



## Helix Code Compliance in Structural Concrete

### Section 1: Introduction

**All codes include specific language that allows performance-based design for alternative construction methods.** The Industry as a whole will continue to ensure codes are performance based for the purpose of allowing innovation and advancement in technology. Several examples are cited below.

At Helix, we have a decade of experience providing engineers and building officials the necessary documents and supporting data for approval. The average time to obtain an approval is 24-48 hours.

### Section 2: Examples

**2009 International Residential Code (IRC)® Section R104.11:** Alternative materials, design and methods of construction and equipment. “The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code”  
*The IRC is a major “Model Building Code” and allows alternative systems provided they meet the performance intent of the codes at the very highest level. This trumps all referenced codes and standards and allows Helix in all construction.*

#### **2012 International Building Code (IBC) Multiple Sections:**

**[A] 104.11 Alternative materials, design and methods of construction and equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.

**[A] 104.11.1 Research reports.** Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, shall consist of valid research reports from approved sources.

**[A] 104.11.2 Tests.** Whenever there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims for alternative materials or methods, the building official shall have the authority to require tests as evidence of compliance to be made at no expense to the jurisdiction. Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the building official shall approve



the testing procedures. Tests shall be performed by an approved agency. Reports of such tests shall be retained by the building official for the period required for retention of public records.

**California Building Code (CBC) Section 108.7:** Alternative Materials and Methods of Construction allows for alternative construction materials for any application provided they meet the performance based standards of the project.  
*While most states and municipalities adopt the IRC as their building code, some extend the codes with their own additions. California is the strictest due to concern over earthquake resistance.*

**Australian Building Code (BCA 2009) Section A0.3:** Compliance with BCA: A Building Solution will comply with BCA if it satisfies the Performance Requirements.  
*This section continues with instructions on how alternatives may be approved if you show that the design meets the required performance levels stated in the code.*

**ACI 318 – 11 Section 1.4** — Approval of special systems of design or construction. This section allows the use of alternative systems provided the sponsor shows by successful use, analysis or test that the system meets the intent of the code.  
*The model building codes defer to ACI 318 for structural concrete design. We received specific instructions regarding these performance based design provisions directly from the President of the American Concrete Institute in 2003, specifically we were instructed to operate under section 1.4 of the ACI 318 Code.*

### **Canadian Concrete Code 1.3 Alternative design procedures**

“Designs that use procedures which are not covered by this Standard but are carried out by a person qualified in the methods applied and provide a level of safety and performance equivalent to designs complying with this Standard are acceptable.”  
*This is similar to ACI 318’s provisions for performance-based design.*

### **Examples of ASTM Performance Based Provisions**

**ASTM C478: Manholes, Section 5.2.1** “Manufacturers are not prohibited from submitting to the owner, for approval prior to manufacture, designs other than those prescribed in the specific section for a product”  
*Helix submits a package that includes all the calculations and data necessary to show the Helix alternative meets the physical and performance requirements listed in the specification*

**ASTM C-78: Concrete Pipe, Section 5.1.1** “Acceptability of the pipe in all diameters and classes produced in accordance with 7.1 or 7.2 shall be determined by the results of the three-edge bearing tests as defined in 11.3.1”  
*Helix reinforced pipes are accepted so long as they pass the performance tests required by this section.*



### **Section 3: Independent Testing**

Helix has undergone thousands of independent tests conducted at certified laboratories including (but not limited to):

**ICC TL 217**–Element Materials Technology - ICC/IAS-accredited Labs/Inspection Agencies)

**ICC- TL458** –Testing Engineering & Consulting Services -ICC/IAS-accredited Labs/Inspection Agencies)

**ICC TL157/UL 263**- Underwriters Laboratory -ICC/IAS-accredited Labs/Inspection Agencies)

**EN 14889**- Consultants Europe – A EC NR201108/POL/05 Certified Laboratory (European Union)

### **Section 4: How to Specify Helix**

#### **Instructions for Specifying Helix in Structural Concrete**

When specifying Helix, the engineer of record should include both the original (rebar/mesh) design on the drawings along with a note indicating that the contractor may use either the existing design shown on the drawings OR Helix per the manufacturer’s instructions. See the example clip from the notes on a drawing that included a Helix option below:

ALTERNATE STEEL REINFORCEMENT: AS A SUBSTITUTION FOR MILD STEEL REINFORCEMENT SHOWN IN THIS DRAWING, THE CONTRACTOR SHALL BE ALLOWED TO USE HELIX 5-25 STEEL REINFORCEMENT AS SPECIFIED BY THE MANUFACTURER, HELIX STEEL.

The specification package we provide includes the instructions and all the calculations and backup information required by the codes.

Example specification language for inclusion in the concrete section of your project’s official specification book can be provided on request.