

5600000, Coating Structural Steel
Response to Comments from Industry Review

Joe Mori
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Comments:

1. Section 560-2.6; For clarity, identify what this primer is proposed to be used for.

Response:

Thanks Joe for taking time to review this document. Subsection 560-2 only addresses materials and is not intended to address how or when they are used. A description of how and when rust preventative compounds are used for is found in 560-8.4. Your comment however did lead me to find that the referenced standard was incorrect and it has been corrected. From the State Specifications Office: The reference to Federal Standard TP 664 is no longer used and has been changed to Military Specification MIL-C-11796C.

2. Section 560-6.4; This section requires that contractors field inspectors be at minimum a NACE level 1 or SSPC Level 1 Bridge Coating Inspector and that they report directly to a NACE Level 3 or an SSPC Level 2 Coating Inspector. Considering only field painting of new structural steel the requirements of SSPC QP1 only require that the QC Supervisor has successfully completed formal training in coating inspection. Per the QP1 program training programs include one or more of the following: SSPC PCI, BCI, NBPI, KTA Level 1, NACE CIP Level 1 or CCC&L Level 1. The 560 specification, as written, will require that a contractor maintain a NACE Level 3 inspector or SSPC BCI Level 2 under contract or on payroll even when work is not being performed. This could become very expensive & difficult to maintain particularly for smaller contractors. It is not required per the QP1 program that field inspecting personnel have NACE Level 1 or SSPC BCI Level 1 or that inspections be reported to a NACE level3 or SSPC BCI Level 2. Can this section be relaxed to require only compliance with the QP1 program as written?

Response

I have spoken with other DOT's and coatings professionals and the general consensus is that this requirement is appropriate. The cost of this certification is approximately \$5000. This is not viewed as exorbitant when compared with the cost of bridge painting contracts. From the State Specifications Office: No changes made.

3. Section 560-7.1; Removing caulking and weld spatter as contaminants. On occasions new structural steel has caulking that was applied by the fabricator at the shop to meet specifications. In addition weld spatter that remained under the zinc primer is sometimes visibly present. In both of these cases the steel was previously inspected and approved for shipment by QC inspections at the shop level. In these cases will removal be required as stipulated in the section? Please clarify.

Response:

Weld spatter that has been coated with zinc primer in the fabrication shop and then subsequently shipped to the job site is not in compliance with the proposed specification. This is a defect that should be corrected at the fabrication shop. However, quality control is a contractor function and who and where it is corrected is also up to the contractor and subcontractors to resolve. The Department should not final accept any such defect. From the State Specifications Office: No changes made.

4. Section 560-7.2; Similar to number 3 above. Is this section applicable for new structural steel?

Response:

Yes. From the State Specifications Office: No changes made.

5. Section 560-7.3; On new zinc primed steel is solvent cleaning of all steel necessary? On new steel this has typically been performed only at field splices during preparation for priming of nuts, bolts, & washers.

Response:

The proposed specification states that all surfaces are to be clean to a level mandated by SP1. If a surface is not clean then SSPC SP-1 is required. From the State Specifications Office: No changes made.

6. Section 560-7.4; Is washing of all steel on new zinc primed steel an absolute requirement? If so what will be the cleanliness requirement standard for new zinc primed steel that will be required? May we suggest WJ-4. Additionally, for new zinc primed steel what will be the required pressure. May we suggest Low-Pressure Water Cleaning (LP WC).

Response:

LPWC is in my opinion sufficient, but will be left to contractor discretion. The criteria is that the substrate be clean. From the State Specifications Office: No changes made.

7. Section 560-7.5; Per this section salt tests are required after washing & between each coat. Please consider, for new zinc primed steel, that after the initial tests are performed prior to the first coat subsequent tests will be required between coats only if the time between coats exceeds 30 days or some other time at the states discretion. This will reduce the cost of testing. Keep in mind that testing requires not only the personnel and countless tests kits but the equipment to access the area and all the MOT & safety procedures that must be considered. Will the state also consider requiring only the first initial three tests on new steel with zinc primer if the tests are shown to be within the allowed threshold?

Response:

There are a lot of environmental conditions that do not lead to a uniform period of elapsed time. I wish there were. I agree with the logic presented for some cases, but some structures are very close to salt water and can be wetted by wind or watercraft. Also, structures can be in close proximity to power plants or industrial chemical facilities. 30 days would be too

long in these scenarios. The specification needs to address both the worst case and best case scenario. From the State Specifications Office: No changes made.

8. Section 560-7.6; Please identify if this section only applies to existing steel recoat.

Response:

This section does apply to new steel, but would be performed in the fab shop and usually with wheel abraders. However, it has been decided to separate existing steel and new steel into 2 different specs, 560 and 561. This should eliminate any further confusion.

9. Section 560-7.7; In new zinc primed steel this section would typically apply for the priming of field splice bolts, nuts, & washers and small abrasions to the zinc. Since these surfaces are typically primed with an aluminum epoxy mastic will the state allow preparation to meet the manufacturers printed requirements which is the use of SP 1, SP 2 & SP 3 for loose mill scale in lieu of specified SP 11? Furthermore will the state identify Aluminum Epoxy Mastic as an acceptable product for remedial field priming of bare steel or abraded zinc primer on new zinc primed steel?

Response:

560-10 has changed to read, "Clean and coat all welds, rivets, bolts, and all damaged or defective coating and rusted areas in accordance with 560-7 and 560-9. Upon approval by the Engineer, aluminum mastic may be used in accordance with the manufacturer's recommendations. Aluminum mastic must contain aluminum pigment and minimum 80% volume solids."

10. Section 560-9.7; Are field applied stripe coats required on new zinc primed steel? This will dramatically increase the cost of painting new steel.

Response:

If proper thickness cannot be achieved without a stripe coat, then yes, it will be required to achieve proper thickness. From the State Specifications Office: No changes made.

11. Section 560-9.9; Is testing for material cure necessary for new steel painting? Manufacturers recoat times shall be followed for application of finish over intermediate & zinc primer is required to be fully cured prior to transport to site.

Response:

No, it is not to be required post delivery of new steel to the job site. This is intended as a check prior to shipment and the associated handling. From the State Specifications Office: No changes made.

12. Section 560-9.10; A small variation in color can be expected when manufacturers product multiple batches on a single project. Can the state revisit this requirement? With regards to variations in gloss & texture, uniformity in gloss & texture of the finish are in direct relation to the uniformity of the base coat or zinc primer. It is commonly known and accepted that inorganic zinc primers do not exhibit a uniform gloss or texture when sprayed, particularly

on large continuous area's such as a steel webs. Spray patterns and dry spray are common conditions produced when spraying zinc primer. Therefore we ask that this requirement be revisited. A small amount of Orange Peel on the finished surface should also be tolerated since the products are in most cases being applied using airless equipment at a rate sufficient to comply with a stated thickness and under varying ambient conditions. Please also revisit this requirement.

Response:

It is understood that the IOZ primers are not going to provide a uniform gloss and color and this language is intended for the final accepted product. From the State Specifications Office: No changes made.

13. Section 560-13; Is this section applicable for field painting of zinc primed new steel? As a QP1 contractor environmental compliance plans are provided, monitored, & enforced. In painting of new steel (Intermediate & Final coats) the degree of generated waste is minimal. This section seems to apply more for coating removal hazards. In general I feel that many procedures are over specified and will only lead to higher costs without necessarily ensuring a better product. If asked, I would prefer FDOT separate the specification for painting of new steel from recoating of existing. This often leads to misinterpretation of the spec by field inspectors and contractors.

Response:

I Agree. This proposed specification will be modified to separate painting new steel versus previously painted steel. This should clear up this issue.

Melissa Hollis
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Comment:

Pay Item 560- 2 was blocked in 1999. Please remove it from the specification, along with the compensation information for payment per ton.

Response:

Thanks Melissa for reviewing this proposed revision. I have removed the pay item as suggested.

Cheryl Hudson
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Comments:

Text: In section 560-8.4, first sentence "..that are not be coated.." add a to? In section 560-9.1:

Field apply the final coat finish. What about steel strain poles and mast arms? Do you intend for the final coat to be field applied?

Response:

Thank you Cheryl for taking the time to review this proposed revision. I have corrected 8.4 as you suggested. However, painting strain poles and mast arms do not fall under the jurisdiction of this specification. These items are governed by sections 649 and 975.

Scott Lent
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Comment:

(1) Article 560-7.51.3 Soluble Salts Detection and Removal: Typically, the standard discussed in the BCI course for nitrates has been 7ug/cm2. This specification lists 10ug/cm2. Is it the intent to utilize the 10ug/cm2 value?

Response:

Thanks Scott for taking the time to review this revision. 7 ug/cm2 is referenced in NV 12 and is the industry standard for chlorides, which is discussed much more often. 10 ug/cm2 is being referenced here for nitrates. From the State Specifications Office: No changes made.

(2) Article 560-8.2 Surfaces to be in contact with Concrete: Recommend that the surface is to be prepared in accordance with the Contract or the coating manufacturers recommendation. Also recommend that the primer be recommended by the coating system manufacturer for compatibility.

Response:

This has been an area of confusion for some time. It was very difficult to reach agreement of all parties involved. The State Construction Office and The State Design Office as well as district maintenance, construction personnel, and coating manufacturers had input into the draft of this language. From the State Specifications Office: No changes made.

(3) Article 560-7.2 Mechanical Removal of Surface Defects: Recommend adding verbiage to address grinding sharp edges of corroded members. Sharp areas, even if coated properly, typically corrode quicker than the remaining member. Smoothing the edges of these corroded areas that are not removed during abrasive blasting is beneficial.

Response:

Existing structures will be separated and addressed in a new Section 561. Corners created by corrosion will be addressed in the new Section. No changes made to Section 560.

Debbie Simmons
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Comments:

Section 560-5.3 - This could be an issue having to have an engineer 'observe' the calibration (s) of the inspection equipment. Possession or ownership of the proper inspection equipment and calibration standards should be part of their submitted QC Program.

Response:

Thank you Debbie for taking the time to review this proposed specification. I believe the intent has been misunderstood. The revision requires that calibrations be observed by the QC inspector which is a NACE/BCI certified individual. From the State Specifications Office: No changes made.

Section 560-6.3 and 6.4 - While I'm a supporter of NACE, this will get very costly for the applicators having to have someone Level 1 and then requiring a Level 3 Supervisor. Since all the fabricators have their AISC Sophisticated Paint endorsement and considering that they are required to take a yearly training session for All their shop personnel (such as the training sessions we've been doing), would this not suffice. For the field painters, a Level 1 or 3 inspector as part of their staff should be the only requirement.

Response:

The cost of certification to these requirements is approximately \$5000. This is not viewed as an exorbitant cost when compared with the cost of painting bridges. This will also become more clear when the section is separated into existing steel and new steel. From the State Specifications Office: No changes made.

Section 560-7.5 - For new work where all the coating systems are applied in the shop and within a reasonable period of time, a chloride, sulfate and nitrate test *should* only be required on the bare steel. Even in field applications, it should only be required on the bare steel or when the primer is applied in the shop and a period of time has elapsed before the following coats are applied. I don't understand what they would prove by doing the tests over each coat.

Response:

Some of our fabrication shops are in close proximity to paper mills and industrial fertilizer production facilities. Instances where the prime coat is applied and the steel sits for months prior to subsequent coats would require salt testing. The frequencies have been reduced to a minimum in an attempt to reduce the encumbrance on the fabricator. I believe some testing should be required however to ensure a salt free substrate. From the State Specifications Office: No changes made.

Section 560-7.7 - The wording is a bit confusing here.

Response:

Prepare steel by power and hand tool cleaning as defined in SSPC-SP 11, SSPC-SP 3, and SSPC-SP 2 for touch up and repair when approved by the Engineer. Use SSPC-VIS 3 as an aid in establishing cleanliness.

Section 560-9.11 - How would a fabricator be able to define these areas when bidding a project?

Response:

I assume this is article -9.1 and not -9.11. The areas not to be coated (560-8) will be defined in the contract documents. Any areas that may become inaccessible will either be defined in the contract documents or determined by the fabricator in coordination with the erection plan. No changes made.

Section 560-9.5 - Phrasing should be added to use only the recommend thinners as listed on the manufactures PDS.

Response:

The requirement has been changed to the following: "Use thinners and solvents according to the manufacturer's published product data sheet requirements and confirm that the amount of thinner added does not result in the coating exceeding any Volatile Organic Compound (VOC) regulations."

Section 560-11.1 - As to the blast profile, again some phrasing should be used to have a 'minimum of 1.5 mils' or as recommended on the manufactures PDS.

Response:

This language has been changed to: "Prepare the substrate in accordance with 560-7. Provide a depth of anchor profile in accordance with the manufacturer's product data sheet, but in no case less than 2.5 mils. Re-blast piles not coated during the same shift or if the surface to be coated no longer meets the requirements SSPC-SP 10."

- Carboline recommends that the implementation date for the proposed changes to FDOT section 975 be moved to 1 year from the date that the proposed changes are officially incorporated by FDOT to allow sufficient time for the coating suppliers to address panel preparation and lab testing of the proposed coatings by an independent lab (e.g. the salt fog testing requires 5000 hrs or ~ 7 months).

Response:

There are paint systems tested to these requirements with results tabulated on the NTPEP website. For galvanized systems you are correct and there will be a delay in developing a QPL. The benefits of providing a QPL for standard structural steel far outweigh those of having to wait for miscellaneous galvanized steel structures such as handrails.

- Carboline recommends that the implementation date for the proposed changes to FDOT section 560 be moved to 6 months from the date that the proposed changes are officially incorporated by FDOT to allow sufficient time for product applicators/fabricators to incorporate these proposed changes into their programs.

Response:

The intent is to utilize NTPEP testing to facilitate qualification of coating systems.

- Carboline recommends that the section 975 spec indicates the manner in which outdoor testing will be addressed as it relates to coating approvals. Historically, a coating company would receive a conditional approval of their coating systems if the systems meet the requirements of the lab testing matrix. If the conditional approval concept applies, Carboline is requesting that FDOT define the terms of the conditional approval within the scope of the section 975 specification document.

Response:

This item is currently being discussed in Tallahassee and the implementation schedule will reflect the decision made regarding conditional approval criteria and responsibilities. From the State Specifications Office: Draft terms of conditional QPL approval will be forwarded. No changes made to the specification.

Jeff Moore
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Comment:

Requiring the pollution control submittal (560-12.2.4) and containment system submittal (560-12.3) at the preconstruction conference is not realistic for all projects. If the project is phased in which the operation will not occur for a year, flexibility needs to be included to ensure a proper plan is submitted.

Response:

Thanks Jeff for taking time to review this document. You are correct and flexibility will be added by including the statement, "or as directed by the Engineer."

Karen Byram
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Comment:

The Product Evaluation Office has identified that the QPL reference was deleted from this specification. The Department is requiring that all Division II specifications identify the QPL, therefore it needs to be replaced. 560-2 Materials. 560-2.1 Coating System: Use only coating products and systems meeting the requirements of Section 975 and listed on the Departments Qualified Products List (QPL). In addition, the reference to the Type M epoxy needs to include a

QPL reference. If there are any other QPL category products identified, they will need the reference added too.

Response:

Karen thanks for reviewing this document. Your comment has been incorporated into the revision.

Rudy Powell

Comments:

560-2.1. Add “and listed on the Department’s QPL for coating of permanent bulkhead sheet piles and H piles” to the last sentence for clarity. The last sentence should read “Use Type M coal tar epoxy coatings meeting the requirement of Section 926 and listed on the Department’s QPL for coating of permanent bulkhead sheet piles and H piles.”

Response:

Rudy thanks for your help with this specification. This comment has been incorporated.

560-2.5. Is the certification absolutely required or is it unnecessary paperwork? If it is required, then who is to certify and what exactly is the certification? Is it a form, a letter, etc.?

Response:

Yes this I believe it to be important enough that it should be required. The certification template will be listed on the SMO’s website with all the others.

560-3.2. Is this subarticle really needed?

Response:

Looking at it, I believe 560-3 is a ways and means statement and have deleted the subsection in its entirety. From the State Specifications Office: After further review, this article goes with the articles -3.1 and -3.3 and should not be removed. No changes made.

560-5.2. Is 60 calendar days needed or can this be shortened?

Response:

I spoke with D7 bridge maintenance and have changed this requirement to 14 days. This was originally done to provide the Engineer time to review and respond, but what I learned was that there are other similar docs that the CEI must review and respond to that are similar with a 14 day timeframe.

560-5.3. What inspection equipment? Consider stating something like “such as but not limited to”

Response:

This comment has been incorporated into the revision. From the State Specifications Office: After further review, this change is not needed. No changes made.

560-6.1 and -6.2. Is 60 calendar days needed or can this be shortened?

Response:

I spoke with D7 bridge maintenance and have changed this requirement to 14 days. This was originally done to provide the Engineer time to review and respond, but what I learned was that there are other similar docs that the CEI must review and respond to that are similar with a 14 day timeframe.

560-6.3 and -6.4. The requirements for shop and field are exactly the same. Is this correct?

Response:

Yes, this is correct and therefore I have combined both into “Shop and Field Personnel Qualifications” into one subsection.

560-6.5. Would work be stopped if a certification expired but there was another individual with a certification who could perform that work? This subarticle needs to be clarified. Also, I suggest deleting “and liquidated damages will apply” because this is covered elsewhere in the specifications and is not needed here.

Response:

I have changed the language to: “If a certification expires and the requirements of this section are no longer fulfilled, the contractor will not be allowed to perform any coatings until compliance with the certification requirements of this specification are once again established.” Yes the following language was a hold over and if it is in other sections, can be deleted. From the State Specifications Office: The language has been clarified by changing the reference from “a certification” to “the certifications.”

560-9.1. In the 3rd paragraph what is “as needed?” I suggest either being more specific or deleting.

Response:

I have made it more specific by adding: “to the requirements of 560-7.2” to define “as needed.” From the State Specifications Office: Reference to 560-7 has been made.

560-9.8. In the 2nd paragraph I suggest changing “written procedures” to “recommendations.”

Response:

I agree and have made this correction.

5/28/09 Notes:

1. The lead-in sentence was changed to be consistent with the 2010 Book.
2. “New” was added to the name of the section since coating existing steel will be addressed in a new Section 561 to be implemented at a later date. In the interim, painting existing steel will be handled in the contract documents either as plans, TSP, or both.
3. 560-1. “New” was added to the first sentence and the second sentence was deleted. See #2 above.

4. 560-7.5. The phrase “For new steel,” was deleted and the sentence “For existing steel, ...” was deleted. See #2 above.
5. 560-9. The phrase “For new steel,” was deleted. See #2 above.
6. 560-12. This article was deleted. See #2 above.
7. 560-13. This article was deleted. See #2 above.
8. 560-14 Method of Measurement. This article was deleted because the cost of painting new steel structures is included in the cost of the steel. The references to pay items are only for painting existing steel and this will be handled in Section 561.
9. 560-15 Basis of Payment. The subarticle was changed to 560-12. The text was deleted and the following added, “No separate payment will be made for coating new structural steel. Include the cost in the cost of the structural steel.”
10. Miscellaneous typo changes.
