. All metal parts shall be galvanized, however, any items or parts of items to be covered with 2 inches (50 mm) or more of concrete need not be galvanized. Internal threads of fasteners may be oversize, tapped after galvanizing. Anchor angles, anchor cable, turnbuckles, hooked bolts, and compensating devices, as well as any other fittings or special hardware which may be required, shall be subject to approval of the Engineer when specific requirements are not stated in the contract documents. All cable fittings required for cable guardrail installation shall be designed and fabricated so as to develop the full strength of a single cable or the multiple cable assembly, as applicable.

Reason for Revision: Update information for minimum AASHTO and ASTM requirements.

County or City Input Needed (X one)			Yes		No	
Comments:						
Industry Input Needed (X one)			Yes		No	
Industry Notified:		Yes	No	Industry Concurrence:		No
Comments:						

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger	Office: Materials	Item 9
Submittal Date: March 2004	Proposed Effective Date: October 19, 2004	
Article No.: 4161.03 Title: Treatment	Other:	

Specification Committee Action:

Deferred:	Not Approved:	Approved Date: 4-8-04	Effective Date: 10-19-04
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Specification Committee Approved Text:

4161.03, Treatment

Replace the entire article:

Except as provided herein, preservative treatment shall be in accordance with requirements and recommendations of AWPA Standard C1 and the applicable AWPA Commodity Standards listed in the following tables for various materials and usages:

TABLE 1: MINIMUM PRESERVATIVE RETENTION REQUIREMENTS						
(lb./cu.ft. of wood)						
(kilograms per cubic meter)						
Material and Usage	Retention					AWPA Material Standard
	Creosote⁽²⁾	Pentachlorophenol⁽²⁾	ACA⁽³⁾	ACZA⁽³⁾	CCA^(1,3)	
Lumber and Timber for Structures	12 (192.2)	0.6 (9.6)	0.6 (9.6)	0.6 (9.6)	0.6 (9.6)	C2, C14
Piles for Foundation:						
Douglas Fir	17 (272)	-	-	-	-	C3, C14
Southern Pine	12 (192.2)	-	-	-	-	
Post, Guardrail, and Spacer Blocks: Sawed Four Sides	12 (192.2)	0.4 (6.4) 0.6 (9.6)	0.6 (9.6)	0.6 (9.6)	0.6 (9.6)	C2, C14
Posts, Fence Guide, and Sign:						
Round	8 (128)	0.3 (4.8) 0.4 (6.4)	0.4 (6.4)	0.4 (6.4)	0.4 (6.4)	C5, C14
Sawed Four Sides	10 (160)	0.4 (6.4) 0.5 (8.0)	0.5 (8.0) 0.4 (6.4)	0.5 (8.0) 0.4 (6.4)	0.5 (8.0) 0.4 (6.4)	C2, C14

NOTE: ⁽¹⁾ CCA shall not be used for the treatment of Douglas Fir.

⁽²⁾ Oil type preservatives

⁽³⁾ CCA, ACA, and ACZA are waterborne preservatives

TABLE 2: MINIMUM PRESERVATIVE PENETRATION REQUIREMENTS			
inches (mm) of wood and/or % of sapwood penetration			
Material and Usage	Penetration		AWPA Material Standard
	Southern Pine	Douglas Fir	
Lumber and Timber for Structures	2.5 in (63 mm) or 85%	Under 5 in (125 mm) thick: 0.4 in (10 mm) and 90% 5 in (125 mm) and thicker:	C2, C14

Piles for Foundation	2.5 in (63 mm) or 85%	0.75 in (19 mm) and 85% up to 1.6 in (40 mm) and 85%	C3, C14
Post, Guardrail, and Spacer Blocks: Sawed Four Sides	2.5 in (63 mm) or 85%	Under 5 in (125 mm) thick: 0.4 in (10 mm) and 90% 5 in (125 mm) and thicker: 0.5 in (13 mm) and 90%	C2, C14
Posts, Fence, Guide, and Sign: Round	2.0 in (50 mm) or 85%	3/8 in (9 mm) and 100% up to 1 in (25 mm) or 85%	C5, C14
Sawed Four Sides	2.0 in (50 mm) or 85%	Under 5 in (125 mm) thick: 0.4 in (10 mm) and 90% 5 in (125 mm) and thicker: 0.5 in (13 mm) and 90%	C2, C14

Other aspects of the treatment shall meet the following requirements:

A. Incising.

Coastal Douglas Fir lumber shall be incised.

B. Seasoning.

When sawed material is treated with chromated copper arsenate (CCA) waterborne preservatives (CCA, ACA, ACZA), the moisture content prior to treatment, as determined by resistance type moisture meter, shall not be more than 20% if kiln dried or not more than 23% if air dried. The moisture content shall be measured at a depth equivalent to the required penetration up to a maximum of 1.5 inches (38 mm). Unless otherwise specified, lumber 2 inches (50 mm) or less in nominal thickness that is treated with a waterborne preservative shall be dried after treatment to a moisture content of not more than 20% if kiln dried or not more than 23% if air dried. When treated with ammoniacal copper arsenate, sawed material shall be suitably seasoned or conditioned prior to treatment.

C. Special Treatment for Guardrail and Sign Posts Treated With Oil Type Preservative.

Before being removed from the treatment cylinder, sign and guardrail posts shall be further subjected to live steam at a maximum pressure of 13 psi (90 kPa), and following that, to an additional period of vacuum to insure that the surface of the wood is free from accumulation of oil type preservative.

D. Method of Treatment.

The preservative used shall be the same for all the product furnished for each contract item or order. Unless otherwise specified, treatment with creosote oil or pentachlorophenol solution shall be made by the empty cell process with initial air pressure. Treatment with waterborne preservative shall be made by the full cell process.

E. Results of Treatment

Unless otherwise specified, retention and penetration of preservatives shall be in conformance with the above tables. Preservative retentions shall be determined by assay method. Penetration and other treatment requirements shall be in accordance with AWPA Standard C1 and the applicable AWPA Commodity Standards listed in the above tables.

F. Handling Treated Products.

Care and handling of preservative treated wood products shall be in accordance with AWPA Standard M4.

G. Product Marking.

The individual pieces of inspected, treated material shall bear a legible identification mark either hammer or heat branded, die stamped, or metal tagged. For material treated with waterborne preservatives, the identification mark may be ink stamped provided the information is clearly visible and legible. As a minimum, the identification mark shall indicate the treater, the species of wood, the preservative treatment type, and the retention level. Additionally, the individual pieces of

inspected, treated material shall be marked by the treating plant with the treatment charge number. Acceptable brands or marks shall be similar to the general guidelines for brands listed in accordance with AWPA M1 and M6, with the addition of the charge number. ~~except that~~ Branding of piles shall be on the butt end. ~~The charge number shall be included in the markings on all treated piles.~~ When size permits, 2 inches by 2 inches (50 mm by 50 mm) or larger, each piece of inspected and approved ~~sawed~~ material shall be legibly hammer stamped on one or both ends by the ~~inspector or the immediate supervisor~~ treatment inspection agency. This ~~mark~~ treatment stamp shall identify the treatment inspection agency and the inspector. ~~The individual pieces of inspected, treated materials shall be marked by the treating plant with the treatment charge number.~~

H. Inspection.

White and treatment inspections, certifications, and test reports for each shipment shall be furnished in accordance with Materials I.M. 462.

Comments: This is a clarification of the existing requirements. There will be additional changes to these specifications in the next year that will help future clarify and possibly reduce the requirements.

There is also a change to smaller lumber, which is reducing its requirements. And a change to the percent of acceptable moisture if air dried.

Specification Section Recommended Text:

4161.03, Treatment

Replace the entire article:

Except as provided herein, preservative treatment shall be in accordance with requirements and recommendations of AWPA Standard C1 and the applicable AWPA Commodity Standards listed in the following table for various materials and usages:

TABLE 1: MINIMUM PRESERVATIVE RETENTION REQUIREMENTS						
(lb./cu.ft. of wood)						
(kilograms per cubic meter)						
Material and Usage	Retention					AWPA Material Standard
	Creosote ⁽²⁾	Pentachloro-phenol ⁽²⁾	ACA ⁽³⁾	ACZA ⁽³⁾	CCA ^(1,3)	
Lumber and Timber for Structures	12 (192.2)	0.6 (9.6)	0.6 (9.6)	0.6 (9.6)	0.6 (9.6)	C2, C14
Piles for Foundation:						
Douglas Fir	17 (272)	-	-	-	-	C3, C14
Southern Pine	12 (192.2)	-	-	-	-	
Post, Guardrail, and Spacer Blocks: Sawed Four Sides	12 (192.2)	0.4 (6.4) 0.6 (9.6)	0.6 (9.6)	0.6 (9.6)	0.6 (9.6)	C2, C14
Posts, Fence Guide, and Sign:						
Round	8 (128)	0.3 (4.8) 0.4 (6.4)	0.4 (6.4)	0.4 (6.4)	0.4 (6.4)	C5, C14
Sawed Four Sides	10 (160)	0.4 (6.4) 0.5 (8.0)	0.5 (8.0) 0.4 (6.4)	0.5 (8.0) 0.4 (6.4)	0.5 (8.0) 0.4 (6.4)	C2, C14

NOTE: ⁽¹⁾ CCA shall not be used for the treatment of Douglas Fir.

⁽²⁾ Oil type preservatives

⁽³⁾ CCA, ACA, and ACZA are waterborne preservatives

TABLE 2: MINIMUM PRESERVATIVE PENETRATION REQUIREMENTS inches (mm) of wood and/or % of sapwood penetration			
Material and Usage	Penetration		
	Southern Pine	Douglas Fir	AWPA Material Standard
Lumber and Timber for Structures	2.5 in (63 mm) or 85%	Under 5 in (125 mm) thick: 0.4 in (10 mm) and 90% 5 in (125 mm) and thicker: 0.5 in (13 mm) and 90%	C2, C14
Piles for Foundation	2.5 in (63 mm) or 85%	0.75 in (19 mm) and 85% up to 1.6 in (40 mm) and 85%	C3, C14
Post, Guardrail, and Spacer Blocks: Sawed Four Sides	2.5 in (63 mm) or 85%	Under 5 in (125 mm) thick: 0.4 in (10 mm) and 90% 5 in (125 mm) and thicker: 0.5 in (13 mm) and 90%	C2, C14
Posts, Fence, Guide, and Sign:			
Round	2.0 in (50 mm) or 85%	3/8 in (9 mm) and 100% up to 1 in (25 mm) or 85%	C5, C14
Sawed Four Sides	2.0 in (50 mm) or 85%	Under 5 in (125 mm) thick: 0.4 in (10 mm) and 90% 5 in (125 mm) and thicker: 0.5 in (13 mm) and 90%	C2, C14

Other aspects of the treatment shall meet the following requirements:

A. Incising.

Coastal Douglas Fir lumber shall be incised.

B. Seasoning.

When sawed material is treated with ~~chromated copper arsenate (CCA) waterborne preservatives (CCA, ACA, ACZA)~~, the moisture content prior to treatment, as determined by resistance type moisture meter, shall not be more than 20% ~~if kiln dried or not more than 23% if air dried~~. The moisture content shall be measured at a depth equivalent to the required penetration up to a maximum of 1.5 inches (38 mm). Unless otherwise specified, lumber 2 inches (50 mm) or less in nominal thickness that is treated with a waterborne preservative shall be dried after treatment to a moisture content of not more than 20% ~~if kiln dried or not more than 23% if air dried~~. ~~When treated with ammoniacal copper arsenate, sawed material shall be suitably seasoned or conditioned prior to treatment.~~

C. Special Treatment for Guardrail and Sign Posts Treated With Oil Type Preservative.

Before being removed from the treatment cylinder, sign and guardrail posts shall be further subjected to live steam at a maximum pressure of 13 psi (90 kPa), and following that, to an additional period of vacuum to insure that the surface of the wood is free from accumulation of oil type preservative.

D. Method of Treatment.

The preservative used shall be the same for all the product furnished for each contract item or order. Unless otherwise specified, treatment with creosote oil or pentachlorophenol solution shall be made by the empty cell process with initial air pressure. Treatment with waterborne preservative shall be made by the full cell process.

E. Results of Treatment

Unless otherwise specified, retention ~~and penetration~~ of preservatives shall be in conformance with the above table. Preservative retentions shall be determined by assay method. ~~Penetration and o~~
Other treatment requirements shall be in accordance with AWPA Standard C1 and the applicable

AWPA Commodity Standards listed in the above tables.

F. Handling Treated Products.

Care and handling of preservative treated wood products shall be in accordance with AWPA Standard M4.

G. Product Marking.

The individual pieces of inspected, treated material shall bear a legible identification mark either hammer or heat branded, die stamped, or metal tagged. For material treated with waterborne preservatives, the identification mark may be ink stamped provided the information is clearly visible and legible. As a minimum, the identification mark shall indicate the treater, the species of wood, the preservative treatment type, and the retention level. Additionally, the individual pieces of inspected, treated material shall be marked by the treating plant with the treatment charge number. Acceptable brands or marks shall be similar to the general guidelines for brands listed in accordance with AWPA M1 and M6, with the addition of the charge number. except that b Branding of piles shall be on the butt end. The charge number shall be included in the markings on all treated piles. When size permits, 2 inches by 2 inches (50 mm by 50 mm) or larger, each piece of inspected and approved sawed material shall be legibly hammer stamped on one or both ends by the inspector or the immediate supervisor treatment inspection agency. This mark treatment stamp shall identify the treatment inspection agency and the inspector. The individual pieces of inspected, treated materials shall be marked by the treating plant with the treatment charge number.

H. Inspection.

White and treatment inspections, certifications, and test reports for each shipment shall be furnished in accordance with Materials I.M. 462.

Comments:

Member's Requested Change (Redline/Strikeout):

4161.01 DESCRIPTION.

Preservative treatment of timber, lumber, piling, and posts shall meet requirements of applicable sections, within these specifications, which cover the individual materials. Unless otherwise specified, the treatment process and results of treatment shall meet requirements of this section.

4161.02 PRESERVATIVES.

Preservatives used for treatment shall meet requirements of [Section 4160](#). Unless otherwise specified, treatment may be with creosote, pentachlorophenol, chromated copper arsenate (CCA), ammoniacal copper arsenate (ACA), or ammoniacal copper zinc arsenate (ACZA).

4161.03 TREATMENT.

Except as provided herein, preservative treatment shall be in accordance with requirements and recommendations of AWPA Standard C1 and the applicable AWPA Commodities Standards listed in ~~the~~ [following table Tables 1 and 2 listed below](#) for various materials and usages:

TABLE 1: MINIMUM PRESERVATIVE RETENTION REQUIREMENTS
(lb./cu.ft. of wood)
(kilograms per cubic meter)

Material and Usage	Retention					AWPA Material Standard
	Creosote (2)	Pentachlorophenol(2)	ACA(3)	ACZA(3)	CCA(1,3)	
Lumber and Timber for Structures	12 (192.2)	0.6 (9.6)	0.6 (9.6)	0.6 (9.6)	0.6 (9.6)	C2, C14
Piles for Foundation: Douglas Fir	17 (272)	-	-	-	-	C3, C14

Southern Pine	12 (192.2)	-	-	-	-	
Post, Guardrail, and Spacer Blocks: Sawed Four Sides	-12 (192.2)	0.4 (6.4) <u>0.6</u> (<u>9.6</u>)	0.6 (9.6)	0.6 (9.6)	0.6 (9.6)	C2, C14
Posts, Fence, Guide, and Sign: Round	-8 (128)	0.30.4 (4.86.4)	0.4 (6.4)	0.4 (6.4)	0.4 (6.4)	C5, C14
Sawed Four Sides	-10 (160)	0.40.5 (6.48.0)	0.50.4 (8.06.4)	0.50.4 (8.06.4)	0.50.4 (8.06.4)	C2, C14

NOTE: (1) CCA shall not be used for the treatment of Douglas Fir.
 (2) Oil type preservative
 (3) CCA, ACA, and ACZA are waterborne preservative

TABLE 2: MINIMUM PRESERVATIVE PENETRATION REQUIREMENTS
inches (mm) of wood &/or % of sapwood penetration

<u>Material and Usage</u>	<u>Penetration</u>		<u>AWPA Material Standard</u>
	<u>Southern Pine</u>	<u>Douglas Fir</u>	
Lumber and Timber for Structures	<u>2.5 in (63 mm) or 85%</u>	<u>Under 5 in (125 mm) Thick:</u> 0.4 in (10 mm) & 90% <u>5 in (125 mm) and thicker:</u> 0.5 in (13 mm) & 90%	C2, C14
Piles for Foundation	<u>2.5 in (63 mm) or 85%</u>	0.75 in (19 mm) & 85% up to 1.6 in (40 mm) & 85%	C3, C14
Post, Guardrail, and Spacer Blocks: Sawed Four Sides	<u>2.5 in (63 mm) or 85%</u>	<u>Under 5 in (125mm) Thick:</u> 0.4 in (10 mm) & 90% <u>5 in (125 mm) and thicker:</u> 0.5 in (13 mm) & 90%	C2, C14
Posts, Fence, Guide, and Sign: Round	<u>2.0 in (50 mm) or 85%</u>	<u>3/8 in (9mm) & 100%</u> up to 1 in (25 mm) or 85%	C5, C14
Sawed Four Sides	<u>2.0 in (50 mm) or 85%</u>	<u>Under 5 in (125mm) Thick:</u> 0.4 in (10 mm) & 90% <u>5 in (125 mm) and thicker:</u> 0.5 in (13 mm) & 90%	C2, C14

Other aspects of the treatment shall meet the following requirements:

A. No Changes

B. Seasoning

When sawed material is treated with ~~Chromated Copper Arsenate (CCA)~~ waterborne preservatives (CCA, ACA, ACZA), the moisture content prior to treatment, as determined by resistance type moisture meter, shall not be more than 20% if kiln dried, or not more than 23% if air dried. The moisture content shall be measured at a depth equivalent to the required penetration up to a maximum of 1.5 inches (38mm). Unless otherwise specified, lumber 2 inches (50mm) or less in nominal thickness that is treated with a waterborne preservative shall be dried after treatment to a moisture content of not more than 20% if kiln dried, or not more than 23% if air dried. ~~When treated with Ammoniacal Copper Arsenate, sawed material shall be suitably seasoned or conditioned prior to treatment.~~

C. No Changes

D. No Changes

E. Results of Treatment

Unless otherwise specified, retention and penetration of preservatives shall be in conformance with the above tables. Preservative retentions shall be determined by assay method. Penetration and eOther treatment requirements shall be in accordance with AWPAs Standard C1 and the applicable AWPAs Commodity Standards listed in the above tables.

F. No Changes

G. Product Markings

The individual pieces of inspected, treated material shall bear a legible identification mark either hammer or heat branded, die stamped, or metal tagged. For material treated with waterborne preservatives, the identification mark may be ink stamped provided the information is clearly visible and legible. As a minimum, the identification mark shall indicate the treater, the species of wood, the preservative treatment type, and the retention level.

Additionally, the individual pieces of inspected, treated material shall be marked by the treating plant with the treatment charge number. Acceptable brands or marks shall be similar to the general guidelines for brands listed in, in accordance with AWPAs M1 and M6, with the addition of the charge number, except that bBranding of piles shall be done on the butt end. The charge number shall be included in the markings of all treated piles. When size permits (2 inches by 2 inches (50 mm by 50 mm) and larger), each piece of inspected and approved sawed material shall be legibly hammer stamped on one or both ends by the treatment inspection agency, inspector or immediate supervisor. This mark inspection stamp shall identify the treatment inspection agency and the inspector.

H. No Changes

Reason for Revision: Update information for current revision of AWPAs standards, and other industry documents.

County or City Input Needed (X one)			Yes	No	
Comments:					
Industry Input Needed (X one)			Yes	No	
Industry Notified:	Yes	No	Industry Concurrence:	Yes	No
Comments:					

Minutes, Specification Committee Meeting, April 8, 2004, Page 27 of 37
SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger		Office: Materials	Item 10
Submittal Date: March 2004		Proposed Effective Date: October 19, 2004	
Article No.: 4162 Title: Untreated Timber and Lumber		Other:	
Specification Committee Action:			
Deferred:	Not Approved:	Approved Date: 4-8-04	Effective Date: 10-19-04
Specification Committee Approved Text: See Specification Section Recommended Text.			
Comments: Continuation of Item 9, in review and clarification of the lumber requirements.			
Specification Section Recommended Text:			
4162.03, Minimum Acceptable Sizes			
Replace the first sentence of the first paragraph:			
All material furnished shall conform to the dimensions specified for either rough, or surfaced, or surfaced hit or miss stock.			
4162.03, A, Manufacture			
Replace the first sentence:			
All pieces shall be well manufactured fully milled and processed, and unless otherwise specified, all ends shall be neatly cut at right angles to the longest dimension, to a length not less than the length designated length specified.			
4162.03, B, Dimensions			
Replace the second sentence:			
Unless otherwise specified, the dimensions of all other material shall be in accordance with the industry standards approved by the Board of Review of the American Lumber Standards Committee for rough or surfaced stock, as specified, for the species furnished.			
4162.04, Species of Wood			
Replace the second sentence:			
Construction parts less than a nominal thickness of 2 inches (50 mm) and including all boards, strips, and sheathing, may be Douglas Fir (coast region), Southern Pine, West Coast Hemlock, Ponderosa Pine, Idaho White Pine, Sugar Pine, or White Fir.			
4162.06, Stress Grade Timber And Lumber			
Replace the entire article:			
Material furnished under this specification shall be either Douglas Fir (coast region) or Southern Pine. The material shall be graded as provided in ASTM D 245, "National Design Specifications for Stress Grade Lumber and its Fastenings" , and by rules of associations representing these industries as approved by the American Lumber Standards Committee.			
Material shall be of the grade specified for each species. Douglas Fir (Coastal Region) shall be graded according to the grading rules published by the Western Wood Products Association or the West Coast Lumber Inspection Bureau. Southern Pine shall be grade according to the grading rules published by the Southern Pine Inspection Bureau. When a stress grade is identified as structural or common class,			

Table 4162.06A shall apply. When a stress grade is identified as common class, Table 4162.06B shall apply. Unless otherwise specified, the material may be either Douglas Fir or Southern Pine.

Table 4162.06 A	
Structural Class*	Grade
Light Framing: Douglas Fir Southern Pine	Dense No. 2 No. 2 Dense
Joists and Plank: Douglas Fir Southern Pine	Select Structural or Dense No. 1 Dense Structural 72
Beams and Stringers: Douglas Fir Southern Pine	Dense Select Structural Dense Structural 86
Posts and Timbers: Douglas Fir Southern Pine	Dense Select Structural Dense Structural 72
<p>* Structural class is based on a nominal extreme fiber stress in bending of 1,900 psi (13 MPa) (minimum 1,850 psi (12.8 MPa)) for light framing, and joists, and plank in a repetitive member use, and for beams and stringers in a single member use. Structural class for posts and timbers is based on a compression stress parallel to the grain of 1,100 psi (7.6 MPa) when used as a column. When used as a beam in a single member use, the minimum extreme fiber stress in bending is 1,750 psi (12 MPa). Use is assumed in a location where the moisture content will not exceed 19% for an extended period of time. Treatment for durability (Section 4161) is also assumed, where appropriate specified.</p>	

Table 4162.06 B	
Common Class*	Grade
Light Framing: Douglas Fir Southern Pine	No. 2 No. 2 Dense
Joists and Plank: Douglas Fir Southern Pine	No. 1 Dense Structural 65
Posts and Timbers: Douglas Fir Southern Pine	Select Structural Dense Structural 65
<p>* Common class is based on a nominal extreme fiber stress in bending of 1,500 psi (10.3MPa) (minimum 1,450 psi (10 MPa)) for light framing, and joists, and plank in a repetitive member use. Common class for posts and timbers is based on a compression stress parallel to the grain of 1,000 psi (7 MPa) when used as a column. When used as a beam in single member use, the minimum extreme fiber stress in bending is 1,450 psi (10 MPa). Use is assumed in a location where the moisture content will not exceed 19% for an extended period of time. Treatment for durability (Section 4161) is also assumed, where appropriate specified.</p>	

Untreated wood material that requires a grade shall be stamped with the identifying quality grade mark of an accredited grade monitoring and inspection agency approved by the American Lumber Standards Committee (ALSC) under the Untreated Wood Program.

When material is resized to shorter lengths, and the quality grade mark is no longer available, the lumber mill/processor shall certify the grade of the material.

Material less than 3 feet (1 m) in length does not require a grade mark; however, the grade of the material shall be certified by the certification statement from the mill/processor in accordance with Materials I.M. 462. Round wood posts, round wood piles, and round wood poles do not require a grade, since the grading rules apply only to sawn material.

Comments:

Member's Requested Change (Redline/Strikeout):

4162.01 GENERAL REQUIREMENTS.

All timber parts, which in their position in the structure support definite traffic loads, namely posts of framed bents and stringers, shall be structural class timber. All other timber parts, including caps, backing plank, floor plank, wing plank, nailers, fillers, sway bracing, rail posts, post blocks, bridging curbs, scupper blocks, rails, and laminated floor, unless otherwise designated, shall be common class timber and lumber.

Inspection arrangements shall be in accordance with [Materials I.M. 462](#). The cost of inspection shall be included in the unit price bid for the material specified.

4162.02 RESERVED.

4162.03 MINIMUM ACCEPTABLE SIZES.

All material furnished shall conform to the dimensions specified for ~~either~~ rough, or surfaced, ~~or surfaced hit or miss~~ stock. Unless otherwise specified in the contract documents, rough material shall be furnished. Materials are classified as follows, according to use:

<u>LIGHT FRAMING:</u>	
Nominal thickness	2" to 4" (50 mm to 100 mm)
Nominal widths	2" to 4" (50 mm to 100 mm)
Dressed thickness	S1S or S2S
Dressed widths	S1E or S2E
<u>JOIST AND PLANK:</u>	
Nominal thickness	2", 3", and 4" (50 mm, 75 mm, and 100 mm)
Nominal widths	6" (150 mm) and wider in multiples of 2" (50 mm)
Dressed thickness	S1S or S2S
Dressed widths	S1E or S2E
Rough	
<u>BEAMS AND STRINGERS:</u>	
Nominal thickness	5" (125 mm) and thicker, rectangular
Nominal widths	Widths more than 2" (50 mm) greater than thickness
Dressed sizes	
Rough	S1S, S1E, S2S, or S4S

A. Manufacture.

All pieces shall be fully milled and processed well manufactured, and unless otherwise specified, all ends shall be neatly cut at right angles to the longest dimension, and to a length not less than the length designated. Miscut, tapered, wedge cut, or bull end pieces shall be rejected.

B. Dimensions.

Material for tongue and groove bridge floors shall have the dimensions specified or approved by the Engineer. Unless otherwise specified, T the dimensions of all other material shall be in accordance with the industry standards approved by the Board of Review of the American Lumber Standards Committee for rough or surfaced stock, as specified, for the species furnished.

4162.04 SPECIES OF WOOD.

The species of wood used in all structural class parts and in all common class timber parts with a nominal thickness of 2 inches (50 mm) and over shall be Douglas Fir (coast region) or Southern Pine. Construction parts less than a nominal thickness of 2 inches (50 mm), ~~including and~~ all boards, strips, and sheathing may be Douglas Fir (coast region), Southern Pine, West Coast Hemlock, Ponderosa Pine, Idaho White Pine, Sugar Pine, or White Fir.

4162.05 DEFINITION OF TERMS.

Terms used in these specifications shall be interpreted in accordance with ASTM D 9 and the grading rules approved by the Board of Review of the American Lumber Standards Committee.

4162.06 STRESS GRADE TIMBER AND LUMBER.

Material furnished under this specification shall be either Douglas Fir (coast region) or Southern Pine. The material shall be graded as provided in ASTM D 245, "~~National Design Specifications for Stress Grade Lumber and its Fastenings~~", and by the grading rules of associations ~~representing these industries~~ as approved by the American Lumber Standards Committee.

Material shall be of the grade specified for each species. Douglas Fir (Coastal Region) shall be graded according to the grading rules published by the Western Wood Products Association or the West Coast Lumber Inspection Bureau. Southern Pine shall be graded according to the grading rules published by the Southern Pine Inspection Bureau. When a stress grade is identified as structural ~~or common class~~, Table 4162.06A shall apply. When a stress grade is identified as common class, Table 4162.06B shall apply. Unless otherwise specified, the material may be either Douglas Fir or Southern Pine.

TABLE 4162.06A

<u>Structural Class*</u>	<u>Grade</u>
Light Framing: Douglas Fir Southern Pine	Dense No. 2 No. 2 Dense
Joists and Plank: Douglas Fir Southern Pine	Select Structural or Dense No. 1 Dense Structural 72
Beams and Stringers: Douglas Fir Southern Pine	Dense Select Structural Dense Structural 86
Posts and Timbers: Douglas Fir Southern Pine	Dense Select Structural Dense Structural 72

*Structural class is based on a nominal extreme fiber stress in bending of 1,900 psi (13 MPa) (minimum 1,850 psi (12.8 MPa)) for light framing and joists and plank in a repetitive member use and for beams and stringers in a single member use. Structural class for posts and timbers is based on a compression stress parallel to grain of 1,100 psi (7.6 MPa) when used as a column; when used as a beam in a single member use, the minimum extreme fiber stress in bending is 1,750 psi (12 MPa). Use is assumed in a location where the moisture content will not exceed 19% for an extended period of time. Treatment for durability ([Section 4161](#)) is also assumed, where ~~appropriate specified~~.

TABLE 4162.06B

<u>Common Class*</u>	<u>Grade</u>
Light Framing: Douglas Fir Southern Pine	No. 2 No. 2 Dense
Joists and Plank: Douglas Fir Southern Pine	No. 1 Dense Structural 65
Posts and Timbers: Douglas Fir Southern Pine	Select Structural Dense Structural 65
<p>*Common class is based on a nominal extreme fiber stress in bending of 1,500 psi (10.3 MPa) (minimum 1,450 psi (10 MPa)) for light framing and joists and plank in a repetitive member use. Common class for posts and timbers is based on a compression stress parallel to grain of 1,000 psi (7 MPa) when used as a column; when used as a beam in single member use, the minimum extreme fiber stress in bending is 1,450 psi (10 MPa). Use is assumed in a location where the moisture content will not exceed 19% for an extended period of time. Treatment for durability (Section 4161) is also assumed, where appropriate specified.</p>	

Untreated wood material that requires a grade shall be stamped with the identifying quality grade mark of an accredited grade monitoring and inspection agency approved by the American Lumber Standards Committee (ALSC) under the Untreated Wood Program.

When material is resized to shorter lengths, and the quality grade mark is no longer available, the lumber mill/processor shall certify the grade of the material.

NOTE: Material less than three (3) feet in length does not require a grade mark; however, the grade of the material shall be certified by a certification statement from the mill/processor (as described in the Documentation Section of IM 462). Round wood posts, round wood piles, and round wood poles do not require a grade, since the grading rules apply only to sawn material.

4162.07 COMMON BOARD AND SHEATHING.

Common lumber less than a nominal 2 inches (50 mm) in thickness shall conform to the requirements of the American Lumber Standards for the species and grade specified.

Reason for Revision: Update information for current revision of current lumber grading rules.

County or City Input Needed (X one)			Yes	No	
Comments:					
Industry Input Needed (X one)			Yes	No	
Industry Notified:	Yes	No	Industry Concurrence:	Yes	No
Comments:					

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger	Office: Materials	Item 11
Submittal Date: March, 2004	Proposed Effective Date: October 19, 2004	
Article No.: 4164 Title: Treated Wood Posts	Other:	

Specification Committee Action:

Deferred:	Not Approved:	Approved Date: 4-8-04	Effective Date: 10-19-04
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Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: Continuation of Item 9 and 10, in review and clarification of the lumber requirements.

Specification Section Recommended Text:

- 4164.01, General Requirement**
Add new first paragraph:
 When dried, either kiln dried or air dried, all posts shall be free from bends in more than one plane and free from short or reverse bends, and a straight line from the centers of the ends of a post shall not deviate from the longitudinal axis of the post at any point more than 0.5% of the length of the post.
- 4164.02, Round Wood Posts**
Replace the first sentence of the first paragraph:
 All round wood posts shall be cut from live, sound, solid trees.
- 4164.03, Sawed Wood Posts**
Replace the entire article:
 Sawed wood posts shall conform to the shape and nominal dimensions for rough stock and shall meet the applicable requirements of Section 4162 ~~and Dense~~. The minimum grade for treated sawed wood guardrail posts, 5 inches by 5 inches (125 mm by 125 mm) and larger shall be No. 1 4400F ~~for or better~~ Douglas Fir (coast region) or No. 1 ~~Dense SR-1550F for or better~~ Southern Pine in accordance with the minimum strength requirements of AASHTO M168.
- 4164.04, Wood Sign Posts**
Delete the last paragraph:
~~All posts shall be kiln dried or air dried prior to treatment to a moisture content of not more than 20%. When dried, all posts shall be free from bends in more than one plane and free from short or reverse bends, and a straight line from the centers of the ends of a post shall not deviate from the longitudinal axis of the post at any point more than 0.5% of the length of the post.~~
- 4164.06, Inspection**
Delete the word "sign" from the second sentence.

Comments: The Office of Materials approved the moving of the requested added sentence change to Article 4164.06 to Article 4164.01. It is a general contractor requirement that applies to all three types of posts.

Member's Requested Change (Redline/Strikeout):

- 4164.02 ROUND WOOD POSTS
 All round wood posts shall be cut from live, sound, solid trees. (Rest of this section is the same)
- 4164.03 SAWED WOOD POSTS
 Sawed wood posts shall conform to the shape and nominal dimensions for rough stock and shall meet the applicable requirements of section 4162. The minimum grade for treated sawed wood guardrail posts (5 inches

by 5 inches and larger) shall be ~~and Dense~~ No. 1 ~~1400 F~~ or better for Douglas Fir (coast region) and No. 1 ~~Dense~~ or better ~~SR 1550 F~~ for Southern Pine according to the minimum strength requirements of AASHTO M168.

4164.04 WOOD SIGN POSTS

Delete last Paragraph (it is added into the 4164.06):

~~All posts shall be kiln dried or air dried prior to treatment to a moisture content of not more than 20%. When dried, all posts shall be free from bends in more than one plane and free from short or reverse bends, and a straight line from the centers of the ends of a spot shall not deviate from the longitudinal axis of the post at any point more than 0.5% of the length of the post.~~

4164.05 No Changes

4164.06 INSPECTION

Posts shall be inspected before and after treatment. Inspection and acceptance shall be in accordance with Materials I.M. 462. When dried (either kiln dried or air dried), all posts shall be free from bends in more than one plane and free from short or reverse bends, and a straight line from the centers of the ends of a spot shall not deviate from the longitudinal axis of the post at any point more than 0.5% of the length of the post. Wood ~~sign~~ posts shall be inspected for quality and straightness before acceptance for treatment, and posts that do not meet the requirements shall not be treated. The treating process will be inspected at the treating plant. Posts will be inspected after treatment for straightness, and posts that do not meet the requirements will be rejected. Posts rejected after treatment may be subjected to steam treatment in the treating chamber while loaded in such manner as to remove or minimize the bends and bows and will be inspected for straightness again. Posts so steamed will be accepted if they comply with the requirements for straightness.

Reason for Revision: Update information for current revision of standard grading rules, minimum AASHTO and AWPA requirements.

County or City Input Needed (X one)			Yes	No	
Comments:					
Industry Input Needed (X one)			Yes	No	
Industry Notified:	Yes	No	Industry Concurrence:	Yes	No
Comments:					

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Donna Buchwald	Office: Specifications	Item 12
Submittal Date: March 25, 2004	Proposed Effective Date: October 19, 2004	
Article No.: 4186.03 Title: Reflective Sheeting	Other:	

Specification Committee Action:

Deferred:	Not Approved:	Approved Date: 4-8-04	Effective Date: 10-19-04
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Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: The Specification Committee is concerned that changes can be made to the Materials I.M.s that affect other Offices and they are not addressed at the Specification Committee meetings. In the past, there have been a some changes to the Materials I.M.s that have affected the Office of Construction and they were not away of the changes until they the Materials I.M.s were already in use. The Office of Materials will pay special attention of changes in the Materials I.M.s that might affect the other Offices and being those items to their attention earlier, and the Specification Committee if appropriate.

The Specification Committee discussed what information should be in the Specification Book and what should information should be in the Materials I.M.s. The Materials I.M.s identify test procedures, inspection procedures, and approved sources.

Specification Section Recommended Text:

4186.03, Reflective Sheeting

Replace the 4th, 5th, and 6th paragraph:

Type VI (Iowa) and Type VII (Iowa) sheeting shall meet the requirement of Materials I.M. 486.03, following materials requirements:

Fluorescent Orange:	The sheeting shall be a fluorescent orange sheeting with a minimum total luminance factor (y) of 29. The fluorescent luminance factor (Y_F) shall be a minimum of 15 as measured with a Labsphere BFC-450 Bispectral Fluorescent Colorimeter. The sheeting shall meet the chromaticity coordinates shown in the following Table.
White:	The sheeting shall be a white sheeting with a minimum total luminance factor (Y) of 37. The sheeting shall meet the chromaticity coordinates shown in the following Table.

Type VI (Iowa) and Type VII (Iowa) Chromaticity Coordinates

Color Point	Fluorescent Orange		White	
	x	y	x	y
1	0.583	0.416	0.303	0.297
2	0.523	0.397	0.368	0.353
3	0.560	0.360	0.340	0.380
4	0.634	0.369	0.274	0.316

Type VII (Iowa) sheeting shall have an initial Coefficient of Retroreflection according to the following table:

Type VI (Iowa) and Type VII (Iowa) Coefficient of Retroreflection

Observation Angle (Degree)	Entrance Angle (Degree)	Orange (Candela/lux/m ²)	White (Candela/lux/m ²)
0.2	-4.0	200	430
0.2	+30.0	60	220
0.5	-4.0	80	250
0.5	+30.0	34	130

After 1 Year of weathering on the Iowa Test Deck, per [Article 4186.03, B](#), the Type VI (Iowa) and Type VII (Iowa) sheeting shall maintain a minimum retroreflectivity of 80% of the requirements for new sheeting. After 1 year of weathering, the chromaticity coordinates and luminance values shall meet the requirements for new sheeting.

4186.03, A, Utilization of Reflective Sheeting.

Add a sentence:

Unless otherwise specified, all signs with white background shall use Type III or IV retroreflective sheeting.

4186.03, A, 1, Permanent Signs and Devices.

Replace the first sentence of the first paragraph:

Unless otherwise specified, all signs with white, yellow, green, or red, blue, or brown background shall use Type III or IV retroreflective sheeting.

Comments: A meeting was held to discuss reflective sheeting in Iowa. Those in attendance were Mark Bortle, Joe Putherickal, Kurtis Younkin, and myself. The group agreed to move part of the information under Article 4186.03 to Materials I.M. 486.03 because it is more Materials I.M. type information and will allow for ease in adding vendors.

The group also agreed that the white background requirements apply to both permanent and work zone signs and devices, and should be moved up in the specification so that it will apply to both types.

Member's Requested Change (Redline/Strikeout):

Reason for Revision:

County or City Input Needed (X one)

Yes

No

Comments:

Industry Input Needed (X one)

Yes

No

Industry Notified:

Yes

No

Industry Concurrence:

Yes

No

Comments:

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger	Office: Materials	Item 13
Submittal Date: March 2004	Proposed Effective Date: October 19, 2004	
Article No.: 4195.02 Table B Title: Neoprene Bearing Pads	Other:	

Specification Committee Action:

Deferred:	Not Approved:	Approved Date: 4-8-04	Effective Date: 10-8-04
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Specification Committee Approved Text:

Replace the second item:

D 412	Tensile Strength, minimum psi (MPa)	2500 2250 (17.2 15.5)	2500 2250 (17.2 15.5)	2500 2250 (17.2 15.5)
	Ultimate elongation, minimum %	400	350	300

Replace the note at the bottom of the Table:
 Laminates shall be rolled mild steel sheets conforming to ASTM A 570/A 570M A 1011/A 1011M, Grade 33; Grade 36, Type 1 and 2; or Grade 40, unless otherwise specified by the Engineer.

Comments: No comments.

Specification Section Recommended Text:

Replace the second item:

D 412	Tensile Strength, minimum psi (MPa)	2500 2250 (17.2 15.5)	2500 2250 (17.2 15.5)	2500 2250 (17.2 15.5)
	Ultimate elongation, minimum %	400	350	300

Replace the note at the bottom of the Table:
 Laminates shall be rolled mild steel sheets conforming to ASTM A 570/A 570M A 1011/A 1011M, Grade 33; Grade 36, Type 1 and 2; and/or Grade 40, unless otherwise specified by the Engineer.

Comments:

Member's Requested Change (Redline/Strikeout):

TABLE B

ASTM Standard	Physical Properties	50 Duro.	60 Duro.	70 Duro.
D 2240	Hardness	50 + or - 5	60 + or - 5	70 + or - 5
D 412	Tensile Strength, minimum psi (MPA)	2500 <u>2250</u> (17.215 <u>15.5</u>)	2500 <u>2250</u> (17.215 <u>15.5</u>)	2250 <u>2500</u> (17.215 <u>15.5</u>)
	Ultimate elongation, minimum %	400	350	300
D 573 70 hr. 212°F (100°C)	Heat Resistance			
	Change in durometer hardness, maximum points			
	Change in tensile strength, maximum %	+15 -15	+15 -15	+15 -15
	Change in ultimate elongation, maximum %	-40	-40	-40
D 395 Method B	Compressive Set			
	22 hours @ 212°F (100°C), maximum %	35	35	35
D 1149 20% strain	Ozone			
	100°F ± 2°F (38°C ± 1°C), 100 hours 100 pphm ozone in air by volume	No Cracks	No Cracks	No Cracks
D 429, B	Adhesion			
	Bond made during vulcanization minimum lbs. per inch (N/mm)	40 (7)	40 (7)	40 (7)
D 746 Procedure B	Low Temperature Test			
	Brittleness at -40°F (-40°C)	No Failure	No Failure	No Failure

Laminates shall be rolled mild steel sheets conforming to ASTM ~~A-570/A-570M~~A1011/A1011M, Grade 33, Grade 36 Type 1 & 2, and/or Grade 40 unless otherwise specified by the Engineer.

Reason for Revision: ASTM A570/A570M has been discontinued and has been replaced by ASTM A1011/A1011M. Conform to AASHTO SPEC M251-2001 Requirements.

County or City Input Needed (X one)		Yes	No		
Comments:					
Industry Input Needed (X one)		Yes	No		
Industry Notified:	Yes	No	Industry Concurrence:	Yes	No
Comments:					