STANDARD SPECIFICATIONS FOR CRIBLOCK™ PRE-CAST CONCRETE RETAINING WALLS

INTRODUCTION

Criblock™ is manufactured utilizing state of the art manufacturing equipment and selected materials that are proven in the field. The guidelines set forth will ensure the highest of quality, reliability and aesthetics that makes Criblock™ the preferred choice.

SCOPE

This specification sets out requirements for the design, materials, manufacture and construction of pre-cast, reinforced concrete Criblock™ wall systems. Bidder’s attention is called to the fact that Criblock™ wall system units are the basis for this specification. Criblock™ wall systems standard design table and dimension packet is incorporated into and made a part of this specification. All statements and values used in this Standard Specification are for normal applications and may be changed as required by qualified engineering.

DESIGN

The face of the wall shall consist of a grid of concrete members, with the face inclined at a slope of 4 feet vertical to 1 foot horizontal, or specifically designed for a particular job. Horizontal members of such a grid are termed “Front Stretchers”. Where non-standard stretcher lengths are required to complete the end of a wall, they are termed “Closers”. The face members shall be connected by transverse members termed “Headers” to a similar grid of “Back Stretchers”, parallel to the face and located so that the overall thickness of is not less than 3 feet. Additional spacers between the stretchers in the front and back grids may be used if the system requires it, and are termed “False Headers”. Headers shall be perpendicular to the face of the wall. The system may allow for additional of one or more grids of members, parallel to the face and situated behind the structure described above. Such additional grids shall be connected to the rid in front of it be an interlocking header system. This constitutes a multiple-depth wall, as detailed on Criblock™ standard plans.

The space between the face and back of the wall shall be filled with free-draining rock or well compacted soil. The overall stability of the structure when assembled shall be such that this
compaction may be carried out without displacing the members. A minimum embedment of 1 foot below final grade is required. These specifications do not purport to provide a basis for engineering analysis of the overall wall system. Criblock\textsuperscript{TM} standard plans furnish some of the basic information used in analysis. A qualified engineer can provide information as required.

**MIX DESIGN**

A qualified materials laboratory shall prepare a design utilizing materials within the specifications required to achieve the minimum compressive strength and durability. The manufacturer may use their own mix designs providing the test results are documented and proven to meet or exceed the required strengths. Concrete for use in dry-cast and wet-cast production shall have a minimum strength of 3000 PSI in 28 days, or 2500 PSI prior to shipment.

**MATERIAL SPECIFICATIONS**

**Cement**

Only Type I, II or III Portland Cement conforming to ASTM C150 shall be used. Transportation and storage need to be secure, clean from impurities and contamination. Regular testing and certifications are kept onsite.

**Aggregates**

All fine and course aggregates used, shall comply with ASTM C33. All Aggregates shall be free of contaminates and are tested regularly for gradation and makeup. All test results and certificates shall be kept onsite.

**Admixtures**

Admixtures are not regularly used in the manufacturing process if used; all admixtures will conform to ASTM C260 and C494. MSDS, documentation and certificates of compliance shall be kept onsite.

**Reinforcement**

All steel reinforcement shall conform to ASTM A615, A616 or A617 with a minimum strength of 60,000 PSI. All reinforcement shall be free of mill debris, rust and contaminants prior to casting. All mill certifications are kept on site.

**Tolerances**

Each individual finished unit of the Criblock\textsuperscript{TM} wall system shall be within 1/8” (+/-) of the designed value. Reinforcement will have a minimum cover of 1-1/4” and within .50 (+/-) to designed positions and in accordance with ASTM 318.
**Corrosion Protection**

Where units are to be placed in direct contact with seawater, used as water retention or diversion, reinforcement if specified and required will be epoxy coated or equivalent.

**Marking**

Each pallet of finished product shall bear its date of manufacture. To the best of their ability, the manufacture will use a suitable method to withstand 12 months in storage.

**TESTING AND INSPECTION**

Acceptability of all finished product shall be based on its compressive strength and a visual inspection. Each unit shall be deemed acceptable for receipt and for placement regardless of its curing age, providing the minimum compressive strength of 2500 PSI has been met. All units shall be subject to final acceptance onsite. Where the Contractor includes the erection of the units, it shall be the Contractors responsibility to ensure that all units are erected in an undamaged condition.

A Project Engineer’s representative may carry out such warranted tests or measurements to suffice for the product design and tolerances. Where these tests may be of a destructive nature, and the units are approved, the costs of each unit tested as delivered shall be added to each contract.

**CRIBLOCK™ WALL SYSTEM CONSTRUCTION**

Criblock™ wall systems shall be constructed in a manner reasonably close to all lines, grades and design and dimensions shown on approved plans supplied and are established by the Project Engineer by means of surveyed staking.

**Excavation**

A bench of excavation to sound material shall be made for the base of the Criblock™ wall system. Unless otherwise shown on the project plans, the benches shall be horizontal in the like of the wall and have a fall of 1 in 4 from the front to the back of the excavation.

Finished base excavation to within .5 inches of base elevation shall include vertical steps where plans indicate such.

**Construction**

The Criblock™ wall system units shall be handled and placed in such a manner as to not damage the seating areas. The first course of units shall be Front Stretchers and or Closures unless
specified otherwise in the engineered drawings. Measures shall be taken in placement of such to ensure proper seating and a firm setting on the base soil(s).

The Criblock™ wall system units shall be placed in horizontal lifts and placed in a uniform pattern as shown in engineered drawings or as approved by such. All wall construction shall be provided with Back Stretchers for the full height of the wall, except for the top course. Please refer to the Criblock™ Standard Plans.

The top course shall consist of Full Headers Only. No back Stretchers are required unless specified.

_Corners:_ Where walls join at an angle, it may be necessary to saw-cut Stretchers to provide a precise joined corner. Walls greater than 5 courses high may require special treatment of Headers.

_Curved Walls:_ Where there is the necessity for a wall with curves to a radius of less than 100’, saw-cuts will be made where necessary to maintain the gap between Stretchers to be uniform.

**Backfilling**

_Backfilling material_ shall consist of either a suitable crushed rock or a soil reasonably free form organic and otherwise deleterious materials. Backfilling material shall be structurally stable and exhibit cohesion to effectively resist erosion form wind and rain and that cohesion shall not impede compaction.

_Placing_ of the material shall be such that care is taken not to disturb the alignment of the units during backfilling and compaction operations. The areas behind and above the Criblock™ wall system shall be the finished configuration shown on the engineered plans. Drainage diversion from the face of the wall is critical.

_Compaction_ within the Criblock™ wall system framework shall be a minimum of 90% relative compaction per ASTM D1556. For single depth systems, and the front cell of multi-depth systems, compaction tests shall be taken at the center of the cell approximately ⅓ the distance from the Back Stretcher and the Front Stretcher. For all other cells of multi-depth systems, tests shall be taken from the center of the cell.

**Erosion Control**

Measures must be taken to prevent erosion both during and after construction. Any runoff must be channeled or diverted from the back slope of the wall to prevent the surface water from washing out the fill material. This is the responsibility of the owner, unless indicated in contract documents.

**METHOD OF MEASUREMENT AND PAYMENT**
Where a contract includes construction of the Criblock™ wall system, the finished wall will be field measured and payment will be based on the total surface area of the wall face (on the slope) measured from the base of the wall, including all buried portions, to the top of the wall multiplied by the width or length of the wall at each change in elevation. I.E. - A wall that is 10.3’ tall by 100’ long would equate to a total surface area of 1,030 square feet. Where the contract calls for a supply of Criblock™ materials only, charges will be invoiced in pallet quantities as ordered.

**SPECIAL INSPECTIONS REQUIRED**

It is a requirement as a condition of these structural calculations, that a member of Retaining Walls Northwest, Inc. inspects in the field and approves the construction of any Criblock™ wall system project. Retaining Walls Northwest, Inc. can not accept any responsibility for any Criblock™ wall system project designed and or constructed without written and final approval from Retaining Walls Northwest, Inc.