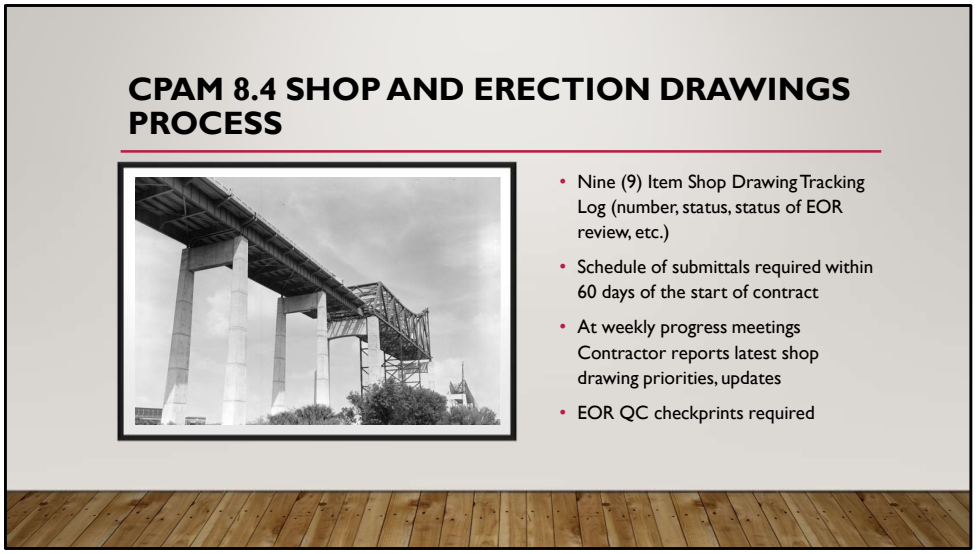
Good afternoon guys.
I'll be getting more into the "meat" of the Specs, the Division II Sections for Structures that go over things like what has to be in the concrete that your pour, how to inspect the concrete, requirements for proper post-tensioning practices.

Seven Mile bridge

- know your duties per CPAM (Construction Project Administration Manual),
- know the requirements in the Specs and Contract Docs.
- **CPAM provides instructions to Department representatives for administering items mandated in Florida Statutes, rules and Specs and ensures that all construction contracts are successfully administered on a fair and equal basis.**
- Throughout the presentation I'll go over the structures related chapters in CPAM and some key sections of our Construction Specifications (Standard Specifications for Road and Bridge Construction).
- **familiarize yourself with the Specs and CPAM**
- **reference the correct Spec Book publication for a given project.**

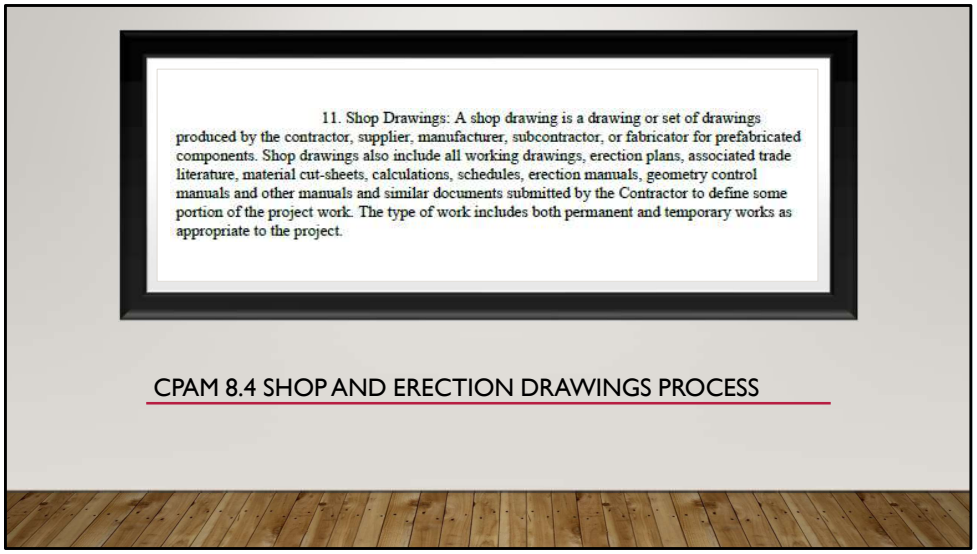
Knights key

- **Shown here are the Structures related Sections in CPAM that the State Construction Office is responsible for updating/monitoring**
- **For now, geotechnical related issues with category 2 structures (will define later on) are handled by the District Geotech experts, who will consult with CO Geotech as needed.**
- **SCO is** also responsible for a couple sections in Chapter 8 which deals with Administrative Requirements. **I'll briefly touch on each one of these as we go through the presentation picking out some key pieces.**

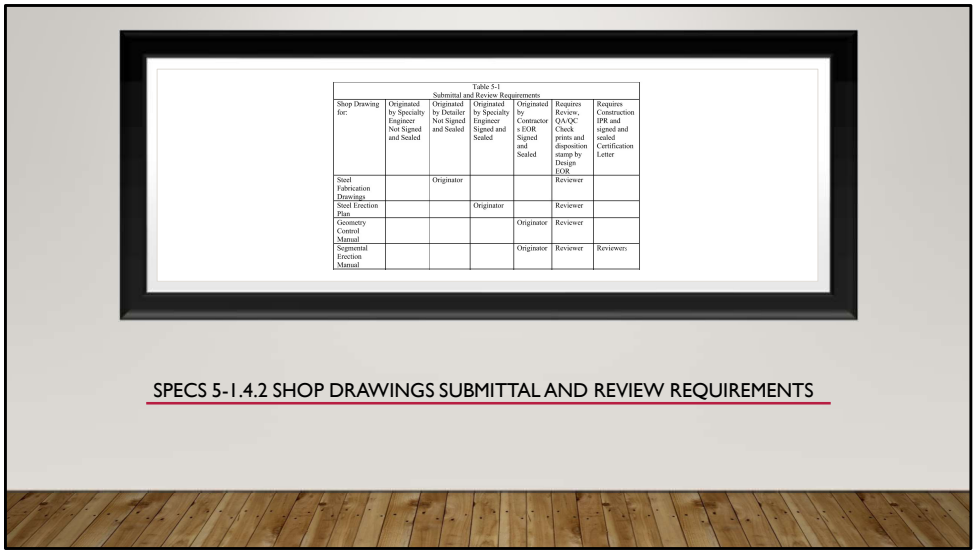


Matthews Bridge

- **At the bottom of this section is a 9 item checklist to follow when keeping track of Shop Drawings.**
- **Some of these include submittal number, the date the EOR sent the submittal back to the Contractor and the total duration of the review.**
- Another important point to **take note of is the language in 5-1.4 of our Specs** which requires a schedule of shop drawing submittals be **turned in within 60 days after the contract starts.**
- Also keep in mind that shop drawing status should also be a standing agenda item discussed at the weekly progress meeting.
- **EOR QC Check prints!! See Spec 5-1.4.1.9**



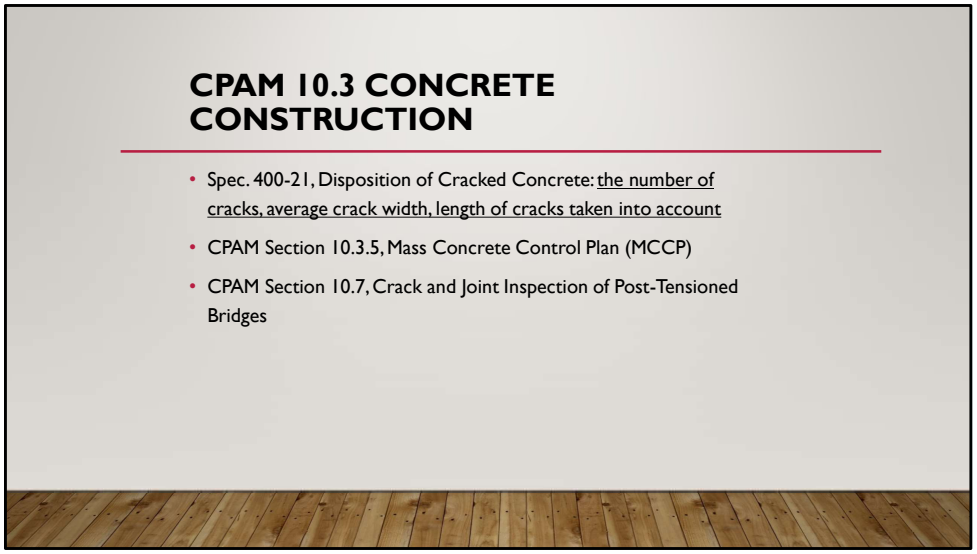
- Section 5-1.4 also defines what a shop drawing is and the different types of shop drawings you'll encounter.
- **essentially they are drawings for the production of prefabricated components, as well as erection plans, geometry control manuals, cut-sheets, etc. the Contractor uses to construct some portion of the work.**



- Construction Affecting Public Safety (or CAPS) include const. operations adjacent to (i.e normal construction operations could impact public), over or under occupied public transit; demolition of bridge w/continuous spans w/traffic under one span
- TWAPS Conventional DBB – requires EOR review and S&S by specialty engineer
- TWAPS (Non-conventional DB) – Independent Peer Review
- CAPS/TWAPS require special inspection certification by Specialty Engineer prior to concreting or erection
- Shop drawings must be stamped for approval prior to beginning construction (otherwise it is construction at the constractor's risk)
- **SCO does not typically provide QC level review of shop drawings.**
- **Shop Drawings are reviewed by District GECs and EORs.**
- **If there is something out of the ordinary, or a dispute, special case SCSE review shop drawings upon request.**

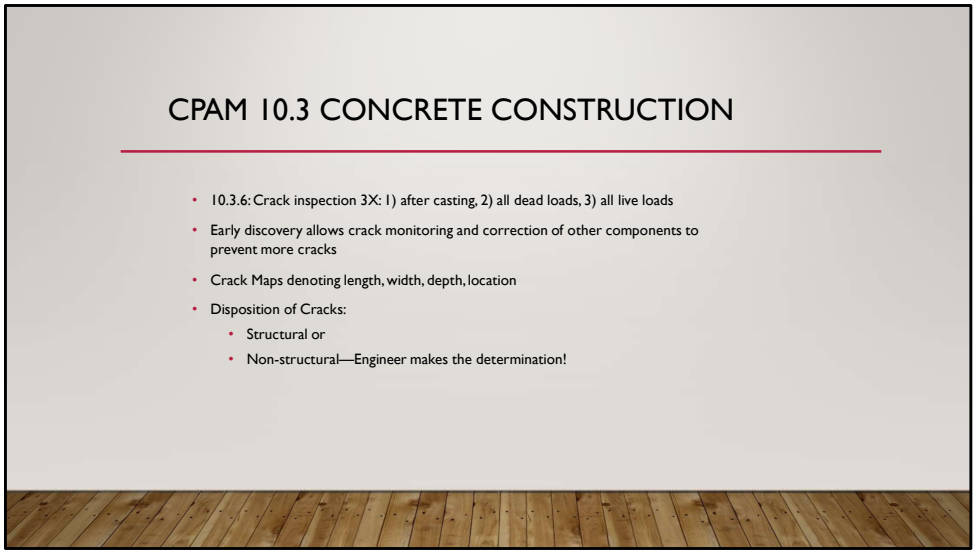
Escambia river bridge.

- **Section 8.11 Contractor Initiated Submittals**. three categories RFIs, RFCs and RFMs. Each are defined well in this CPAM Section
- Typical to see item labelled an RFI that is really an RFM; pay close attention to the deifinitions
- The process for each is laid out in this CPAM section.
- **RFIs often aren't the fault of the Contractor, but an issue they need clarification on such as an omission, or conflicting language in the contract documents,**
- **RFCs are the fault of the Contractor generated when noncomplying work is discovered either through their QC, or our QA processes. Need to require steps to prevent recurrence!!**
- **RFMs modify the contract documents most often due to unforeseen constructability issues or contractor construction preference.**
- Again Tracking Logs are gone over **at the bottom of this Section and 17 item checklist is laid out for proper tracking of these issues.**



- 10.3 Concrete Construction. **Here we focus on ensuring the quality of cast-in-place concrete construction.**
- **Disposition of Cracked Concrete and Mass Concrete Control Plan.**
- **Spec article 400-21 detail on classifying cracks, which ones are considered structural and repair considerations.**
- Table 400-3 &4 in the Spec that follow the descriptions which help you reach disposition of the cracks as you enter factors such as environmental category, crack width, etc.
- Related in Section 10.7 on Post-Tensioned Bridges you'll also find guidance on tracking cracks as post-casting activities with reference back to 10.3 for inspection practices and record keeping.
- 10.3.5 summarizes what mass concrete is and what needs to be included in the MCCP so a mass concrete element is properly monitored during construction,
    - key points being max allowable temperature, and temperature differentials between the core and exterior.
    - Options for lowering max temp, continuous real-time monitoring (specified intervals).

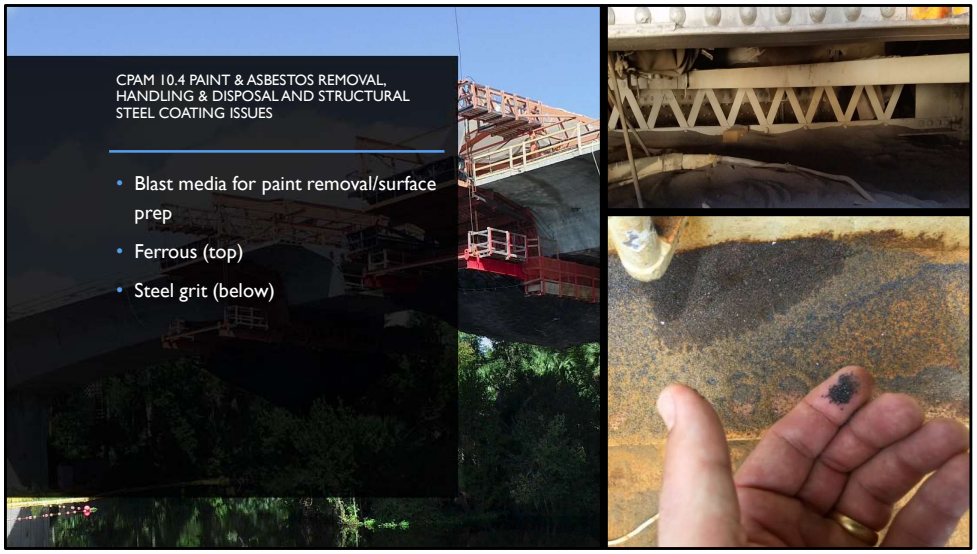
Here we see some examples of what you can encounter in the field as far as cracking in different elements.



- Subsection 10.3.6, that concrete components must have all visible surfaces inspected for cracks on three cycles: right after casting, between 7 – 31 days after the component has been burdened with all dead loads, and again a minimum of 7 days after the bridge is open to unrestricted use.
- That 2nd point on the slide is key. The sooner we find and log cracks the better, so we can make adjustments before the next pour to hopefully prevent future cracking from happening. STEPS TO PREVENT RECURRENCE!
- Once a crack has been identified and measured refer to back to Spec Article 400-21 in order to label a crack as structural, or non-structural and remember it is the Engineer who makes this determination.

- In Section 10.4 we go over Handling and Disposal of Structural Steel Coatings with the purpose of heighten the awareness of CEI personnel to the critical responsibilities for managing steel structural coatings projects.
- We've all heard that asbestos and lead are hazardous to us, but they can also be hazardous waste and must be disposed of in accordance with local, state and federal regulations.
- We also go into Coatings Inspection:
    - surface prep being paramount and particular attention must be paid to surfaces that are visually difficult to inspect and access,
    - caulking of gaps and seams by Spec 560-9.7 and 561-8.3,
    - testing for chlorides and sulfates and nitrates on surfaces is the responsibility of the Contractor.

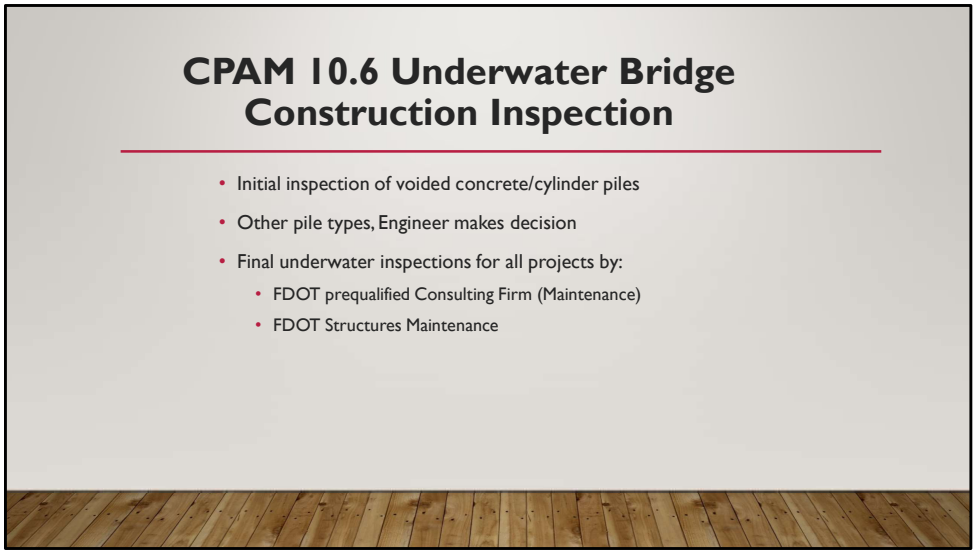
    - Also be prepared to bring up any concerns you see at the pre-operations meetings.



- For cleaning and surface prep refer to Spec Section 560 (new steel) & 561 (existing steel).
- There you'll find reference to surface cleaning methods, acceptable surface prep per the Society of Professional Coatings (SSPC) as far as what tools and blast media are allowed.
- Shown on the picture above we see containment of the blast media.
- As the Spec reads - Isolate the work areas with **containment devices**, canvasses, tarpaulins or screens during all surface preparation and coating application operations.
- Dispose of all debris and waste products generated in accordance with all Federal, State and Local regulations.

- Here we see a freshly painted bascule girder, tread plate; rehab work with good stripe coating.
- Stripe coats are an aluminum epoxy mastic which get applied between the primer and intermediate coats and then again between the intermediate coat and the finish coat to achieve complete coverage on welds, corners, bolts, sharp edges, and crevices.

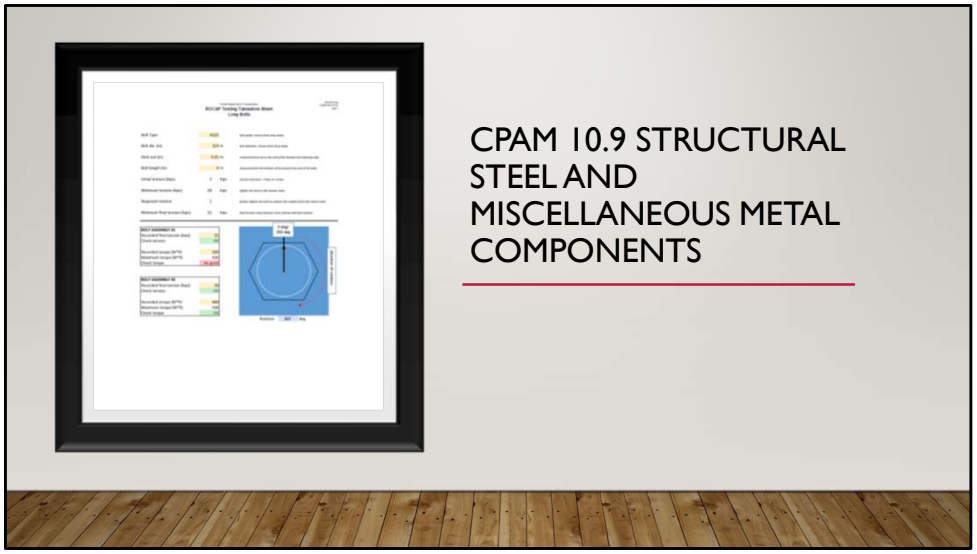
- Containment is gone over in detail in Subarticle 561-10.3 of our Spec and is an important health and environmental concern.
- The Contractor must submit a written containment systems design plan at the pre-construction conference, or as directed by the Engineer.
- Collection of debris and enclosure components are important aspects of the plan.
- Here in Florida we take our pristine waterways seriously and large fines and delays can be incurred if a job site is found to not be in compliance.



- In Section 10.6 we go over Underwater Bridge Construction Inspection.
- This may not be a factor for your bridge project, but if required, it will be in the CEI Scope of Services contract.
- The purpose of initial inspection of voided members is to revise pile driving or drilled shaft installation procedures, or designs if defects develop during installation. This should occur after all foundation members of the first pier have been installed.
- Cracking of hollow HMC prestressed piles has been observed recently on some projects
- Final underwater inspection must be performed prior to final acceptance, but not before the bridge has been carrying unrestricted live load. Final inspection must be in compliance with the FDOT Maintenance Office's procedures for routine underwater maintenance inspections and the District Structures Maintenance Engineer must be consulted prior to the start of the inspection.

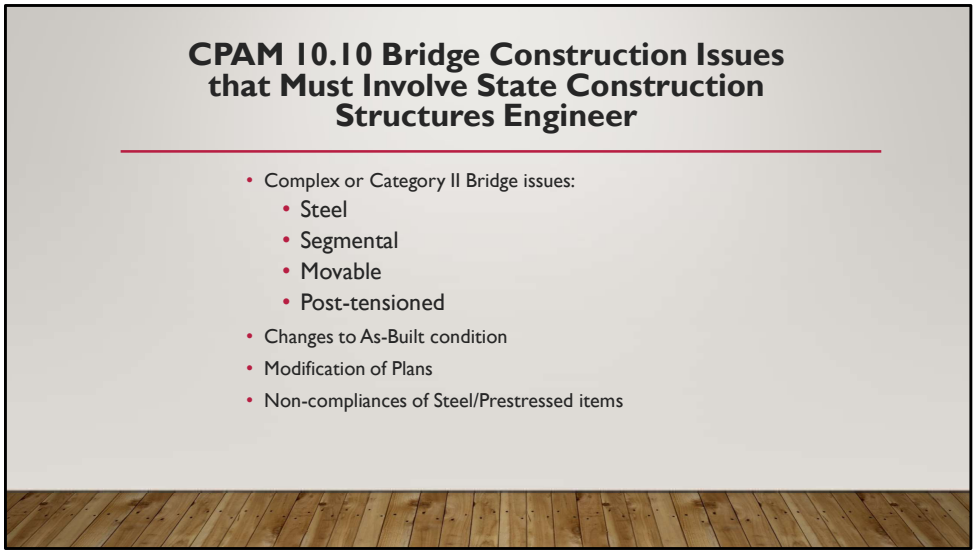
- CPAM Section 10.9 goes over Structural Steel and Miscellaneous Metal Components.
- Important records that must be kept are: Job Inspection Snug Tight Torque, ROCAP or Rotational Capacity Test for Bolts, and the steel girder shear connector bend test.
- Per subarticle 105-1.2.3 in our Spec the Contractor must submit to the Engineer a fabrication schedule for all items requiring commercial inspection. This schedule needs to be forwarded to the State Materials Office for review (30 days before beginning fabrication) to allow the SMO time for inspection prior to delivery to the jobsite.
- Also, for nonconforming components we have a form (Form # 675-010-10) to be prepared by the contractor, or fabricator and countersigned by the Quality Assurance Inspector. Review for disposition is to be carried out by the EOR, State Construction Structures Engineer and the State Materials Office.

- Workers performing a ROCAP test on the back of their truck using a Skidmore-Wilhelm Calibrator and a very large calibrated torque wrench.
- The RC Test verifies that fastener assemblies can attain at least a 15% or greater increase in tension than the minimum required fastener tension.
- For example, the 15% minimum requirement of an ASTM F3125 A325 bolt is 45 kips for a 7/8-inch diameter bolt (or 1.15 times 39 kips from Table 460-6).
- The RC test does not establish how much additional tension beyond the 15% minimum that the bolt can take before it fails.
- Forms can be downloaded for documenting the results from ROCAP testing for both long and short bolts from the FDOT Procedural Document Library.

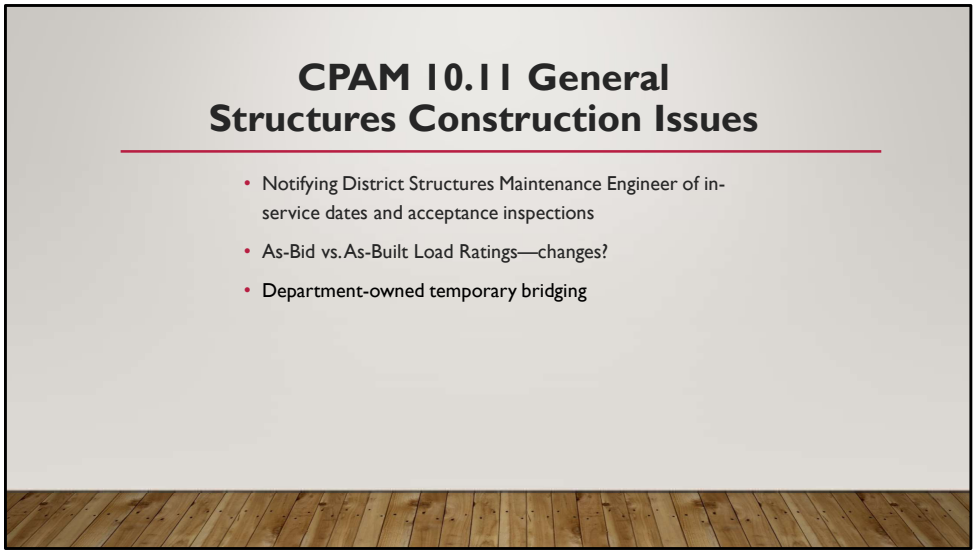


- The rotational capacity test required by our Spec is performed according to Florida Test Methods 5-581 and 5-582, for long and short bolts respectively.
- The testing tabulation sheet you see here can be downloaded as an excel spreadsheet from FDOT Procedural Document Library.
- This is a good tool we provide for the CEI to use so that documentation is easily saved digitally.
- If the bolt fails during testing the test is failed and another assembly has to be tested.
- For test to finally be considered passing after testing the bolt and nut must be visually inspected and show no signs of thread stripping, and the nut must still be able to be run up and down the bolt by hand.

- At the end of Section 10.9 you'll find the requirements for the shear connector bend test.
- I have a short embedded video here
- These tests must be done in the presence of the CEI and the location of the test and its result recorded. Two studs must be bent to a 45 degree angle and if either fails at the weld the welding procedure must be corrected and two more studs tested.



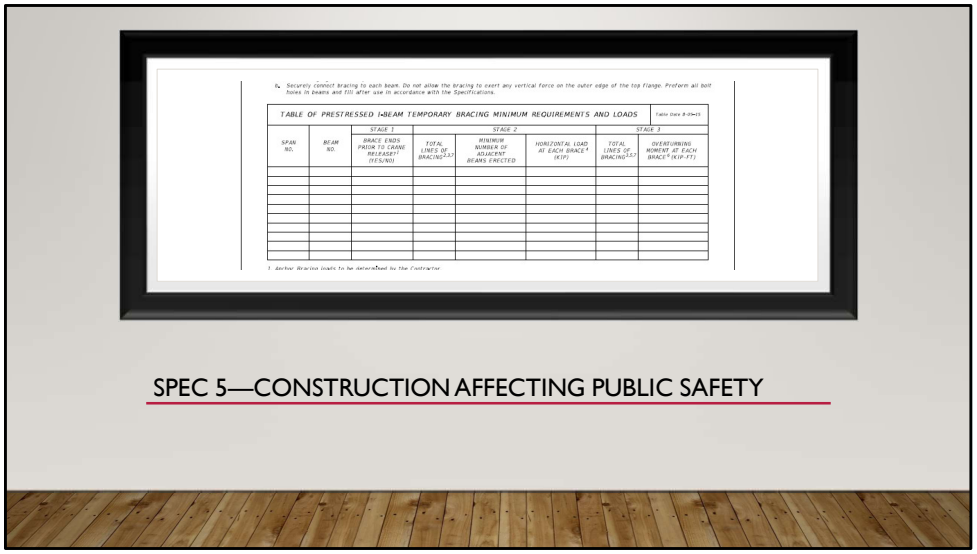
- In Section 10.10 we go over Bridge Construction Issues that must involve my office.
- These issues are ones occurring on Category 2 structures and usually start off with the submission of one of those RFI, RFC, or RFMs we talked about earlier.
- Examples of these more complex bridges would be bascule, post-tensioned, segmental, and some steel bridges.
- The State Construction Structures Engineer will make recommendations back to the CEI for resolution. The CEI shall also obtain input from the EOR on complex issues either prior to (which is preferrable), or concurrently with the State Construction Structures Engineer. Furthermore, the CEI, who is intimately involved in the project and should be knowledgeable of all issues on the project, should provide a cursory review to assist the SCSE in their review. **Put the E back in CEI!!!**
- Other examples that require our involvement are: Plans Modifications, Non-complying members (NCRs), and Changes to As-Built condition.



- Lastly for CPAM, Section 10.11 addresses General Structures Construction Issues.
- Within 60 days of the start of work the Project Administrator will provide the DSME with the tentative date that each bridge will be put into service.
- If these dates change by more than 3 months as the project progresses, the PA must notify the DSME of the revised dates as soon as possible, so the pre-acceptance inspection can be planned accordingly.
- The CEI must notify the EOR in advance of the in-service date so they can assess if the as-bid load rating has changed. CEI will provide any as-requested info to EOR such as dimension's, camber, f'c, etc.
- Regarding Department-owned temporary bridging, if a load rating is required contact the Office of Maintenance, Structures Operations Section. These bridges are not designed to carry overloaded construction vehicles. The Contractor needs to notify the Department at least 10 days prior to returning any bridge components and that all components are listed on the Detour Bridge Issue and Credit Ticket and signed by the Contractor.

We're going to switch gears a little bit now and look directly at some parts of our Construction Specifications and the Specification Sections:
5 – Control of the Work
346 – Portland Cement Concrete
400 – Concrete Structures
450 – Precast Prestressed Concrete Construction
and
460 – Structural Steel and Miscellaneous Metals

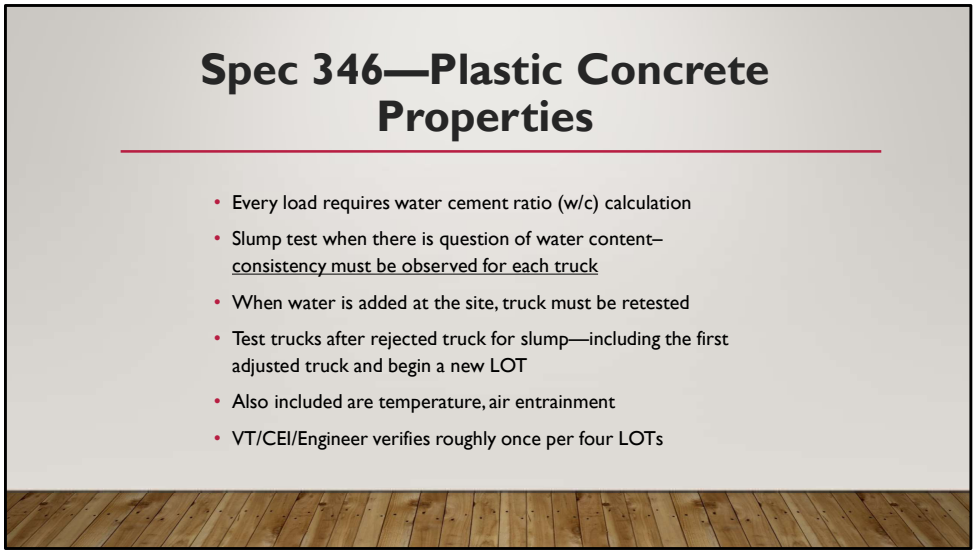
- Erection Plans are not required on simple-span concrete girders 170’ or less unless noted otherwise in the contract documents.
- Be sure to consult the AASHTO Guide for Temporary works. For all erection plans and erection manuals, refer to Standard Plans Index 102-600 for construction activities permitted over traffic. **Erection must not take place over active traffic.**
- For Construction Affecting Public Safety a signed and sealed erection plan, sealed by the Specialty Engineer is required. Daily inspections are required for structures with temporary supports until the temporary supports are no longer needed.
- In the next slide I’ll show an example table required for temporary bracing details.



- This table can be found in Structures Detailing Manual (SDM) and is critical for laying out the number of braces needed during the different stages of erection.
- This table is provided in the contract drawings and is developed by the EOR during design

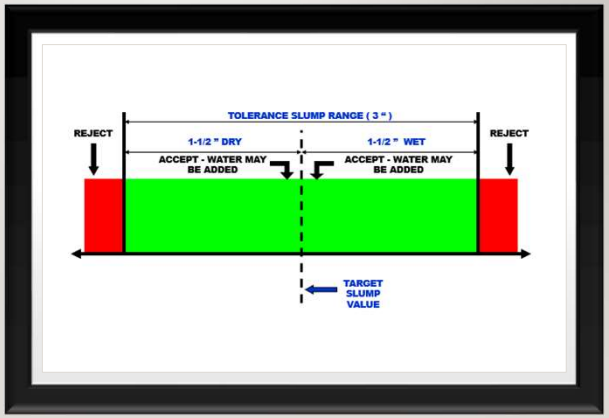
SPEC 5—
CONSTRUCTION
AFFECTING
PUBLIC SAFETY

Here we have a good field shot of the beam end and intermediate temporary bracing scheme for three FIB girders.

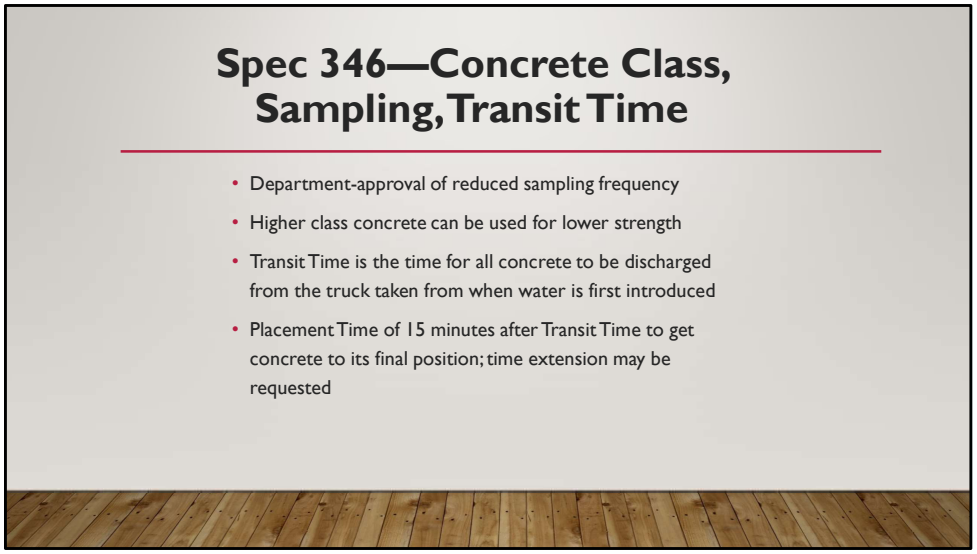


Moving on to Spec 346,
(read slide)
30 revolutions after adding water.
VT = Verification Testing

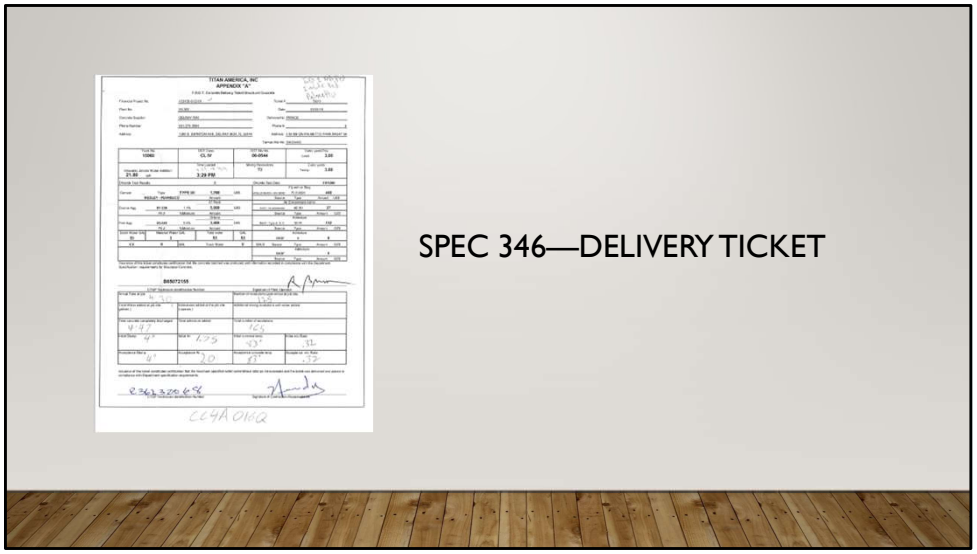
SPEC 346— PLASTIC PROPERTIES



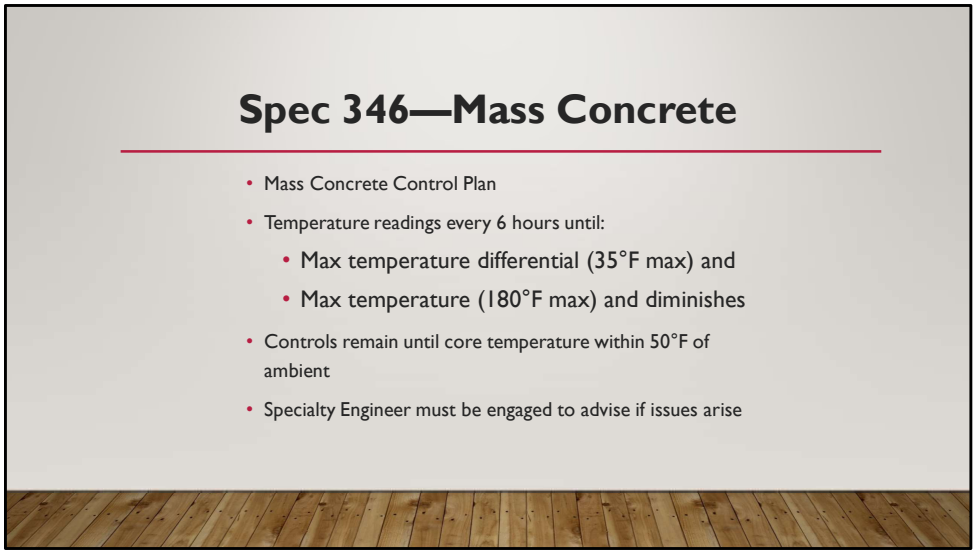
Target slump varies with Class of concrete, but the tolerance is 1.5”. If the slump is within this tolerance and a water adjustment is desired that can be done by following Spec 346-7.



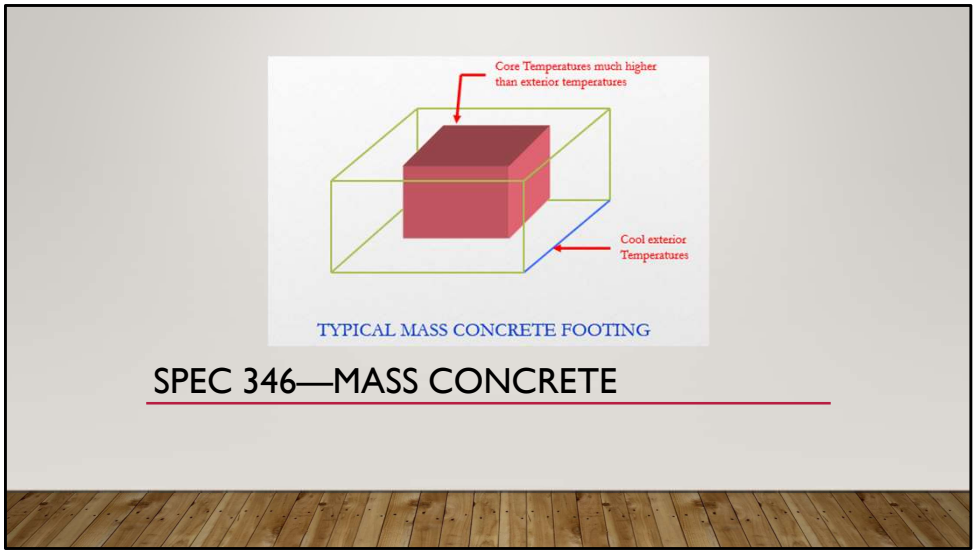
- Spec 346-7 also goes over several other important concepts such as Transit Time, and Concrete Sample Location.
- Department approval is required to incorporate a reduced sampling frequency.
- Higher Class concrete can be used in place of a lower class concrete.
- Transit Time is the time for all concrete to be discharged from the truck taken from when water is first introduced
- Placement Time of 15 minutes after Transit Time to get concrete to its final position; time extension may be requested



- Spec 346-6 speaks to Delivery Certification for concrete
- here we see a standard paper ticket that includes the total water used, volume delivered, load time, etc.
- The Spec lists 6 items that are required to be listed on the ticket and CPAM 9.2.16 mentions 25 items that need to be present on a concrete delivery ticket, also the Contractor needs to sign the ticket certifying that the design mix maximum ratio was not exceeded.
- Something that may be helpful to you guys is a report you can run in MAC (Materials Acceptance and Certification System) to check water cement ratio. .
- (Show them the website) Materials Acceptance and Certification System



- Spec 346-4.2 addresses Mass Concrete and what all must be included in the Mass Concrete Plan.
- Here we note the major points on this slide that must be followed to ensure proper curing and durability of our mass concrete elements.
- CEIs must submit all monitoring records as soon as available to the District Materials Office for review.



Just showing a graphical depiction of a mass concrete element here and the temperature differential. Note the coolest part of the element is at the edge where the concrete is in contact with the ground. So again we need to be watching the temperature differential as our primary concern.

Why?? Because it will lead to cracking of the element and reduced service life

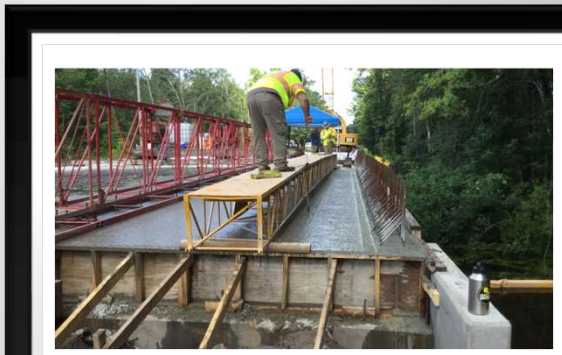
- Here we can see some field examples of mass concrete and the cooling tubes that were installed to help regulate the temperature.
- Something to think about is for very large concrete placements that have a lot of congestion the Contractor may ask to change up the intended concrete mix design to flowing concrete.
- Potentially need to required a mass concrete mockup to be performed so FDOT/CEI knows the contractor could produce flowing concrete and pump it into place between all the congestion

Spec 400 addresses Concrete Structures:

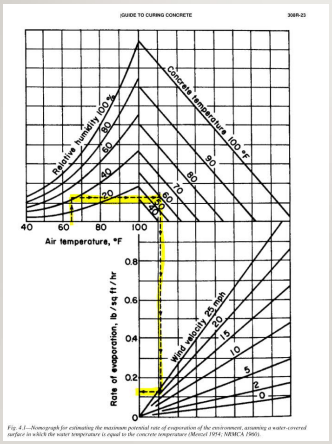
- Some specific things to remember starting with cofferdams is that they shall not be dewatered until the seal has set sufficiently and concrete other than seal concrete shall not be exposed to the action of water before final setting.
- Lift thickness shall be 20 inches or less and mass concrete monitoring devices must be protected during concrete placement.

- For deck placement make sure placement sequence follows the plans.
- 400-7 goes over the requirements of the screed demonstration to ensure the methods can finish the concrete to the specified grades.
- Curing compound applied within 2 hours of initial placement per the specified spread rate.
- And place and maintain curing blankets over the barrier.
- solid stream coming out of the concrete pump mentioned in 400-7. You don't want to see burping/air pockets coming out of your hose during placement

SPEC 400—DECK PLACEMENT



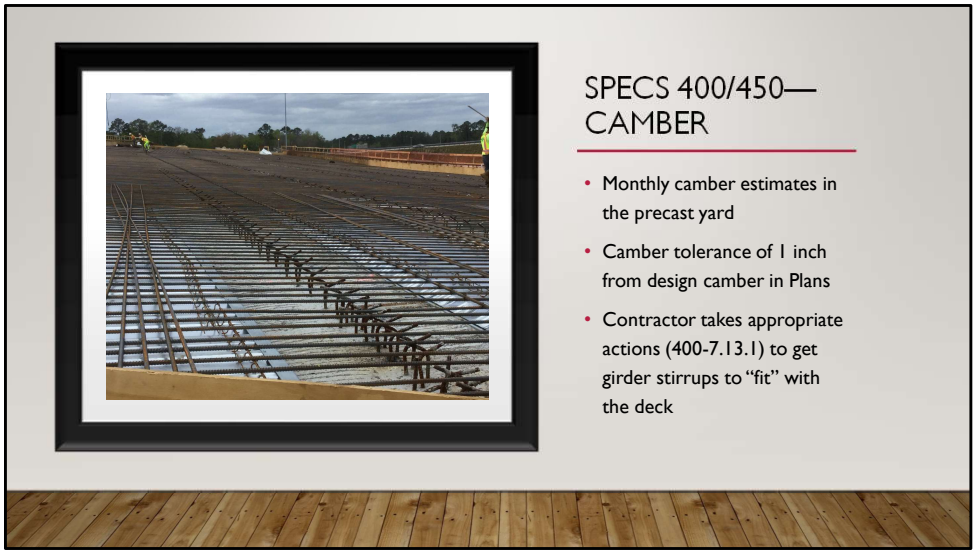
Here we have a short video showing a CEI checking the rebar depth for proper cover.



SPEC 400—DECK PLACEMENT

- Evaporation rate determined by:
  - Air temperature, relative humidity
  - Concrete temperature
  - Wind Velocity (15 mph max)
- If evaporation rate exceeds 0.1 lbs/ft²/hr including:
  - Evaporation retarder
  - Water fogging
  - Chilled mix water
  - Wind screens

Shown here is your typical nomograph for calculating evaporation rate. Until curing has begun, retain concrete surface moisture at all times by maintaining a surface moisture evaporation rate of less than 0.1 pound per square foot per hour.
(read bottom half of slide)

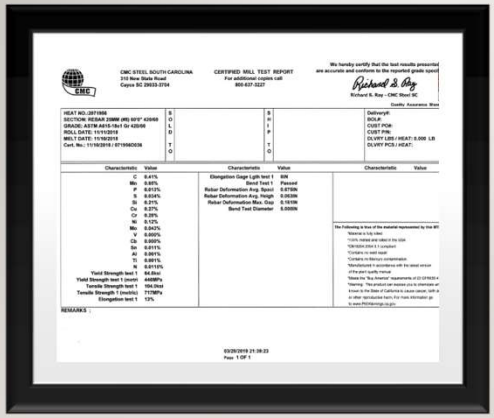


Read slide

- If the camber exceeds by 1 inch of the design camber shown in the plans, take appropriate action in accordance with 400-7.13.1 to get the stirrups to fit within the deck.
- This issue is something we see somewhat frequently seeing as camber calculations are unfortunately not an exact science.
- Sometimes you can move you beat pedestals in the precast yard to adjust camber prior to the beams being shipped to the field, but you may also need to adjust the pedestal heights on the bent caps to make sure the stirrups are within the deck thickness as well as not violating minimum cover requirements.
- Something else to keep in mind is Standard Plans 450-199 (go to website) which shows us the design minimum height of the haunch we need to obtain.
- EOR/CEOR must ensure load rating (as-built) is acceptable (build-up increase adds DC)

SPECS 400/415/460/502—REBAR, SIP FORMS, SHEAR CONNECTORS

- Field welding per Spec 460 only if Engineer approval or if on the Plans
- No welding of SIP forms to flanges
- Bending of reinforcement with Engineer's permission
- Store rebar above ground on dunnage
- Shear stud installation in the field with bend testing



CMC STEEL SOUTH CAROLINA
310 New State Road
Cayce SC 29033-3704

CERTIFIED MILL TEST REPORT
For additional copies call
800-637-3227

We hereby certify that the test results presented are accurate and conform to the reported grade specif

Richard S. Ray

Richard S. Ray - CMC Steel SC

Quality Assurance Mgr

Characteristic	Value
C	0.41%
Mn	0.93%
P	0.013%
S	0.031%
Si	0.21%
Cu	0.27%
Cr	0.28%
Ni	0.12%
Mo	0.043%
V	0.005%
Cb	0.005%
Sn	0.011%
Al	0.001%
Ti	0.001%
N	0.0113%
Yield Strength test 1	64.5ksi
Yield Strength test 1 (metric)	444MPa
Tensile Strength test 1	104.0ksi
Tensile Strength 1 (metric)	717MPa
Elongation test 1	13%

Characteristic	Value
Elongation Gage Lgth test 1	8IN
Bend Test 1	Passed
Rebar Deformation Avg. Spacir	0.8750IN
Rebar Deformation Avg. Height	0.0533IN
Rebar Deformation Max. Gap	0.1410IN
Bend Test Diameter	5.000IN

Characteristic	Value

REMARKS :

03/29/2019 21:39:23
Page 1 OF 1

SPEC 6—BUY AMERICA

- Buy America applicable to steel incorporated in the finished work, not the temporary condition
- Not just for Projects with FHWA funding during Construction
- Included if the corridor had FHWA funding through PD&E
- Mill certs need state "Made in USA"

Other things we look for are bearing deformation and general condition, anchor bolt misalignment.

Spec 460—Material

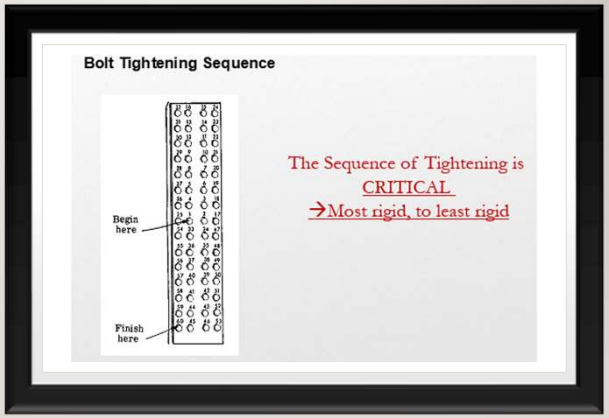
- The Department default material requirement for structural steel superstructures is weathering steel if 4 miles from the coast or greater
- If site conditions are acceptable, painting not required, reduction in maintenance costs over the life of the bridge
- Exceptions permitted but must be approved by the Chief Engineer, requiring justification by the District

Here we have a look at weathering steel girders..
SDM 16.12 has special detailing requirements for uncoated weathering steel to prevent corrosion of the girders and staining of the substructure due to runoff

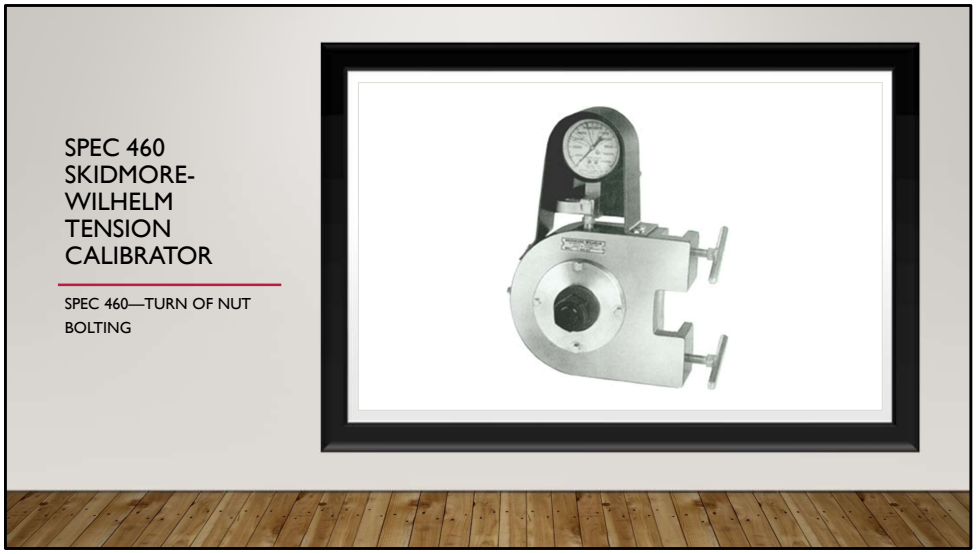
DTI is a calibrated dimpled washer that is placed under the nut during torquing of structural steel bolts. The dimples crush and feeler gages are used to measure the dimple deformation.

- On a daily basis (when DTI devices are being installed) and at the location of installation, perform DTI Verification tests in accordance with FM 5-583.
- Perform this test on a minimum of two high-strength fastener assemblies from each fastener assembly LOT and position of the DTI prior to production installation.
- DTIs can be used as a tool to verify short bolts.

SPEC 460— BOLTING



- Bolts must be tightened in a required order or sequence to ensure that the faying surfaces of the plates being bolted are pulled into full contact and that all bolts have approximately the same final tension.
- If the proper sequence is not followed, some of the initially tightened bolts may loosen and allow plates that were previously in contact, to pull apart.
- Tightening should be symmetrical, starting from the most rigid parts of the joint at the center and working outward. This eliminates warps in the plates by pushing them to the free ends.



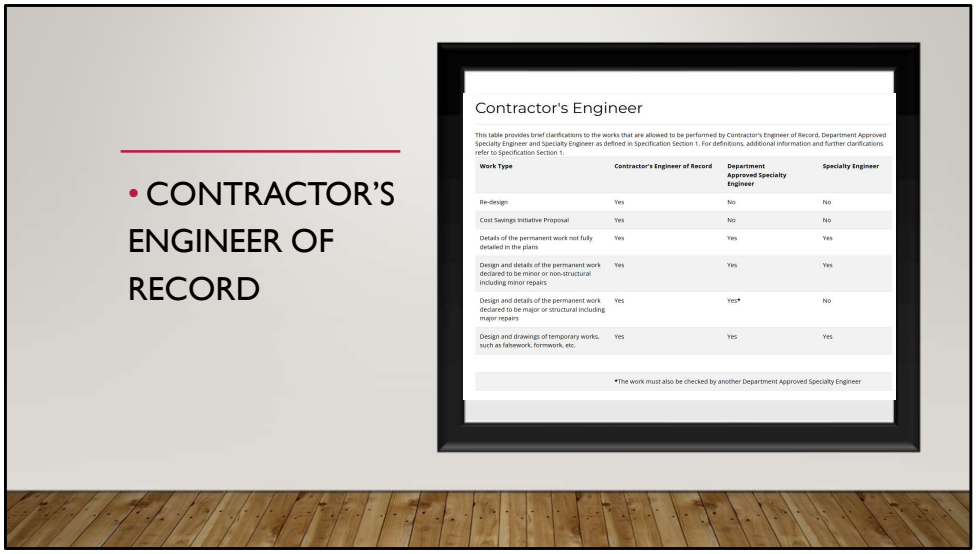
- Here we see a closer look at the tool of the trade in conducting (Job-Inspection Snug Tight Torque) JISTT and ROCAP testing, the Skidmore-Wilhelm Tension Calibrator, or typically just called the Skidmore out in the field.
- We talked about ROCAP testing before which is a test of the bolt assemblies themselves, so I'll briefly mention Turn-of-Nut which is to ensure we get the proper clamping force of our bolts in the field.
- Remember Turn-of-Nut Tightening requires a job inspection snug tight torque test to be performed for each work shift.
- This is because the amount of torque required to provide a target tension in a bolt can vary depending on site conditions that day and amount of lubrication on a given LOT of bolts.
- The test consists of determining a snug tight torque for a representative sample of 5 fastener assemblies of the type used on the day of the test.
- Then making sure that with the additional rotation required in Table 460-7 of our Spec which is usually

1/3 – 2/3 rotation, that the tension in the bolt will be at least 5% greater than the minimum value listed in Table 460-6 of our Spec.

- Since most all of our bolted connections are slip-critical connections getting the correct tension in our bolts is of critical importance.

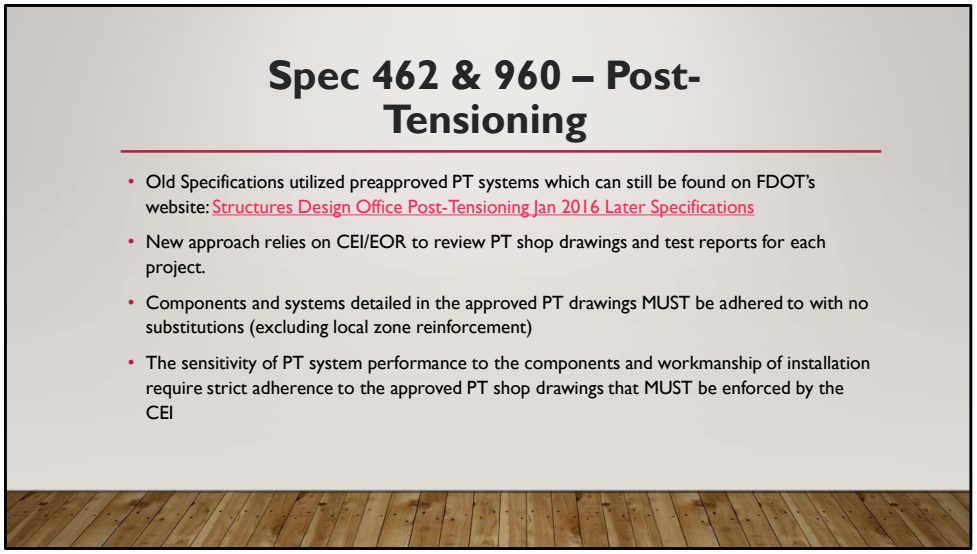
SPEC 460—BOLTING

- Checking Snug Tight Tension with a Calibrated Torque Wrench



- Contractor's EOR is something to be mindful of.
- This is another reminder to pay attention to your contract documents, and know the definition.
- Need to pay attention to your Contract type regarding CEOR.
- For Design-Build contracts for example the EOR and CEOR can be the same person.
- Consultants prequalified in the Type of Work per Rule 14-75 may perform Specialty Engineering services
- Contractor's EOR must be an employee of a pre-qualified firm.
- Department approved Specialty Engineer meets the experience requirements described in Rule 14-75

- Similar to FDOT Design Prequalification requirements, we have construction prequalification requirements in an effort to ensure quality by only allowing prequalified personnel to work on our projects.
- Construction Training Qualifications Manual
- Here is a list of the qualifications we require for certain work activities.
- Depending on what your Scope says, will dictate who is required to have which credential.
- Remember the red X there at the bottom, personnel are not considered qualified for FDOT work until qualification by CQTP.
- Talk about ASBI Flex Filler course. Encourage them to take the course.



- FDOT has moved away from preapproved PT systems due to previous projects not strictly adhering to the exact components (i.e. substituting parts within the system)
- Now the PT systems are submitted and approved as shop drawings for each project, making the review of these systems by the CEI critical
- Spec 960 defines the component and system testing and material spec requirements that must be submitted with the PT system shop drawings
- Recent corrosion issues with PT tendons utilizing flexible filler showcase the sensitivity of these systems to improper installation and poor workmanship and the need to follow the specifications
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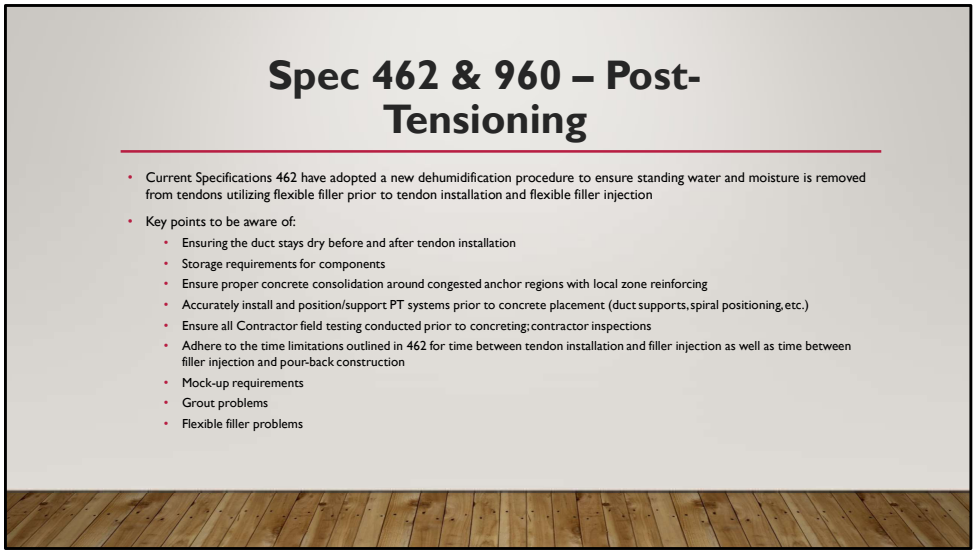
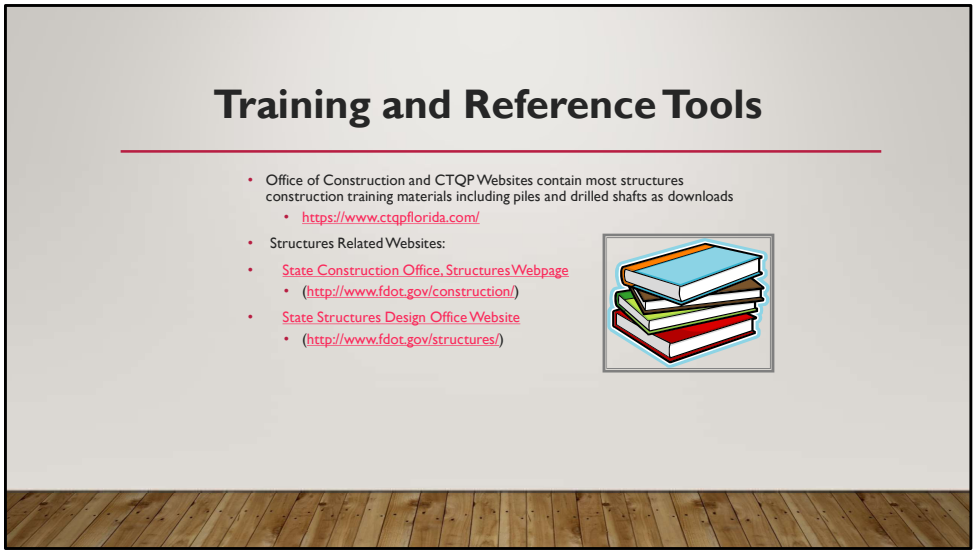
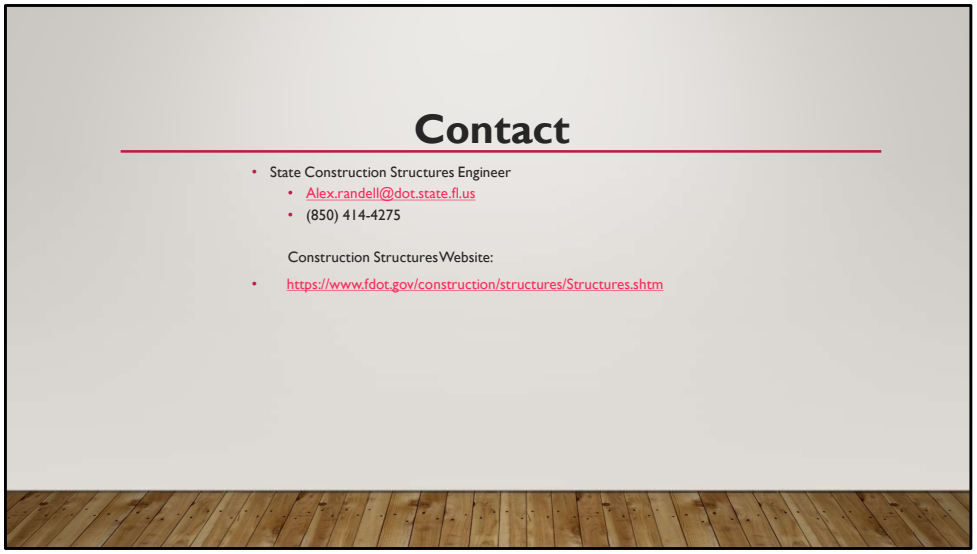


- Spec 462-7.2.1 outlaws the use of tape/caulking to seal ducts during temporary conditions throughout construction; PT shop drawings need to have details to temporarily seal ducts during construction
- Spec 462-6.4 strict temp/humidity controlled requirements must be adhered to for filler storage
- Spec 462-6.5 storage of ducts to prevent UV degradation and ensure end caps are always installed
- Spec 462-7.2.4 provides time limitations between tendon installation and filler injection, as well as dehumidification procedures
- Spec 462-7.3.3.2 limits 7-days between filler injection and anchor pour-back placement; particularly important for phased stressing of PT straddle caps which has been missed by the EOR during plans development resulting in extended periods of exposure of the unprotected anchors to the elements.
- Mock-ups should be conducted by the same crew and equipment that will be doing production filler injection
- Prepackaged PT grout performance is sensitive to water content; follow the manufacturers recommendations. Sensitive to bag weights, storage conditions, etc. Injection can be difficult for long runs at high temperatures
- Flexible filler performance as a PL against corrosion has shown to be highly sensitive to moisture entrapped within the PT system; different densities mean there will be voids with water in contact with tendon strands.



A brief mention of our Training and Reference Tools. CTQP Florida .com is where you can go to verify someone's certification, find out when courses will be offered, and look up Documents and Forms such as Aggregate Testing Technician Application, or Concrete Field Inspector Level 2 Application.
Also, I encourage you to go to our State Construction and Structures Design websites find references such as CPAM, our Construction Training & Qualification Manual, QC Guidelists, and the Structures Design Manual.



Finally, here is our contact information if you need to get in touch with us structures related issues during construction. As I mentioned before we most often only get involved with field issues that occur during the build of Category II bridges, but we are here as a resource to all the Districts and welcome open conversation regarding Spec language and CPAM.