

1080000 PROTECTION OF EXISTING STRUCTURES
COMMENTS FROM INTERNAL/INDUSTRY REVIEW

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Comments: (11-13-14, Internal)

1. Should this be “as shown in the Plans”?

108-2-Construction.
→ **108-2.1-Inspection and Settlement Monitoring.**
→ → **108-2.1.1-Miscellaneous Structures:** When constructing foundations for miscellaneous structures such as sign, signal, lighting, or intelligent transportation system structures, inspect and document the condition of the existing structures shown in the Plans, and survey and monitor for settlement the existing structures shown in the Plans.
→ → **108-2.1.2-Structures other than Miscellaneous:** When excavating or constructing

Response: The terminology “ shown in the plans” is correct.
No change made.

2. ...during the driving of any casings or piling’

→ → **108-2.1.5-Settlement Surveying and Monitoring Requirements:** Obtain the Engineer's approval for the number and location of monitoring points. Survey and monitor for settlement the structures, recording elevations to 0.001 foot.
→ → → 1. before beginning construction
→ → → 2. daily, during the driving of any casings, piling or,
→ → → 3. daily, during compaction
→ → → 4. daily, during foundation drilling
→ → → 5. weekly, for two weeks after stopping pile driving
→ → → 6. during excavation
→ → → 7. during blasting
→ → → 8. or, as directed by the Engineer
→ → Upon either detecting movement of 0.005 feet or damage to the structure,

Response: the word “sheeting” was accidentally deleted. Change made to during the driving of any casings, pilings, or sheeting.

3. Groundwater spelled as one word elsewhere.

contact the Engineer for instructions.
108-2.3-Groundwater Monitoring: When shown in the Contract Documents, install piezometers at the locations shown in the Plans. Monitor the piezometer and record the ground water elevation level daily. Notify the Engineer of any ground water lowering near the structure of 12 inches or more.

Response: Will change to “groundwater”.

Change made.

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Comments: (12-1-14)

1. Subarticle 108-2.1.2 requires inspecting and documenting the condition of existing structures “within 200 feet of sheet pile installation and extraction operations”. Suggest to include soldier piles in the list since they may be installed using a vibratory hammer with similar vibration effect as sheet piles on existing structures.

Response: Agree. Change made.

2. Subarticle 108-2.1.3 requires inspecting and documenting the condition of existing structures “within 75 feet of vibratory compaction operations” and Subarticle 108-2.1.4 shows “one report before beginning the construction operations such as but not limited to foundation construction, excavations, vibratory compaction.....” Suggest to replace “vibratory compaction” in the above reference with “vibratory compaction (vertical and any other mode)”. Per discussion with Turnpike Bituminous Engineer, asphalt industry apparently consider vibratory mode to be in a vertical direction and compaction equipment compacts using a horizontal motion is considered oscillatory mode (although the term is not on FDOT Specifications). Turnpike has problem in the past enforcing non-vibratory requirement in a project because the Contractor’s equipment operated in an oscillatory mode (and thus non-vibratory). See Specification subarticle 334-8.2.3, Table 334-7 Note 1 for the closest reference the reviewer can find.

Response: Agree. Vibratory compaction is not limited to vertical mode. Table 334-7, Note 1 indicates that non vertical vibration may be allowed. However, such mode is still vibratory. Subarticle 108-2.1.2 was revised to indicate the requirement applies to vibratory compaction in any mode.

Change made.

3. Subarticle 108-2.1.4 shows “Do not inspect and document the condition of bridges owned by the Department except when shown in the Contract Documents.” This statement seems to prohibit the Contractor from performing the inspection and documentation which is probably not the intent. Respectfully suggest to rephrase the sentence to become “Inspecting and documenting the condition of bridges owned by the Department is not required, except when shown in the Contract Documents.”

Response: Agree. Change made.

4. Subarticle 108-2.1.4 shows “2. daily, during the driving of any casings, piling or,” Is ther a typo error in the phrase above? Is it meant to be “2. daily, during the driving of any casings or piling” ? The word “or” appears to be out of position.

Response: The word “sheeting” was accidentally deleted and will be added. Change made.

5. Subarticle 108-2.2 requires vibration monitoring equipment capable of detecting velocities of 0.1 inches. All vibration monitoring equipment that the reviewer has seen are capable of reporting to 0.01 in/sec. Suggest changing “0.1” to “0.01”.

Response: Agree. Change made.

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Comments: (12-3-14)

1. **108-2.1.1:** most of the time, the Plans do not show the existing structure when instilling miscellaneous structures. However, there are quite a bit of existing structures near proposed new miscellaneous structures which require proper protection during installation. Therefore, we suggest to insert the following requirement. "Existing structures within 25 feet of proposed foundation installation shall be inspected, documented, surveyed, and monitored.

Response: Disagree. Designers are being instructed in a new PPM chapter that for miscellaneous structures they will need to indicate what structures to monitor in the plans.
No change made.

2. **108-2.1.5:** The number 2 is missing "Sheeting" in the sentence. Please revised as follows, 2. daily, during the driving of any casings, piling, or, sheeting

Response: Agree. Change made.

D5 Construction

Comments: (11-11-14)

1. The proposed spec changes requires not only addressing the existing structures on construction of foundations but on any construction operation, which include roadway compaction (asphalt, earthwork, et.). This will have a significant increase in the cost of projects District and State wide. The cost of implementing this change on all projects may outweigh the cost of claims resulting from damage to existing structures.

Response: The intent of the new section is to have an independent section where the construction impacts of any type of construction can be addressed, not just foundation. In the past designers were using plan notes, references to 455, MSP or TSP to overcome the lack of a separate section. The fact that there was no separate spec did not mean that it should not have been addressed in the plans. We will monitor the impacts of the changes and make adjustments as required.
No change made.

2. 108-2.1.4 Inspection and Documentation Requirements: Inspect and document the condition of the existing structures and all existing cracks with descriptions and pictures using a qualified Specialty Engineer..... Do not inspect and document the condition of bridges owned by the Department except when shown in the Contract Documents. What about state owned sign

structure foundations? You may have a large right of way on an interstate project where you could do vibratory compaction and have drilled shaft sign foundations within 75 feet of the compaction operation. Is it the states intention to have the contractor have a specialty engineer inspect and document these? I wouldn't think so if they don't want the bridges inspected and documented except when shown in the contract documents. If they don't, I would add some language similar to the language they use with the state owned bridges.

Response: Agree. Change made.

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Comments: (12-15-14)

1. This section will require the contractor to inspect and document all existing structures for the majority if not all upcoming projects. Under this section, two reports, signed by a Specialty Engineer, are required by the contractor to document pre and post activity following any operations (Excavation, dewatering, retaining wall, vibratory compaction) that may affect existing structures. The way the paragraph reads, the contractor will have to produce more than two reports; hence, this section should be revised to show right intent.

Response: Disagree, 108-2.1.4 clearly requires two reports one before and one after. This language did not change from what has been in Section 455 for many years.
No change made.

2. Under 108-2.1.3 it states that when performing embankment and asphalt compaction one must “inspect and document the condition of the following existing structures, and survey and monitor for settlement the following existing structures (1) as shown in the Plans (2) within 75 feet of vibratory compaction operations”. The term “existing structure” is somewhat vague and if it needs to be within 75 feet of the vibratory compaction operations could be numerous. (Chad Rucks)

Response: Disagree. The term “existing structure” refers to existing structures at the time of bidding. As mentioned above, the impact of these changes will be monitored and adjustments will be made as required.
No change made.

3. Section 108-2.1.2 Structures Other than Miscellaneous – Recommend adding in “buildings” between “bridges and structures” so that the first sentence reads, “When excavating or constructing retaining walls and foundations for bridge, buildings and structures other than miscellaneous structures, ...” (Kandarappallil Jose)

Response: Agree. Change made.

4. Section 108-2.1.5 Settlement Surveying & Monitoring Requirements – Recommend adding the word “of” into the second sentence such that it reads, “Survey and monitor for settlement of the structures, recording elevations...” (Kandarappallil Jose)

Response: Agree that the sentence may be improved. Change made to “*Survey and monitor the settlement of structures, recording elevations...*”

5. Section 108-2.1.3 – Roadway Compaction Operations – Having a specialty engineer inspect and document every structure within 75 feet of the roadway both before and after construction could amount to a considerable cost to the project. An urban widening project could have many buildings, and other structures along the Right-of-way. • Most houses and buildings have minor settlement cracks that may be missed by the specialty engineer in the initial inspection. The buildings also continue to have minor cracking throughout their lifetime. I have spoken with many homeowners that feel the minor vibrations from the compaction equipment and are sure that all of the cracks were caused by the construction equipment. The homeowner will use the initial report to “prove” that his home was damaged by the construction. • The right-of-way entry agreements do not transfer to new owners should the property be sold between the time the agreement is obtained and the final inspection is needed. (Jeffrey LeClaire)

Response: There seems to be a concern that 75 feet may be excessive. This distance was selected based on vibration data collected on FDOT projects and presented in the Research Report “Evaluation of Vibration Limits and Mitigation Techniques for Urban Construction”. At 75’ a Particle Peak Velocity of 0.26 in/sec or less is anticipated for compaction operations. This is already a little above the 0.2 in/sec threshold that has been used in many FDOT projects. A value of 0.2 in/sec is widely accepted by the experts as the vibration level at which people start to complain, even though not necessarily this level of vibration produces damage. There was a consensus between Structures Design and the Construction offices to accept this value. As mentioned above we will monitor and reevaluate and make adjustments if necessary. Regarding reports, experts recommend to document the conditions of the existing structures as a mechanism to protect against unfounded claims. The second report (which reports the condition right after completion of construction operations) can be also used as a defense for a claim of a damage happening after construction. Finally, please note that the 75 feet distance requirement applies from the compaction operation, not from the roadway.

No change made.

6. Spec 108-2.1.3 “Roadway Compaction Operations: This specification as written will cause the Contractor and the Department to perform massive investigation whenever we are performing embankment and asphalt compaction. Are we having problems? Asphalt- Whenever we have concerns with asphalt vibration, we change the paver from vibration to static to solve this problem. Excavation- contractors are already inspecting existing property prior to any major pipe work.

Response: Yes, vibratory compaction has been observed to create settlements and complaints even at significant distances. As mentioned above we will monitor and reevaluate and make adjustments if necessary. If the contractor selects to compact in the static mode (non vibratory in any mode) then the requirement specified in 108-2.1.3 item 2 does not apply.

No change made.

7. 108-2.1.5 “Settlement Surveying and Monitoring Requirement- We to define damage to the structure. Many property owners have existing cracks. This cracks are not a structural issue.

Response: No need to define damage. ALL existing cracks should be found in the initial inspection. Damage at a specific time is the difference between the observed conditions at this time and the original conditions observed in the initial inspection.
No change made.

8. Vibration monitoring- .5 inches per second- We have had damages with lower vibration levels. Right now, it is up to the contractor to hold us harmless and settle with the property owners. Or the contractor changes his means and method for compaction

Response: For most of the cases 0.5 in/sec has worked well. There are sensitive structures and sites in which lower vibration levels may produce damage. It is up to the EOR to specify in the Contract Documents more stringent levels based on the site and type of structure we are trying to protect. It has not been uncommon to see projects in which lower vibration levels have been specified in the Contract Documents (for example 0.2 in/sec).
No changes made.

9. 108-2-1-3: The 75' limit to inspect and monitor structures is not enough. On the projects we have worked on it has been common to get complaints from occupants in excess of 200 feet from the operations. Without a precondition survey it is very difficult to even review, much less enforce the contractor to settle these 3rd party claims. Recommend changing the 75' to 200'.
(Mike Irwin)

Response: At this time it has been decided to use a 75 ft distance. However, specific sensitive structures beyond this distance may be shown in the Plans.
No change made.

10. 108-2.2 Vibration Monitoring: The spec tells the contractor that if his operations result in excessive vibrations (0.005' of settlement or .05 in/sec vibration) to stop work and contact the Engineer for directions. This puts direction of operational responsibilities on the Department and will most certainly result in additional costs to the Department. The recommendation is for the spec language to require the contractor to stop, notify the Engineer and the submit a remediation or corrective action plan which would show how he can perform the work within the specified vibration requirements. Let the contractor tell the Department how he can accomplish the work within specs instead of the Department directing his work methods. (Mike Irwin)

Response: Agree with the recommendation. Change made.

11. The Protection of Structures language is proposed to be removed from the 455 Spec(s) and is to be "all inclusive" in the new Section 108. This is fine, but there are operations included in the 455 Spec language that were not included in the new Section 108. For instance, there is no mention of blasting operations in the new Section 108. Suggest review and ensure that all previously covered operations are included. (Patrick Kennedy)

Response: No changes were made in the 455 language regarding blasting. If blasting is anticipated the distances of monitoring and inspecting must be included in the plans. Regarding frequency of monitoring and vibration monitoring, blasting is included in sections 108-2.1.5 and 108.2.2 as it was before in 455.1. In addition section 7-9 addresses additional requirements regarding use of explosives.

No change made.

12. Section 108-1: Suggest removing sentence “Preserve all property from damage in accordance with 7-11.1”. This Specification would already be in affect and this language is redundant.

Response: Disagree. We want to make clear that in addition to the responsibilities stated in 7-11.1, the requirements of Section 108 will apply.

No change made.

13. Section 108-2.1.2 Note 3: Suggest adding “within a distance of three times the depth of ANY other excavations. (Patrick Kennedy)

Response: Agree. Change made.

14. Section 108-2.1.4: Suggest adding Stabilized Subgrade, Base, and Structure/Pipe Backfill to the list of operations included in Roadway Compaction Operations. (Patrick Kennedy)

Response: Not needed; these are embankment compaction activities.

No change made

15. Section 108-2.1.4: Last sentence reads “The Department will make the necessary arrangements to provide right of way entry into the existing structures”. What if private owners do not allow access? There should be language that indicates what should be done in that case. On past projects where I had similar requirements in a TSP, certified letters were sent to the property owners by the Contractors and/or Design/Build Team asking to complete the survey/inspection and, if the owner refused or was non-responsive, we had those letters on file to indicate that we attempted to complete pre and post construction inspections. (Patrick Kennedy)

Response: The language you suggest does not belong in the specifications. However, it will be considered for a future CPAM revision.

No change made.

16. Section 108-2.1.5: Suggest adding “Obtain the SPECIALTY Engineer’s approval.....” Specialty Engineer employed by the Contractor/Design Build Team is required for all other monitoring and should also be included here since they will be responsible for any issues and/or damage resulting from this. (Patrick Kennedy)

Response: At this time we don’t feel this is needed. It is the Engineer (FDOT) approval that is required. In DB projects the RFP boilerplate has additional language that addresses submittal of a monitoring and settlement plan as well as establishment of the threshold criteria.

No change made.
