

MASS Updates
 DIV 65 - Construction Surveys

Comment	Response
<p>If I might make the suggestion, all the he/his/him's are a bit out of control. Flipping through Division 10 really makes one wonder how much of the MASS has been copied and pasted since the 80's rather than being kept current.</p> <p>I saw the "Working Titles" disclaimer, but I can't imagine it would take more than an hour or two to find-and-replace all the he/his/him's with they/their/them/"the Contractor"/whatever.</p>	<p>Agree. Chapter 65 did not contain any gender references.</p>
<p>Section 65.02, Article 2.1A.2: Vertical Control, "All level circuits run to establish temporary bench marks shall have an accuracy no less than the value computed by the equation (three-hundredths feet (0.03') times the square root of the distance in miles)."</p> <p>This specification falls between the Federal Geodetic Control Subcommittee (FGCS) Digital Leveling Specifications for Second Order Class I and Second Order Class II accuracies. (0.025'VM and 0.033'VM respectively). See Fgcsvert.v41.specs.pdf (noaa.gov) Both Second Order classes call for a more precise level, such as the Leica DNA03, and a one-piece Invar barcode rod to reliably achieve. This accuracy is typically used for leveling campaigns establishing original Bench Mark networks, such as the MOA Bench Mark Network itself. It is typically not required for establishing Temporary Bench Marks for design and construction. We recommend moving to the Third Order accuracy specification of (0.05'VM). This is the current industry standard specification required by other government entities such as USACE (EM 1110-1-1005, 3-14) for level loops setting TBM's for design and construction. It is regularly achievable with the typical digital level used, such as the Leica DNA10, using a fiberglass barcode staff.</p> <p>In practice, the current specification requires accuracies for the following loop lengths: 600'=0.01'; 1600'=0.017'; 2640'=0.021'; 5280'=0.03'; 7920'=0.037' and 10,560'=0.042'. Moving to the Third Order specification would require accuracies for the following loop lengths: 600'=0.017'; 1600'=0.028'; 2640'=0.035'; 5280'=0.05'; 7920'=0.061'; 10'560'=0.071'.</p>	<p>Agree. The vertical control specification to will be revised to Third Order. Additional language will be added to clarify what is required when closure between two benchmarks doesn't meet specifications.</p>

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<p>Section 65.02, Article 2.1A.2 (cont.): It should be noted that most of the MOA Bench Marks no longer meet the Second Order accuracy between themselves, but many do meet Third Order accuracy. The requirement in the paragraph after the Accuracy Specification states, "A minimum of two known bench marks shall be utilized when establishing TBM's to verify correct elevation information." It would promote the best harmony to use the Third Order Accuracy Specification to evaluate their harmony, and allow both of them to be used to control a project if possible. This section of MASS is silent on what should be done if both of the known bench marks don't match in elevation. Moving to the Third Order specification would promote more harmony with the existing Bench Mark Network, which is still a very good network.</p>	<p>Agree. The vertical control specification to will be revised to Third Order. Additional language will be added to clarify what is required when closure between two benchmarks doesn't meet specifications.</p>
<p>Section 65.02, Article 2.1: Since some projects are actually titled rehabilitation projects and some are titled reclamation projects, I think after the first sentence we should state (or something similar) that rehabilitation projects include projects with pavement removal, or pavement rotomilling, or pavement reclamation, and/or a combination of such. I can see where some Contractors may state that their project is titled a reclamation project, not rehabilitation so they do not have to perform the survey. I also suggest on pavement rehabilitation and reclamation projects under (typically) General Note 2 of the plan set where we state that no survey has been performed for the project, we should reference 65.2.1 Project Control, Sub-article B-3 Pavement Rehabilitation Projects.</p>	<p>Agree. Language will be inserted into 65.02 Article 2.1.B.3.</p>
<p>Section 65.02, Article 2.17: Basis of Payment – Add language for withholding 25% payment for Construction Survey Measurement bid item until survey submittals (survey field notes, survey cross sections, survey quantity measurement, etc.) have been received and approved.</p>	<p>Agree. However, this section does not address withholding payment; it only indicates what units of work are paid for. Currently all survey work is generalized as "Construction Survey Measurement". Should we itemize the pre-construction survey, field notes, cross sections and quantities?</p>

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<p>Something that comes up on our Private Development warranty inspections are the differences in MH and monument depths (at grade) between storm, sewer and water structures and monuments. If we could get the depth to be consistent across all utilities it would make construction and inspections easier.</p>	<p>I'm not sure monuments fall in the same category as utility structures. While it is necessary that monuments, and especially monument cases, are set below grade, this is primarily to preserve the monuments themselves. It also ensures that road maintenance equipment are not damaged by protruding monuments. The depth of the monument is more a function of platting requirements based on the legal significance of the property corner being marked. I'm not sure it is applicable although we can come up with a minum depth below grade to create some consistency. More discussion may be needed on this topic.</p>
<p>See memo for Special Provision Regarding Monumentation. Does anything need to be updated in Div 65 from memo?</p>	<p>I don't think so. This system is working.</p>