Addenda to MNL 116-21 & MNL 117-13 – Requirements for Post-Installed Anchors

The following sections of MNL 116-21 and MNL 117-13 are revised to incorporate requirements and the associated commentary for post-installed anchors.

MNL 116-21 Addendum

Section 2.5 Hardware Installation
(Add these two new paragraphs to the end of this existing Standard section.)

Adhesive anchors shall be installed in accordance with the Manufacturer's Printed Installation Instructions (MPII) by qualified installers. Adhesive anchors identified in the construction documents as installed in a horizontal or upwardly inclined orientation and resisting sustained tensile loads shall be installed by an installer possessing ACI Adhesive Anchor Installer certification or another certification approved by the precast engineer, structural engineer of record, and the building official. The installation of adhesive anchors shall be inspected by an individual possessing ACI Post-Installed Concrete Anchor Installation Inspector certification or another certification approved by the precast engineer, structural engineer of record, and the building official. Adhesive anchors shall not be installed in a concrete component until the component has reached a minimum age of 21 days.

Non-adhesive post-installed anchors shall be installed in accordance with the manufacturer's instructions, by qualified installers. The installation of non-adhesive post-installed anchors shall be inspected by a certified inspector or by a qualified inspector approved by the precast engineer, Structural Engineer of Record, and the building official.

Section C2.5 Hardware Installation
(Add this new paragraph to the end of this existing Commentary section.)

Because of the potential for adhesive anchors to creep over time, there are special procedures to employ when installing anchors subject to sustained tension.

Section 3.2.6 Post-Installed Anchors
(Add this new Standard section.)

Post-installed anchorages installed in hardened concrete and used for temporary or permanent loads at the jobsite shall be qualified in accordance with ACI Code 355.2 or ACI Code 355.4. Anchor design and installation provisions for transportation components shall be in accordance with Article 5.13 of the AASHTO LRFD Bridge Design Specifications. Anchor design and installation provisions for building components shall be in accordance with ACI Code 318, Chapter 17.

Section C3.2.6 Post-Installed Anchors
(Add this new Commentary section.)

Prequalified anchors need not be re-qualified for each project, unless the evaluation report is expired. The evaluation report for the specified anchors must meet the requirements in ACI Standards: ACI Code 355.2 for post-installed mechanical anchors and ACI Code 355.4 for post-installed adhesive anchors.

Section 6.2.2 Acceptance Testing of Materials
(Replace the existing paragraph with the following paragraph.)

Suppliers of materials shall be required to furnish certified test reports for all materials used in the precast concrete products, such as cement, aggregates, admixtures, curing materials, reinforcing and prestressing steel, connection materials, post-installed anchors, and hardware materials, indicating that these materials comply with the applicable ASTM standards, project specifications, and plant standards.

Section 6.2.2.7 Hardware, inserts and post-installed anchors
(Change section title and add two new paragraphs.)

Post-installed anchors need not be plant tested unless specifically required by the SER or construction documents. Post-installed anchors shall be prequalified under ACI Code 355.2 or ACI Code 355.4. The current anchor-specific evaluation report shall be listed on the evaluation agency's website or manufacturer's website for their product. All anchor qualification credentials and the evaluation agency report number shall be shown on the approved shop drawings.

The specific anchor product and personnel installing and inspecting the installation and age of the precast concrete component in which the anchors are installed shall be documented in the inspection reports created by plant QC personnel. Information documenting the qualification or certification, as appropriate, for the installers of post-installed anchors and installation inspectors shall be obtained. The inspection report shall also include documentation that the concrete compressive strength of the precast concrete component in which the anchors are installed has been verified to meet the manufacturer's requirements.

Section C6.2.2.7 Hardware, inserts and post-installed anchors
(Change section title and add two new paragraphs)

Prequalified anchors need not be re-qualified for each project and shall be shown on the approved shop drawings.

The capacity of a mechanical anchor is related to the compressive strength of the concrete at the time of installation; therefore, it is important that the minimum concrete compressive strength of the component at the time of anchor installation be verified to have met the anchor manufacturer's requirements. This can often be accomplished through the review of the plant's test specimen results for stripping or release strength purposes.

Section 6.3.2 Suppliers Test Reports
(Replace the second paragraph with the following.)

Mill or suppliers' test certificates or test results shall be available for the following materials:

1. Cement
2. Aggregates
3. Admixtures
4. Reinforcing steel (all grades)
5. Prestressing tendons
6. Studs or deformed anchors
7. Structural steel or other hardware items
8. Inserts or proprietary items
9. Pigments
10. Curing compounds

11. Post-installed anchors

Section C6.3.2 Suppliers Test Reports
(Add the following paragraph.)

11. Precasters using post-installed anchors qualified under ACI Code 355.2 or ACI Code 355.4 should retain the evaluation report for each type of anchor and the specific lot, date, and anchor identification numbers used on the precast product. (Note, this is sometimes referred to as the fingerprinting information.) A record of the anchor installer and inspector information and their certification credentials should also be retained.

MNL 117-13 Addendum

Section 2.5 Hardware Installation
(Add these two new paragraphs to the end of this existing Standard section.)

Adhesive anchors shall be installed in accordance with the Manufacturer's Printed Installation Instructions (MPII) by qualified installers. Adhesive anchors identified in the construction documents as installed in a horizontal or upwardly inclined orientation and resisting sustained tensile loads shall be installed by an installer possessing ACI Adhesive Anchor Installer certification or another certification approved by the precast engineer, structural engineer of record, and the building official. The installation of adhesive anchors shall be inspected by an individual possessing ACI Post-Installed Concrete Anchor Installation Inspector certification or another certification approved by the precast engineer, structural engineer of record, and the building official. Adhesive anchors shall not be installed in a concrete component until the component has reached a minimum age of 21 days.

Non-adhesive post-installed anchors shall be installed in accordance with the manufacturer's instructions, by qualified installers. The installation of non-adhesive post-installed anchors shall be inspected by a certified inspector or by a qualified inspector approved by the precast engineer, Structural Engineer of Record, and the building official.

Section C2.5 Hardware Installation
(Add this new paragraph to the end of this existing Commentary section.)

Because of the potential for adhesive anchors to creep over time, there are special procedures to employ when installing anchors subject to sustained tension.

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Post-installed anchorages installed in hardened concrete and used for temporary or permanent loads at the jobsite shall be qualified in accordance with ACI Code 355.2 or ACI Code 355.4. Anchor design and installation provisions for transportation components shall be in accordance with Article 5.13 of the AASHTO LRFD Bridge Design Specifications. Anchor design and installation provisions for building components shall be in accordance with ACI Code 318, Chapter 17.

Section C3.2.6 Post-Installed Anchors

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Prequalified anchors need not be re-qualified for each project, unless the evaluation report is expired. The evaluation report for the specified anchors must meet the requirements in ACI Standards: ACI Code 355.2 for post-installed mechanical anchors and ACI Code 355.4 for post-installed adhesive anchors.

Section 6.2.2 Acceptance Testing of Materials
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Suppliers of materials shall be required to furnish certified test reports for all materials used in the precast products, such as cement, aggregates, admixtures, curing materials, reinforcing and prestressing steel, connection materials, post-installed anchors, and hardware materials, indicating that these materials comply with the applicable ASTM standards, project specifications, and plant standards.

Section 6.2.2.7 Hardware, inserts and post-installed anchors
(Change section title and add two new paragraphs.)

Post-installed anchors need not be plant tested unless specifically required by the SER or construction documents. Post-installed anchors shall be prequalified under ACI Code 355.2 or ACI Code 355.4. The current anchor-specific evaluation report shall be listed on the evaluation agency's website or manufacturer's website for their product. All anchor qualification credentials and the evaluation agency report number shall be shown on the approved shop drawings.

The specific anchor product and personnel installing and inspecting the installation and age of the precast concrete component in which the anchors are installed shall be documented in the inspection reports created by plant QC personnel. Information documenting the qualification or certification, as appropriate, for the installers of post-installed anchors and installation inspectors shall be obtained. The inspection report shall also include documentation that the concrete compressive strength of the precast concrete component in which the anchors are installed has been verified to meet the manufacturer's requirements.

Section C6.2.2.7 Hardware, inserts and post-installed anchors
(Change section title and add two new paragraphs.)

Prequalified anchors need not be re-qualified for each project and shall be shown on the approved shop drawings.

The capacity of a mechanical anchor is related to the compressive strength of the concrete at the time of installation; therefore, it is important that the minimum concrete compressive strength of the component at the time of anchor installation be verified to have met the anchor manufacturer's requirements. This can often be accomplished through the review of the plant's test specimen results for stripping or release strength purposes.

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2. Aggregates

3. Admixtures
4. Reinforcing steel (all grades)
5. Prestressing tendons
6. Studs or deformed anchors
7. Structural steel or other hardware items
8. Inserts or proprietary items as specified for individual projects
9. Pigments
10. Curing compounds
11. Post-installed anchors

Section C6.3.2 Suppliers Test Reports

(Add the following paragraph:)

11. Precasters using post-installed anchors qualified under ACI Code 355.2 or ACI Code 355.4 should retain the evaluation report for each type of anchor and the specific lot, date, and anchor identification numbers used on the precast product. (Note, this is sometimes referred to as the fingerprinting information.) A record of the anchor installer and inspector information and their certification credentials should also be retained.

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