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Structural Engineering, Truss Engineering, Third Party Inspection, Forensic Study, Project Management
Residential Design and BIM Modeling for Homebuilders

Pro-Crete Materials Corporation

QUALITY CONTROL MANUAL

Version 1.1

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PRECAST AND PRESTRESSED LINTELS (8" AND 12" WIDE)

In order for proper manufacture of precast and prestressed lintels, Monta Consulting & Design, has prepared this quality control manual to be used in conjunction with quality control methods of the plant.

Prestressing Steel

Prestressing steel shall be 7/16-inch diameter, 7-wire, and 270,000 psi low relaxation strand conforming to ASTM A-416. They shall have a minimum yield of 204,000 psi and initial prestressing force of 21,700-pound. Certified mill test reports shall be submitted for review when requested.

Tendons shall be clean and free of excessive rust, scale and pitting. A light oxide coating is permissible. The coating shall be chemically non-reactive with the tendon, concrete, and the material used for sheathing.

Tendons shall not be subject to excessive temperatures, welding sparks, or electric ground currents. To ensure that this requirement is met, burning and welding operations shall not be conducted in the vicinity of tendons without prior acceptance.

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Bonded tendon anchorages tested in an unbonded state shall develop 90% of the minimum specified ultimate strength of the prestressed steel without exceeding anticipated set at time of anchorage, and without slip.

Formwork shall not restrain elastic shortening, deflection, or camber resulting from application of the prestressing force. Form supports shall not be removed until sufficient prestressing force has been applied to support the dead load, formwork, and anticipated construction loads. Formwork shall be sufficiently rigid to prevent displacement of the tendons beyond recommended tolerances.

Tendons, sheathing, and anchorages shall be placed with a tolerance of $\frac{1}{4} \pm$ inches in concrete dimensions of 8" and $\frac{3}{8} \pm$ in 12" wide lintels. These tolerances apply separately to both vertical and horizontal dimensions.

The prestressing force shall be determined by measuring tendon elongation and checking jack pressure with a calibrated gauge or dynamometer. The gauge or dynamometer shall have been calibrated within six months prior to use. Test records shall be kept at the plant.

Reinforcement Steel

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All reinforcing bars shall be deformed and shall be the grade required by the drawings. They shall be minimum grade 40 conforming to ASTM A-615 in the precast lintels and minimum grade 60 in the prestressed lintels.

All reinforcement shall be bent cold unless otherwise permitted. Reinforcement shall be placed to a tolerance of $\frac{1}{2}$ ". A minimum concrete cover of $1 - \frac{1}{2}$ " is recommended.

At the time of concrete placement, all reinforcement shall be free of mud, oil or other materials that may adversely affect or reduce the bond.

All reinforcement shall be supported and fastened before concrete placement and shall be secured against displacement within the tolerances specified.

Concrete

Ready-mixed concrete shall be batched, mixed, and transported in accordance with ASTM C-94. Plant equipment and facilities shall conform to "Certification of Ready Mixed Concrete Production Facilities (Checklist with Instructions)" of the National Ready Mixed Concrete Association.

Concrete produced by on-site volumetric batching and continuous mixing shall be batched and mixed in accordance with and shall conform to all requirements of ASTM C-685. A minimum compressive strength of 4,000 psi shall be used in all concrete for the production of precast lintels. A minimum compressive strength of 6,000 psi shall be used in all concrete for the production of prestressed lintels. Compressive strength shall be at least 3,500 psi before prestressing reinforcement to be stressed.

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A minimum of 2 sets of 3 cylinders shall be taken from each type of concrete mix used within a period of ninety (90) days. Compressive strength tests shall be performed by an ACI certified testing facility and all results kept on premises. Concrete cylinders must be prepared and cured in accordance with ASTM C-192. In addition, the certified testing agency should perform slump test in accordance with ASTM C-143. These results shall be reviewed by Monta Consulting & Design at least twice a year to ensure compliance.

Concrete mix designs of each type mix shall be kept on file by Monta Consulting & Design.

This manual is prepared for the use of Pro-Crete Materials Corporation, and is in conjunction with drawings prepared by Monta Consulting & Design.