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### 2015 Concrete Girders

#### **INTERNATIONAL BUILDING CODE (IBC) | ICC DIGITAL CODES**

1 of concrete Post-tensioned: end of curing of concrete Age = 30. days, or time when a member is subjected to load in addition to its own weight 3 End of Step 2 Age = 1 year 4 End of Step 3 End of service life taking into

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account the loss of pre-stress force occurring over the pre-ceding time interval. The concrete stress  $f$ , at ...

### **Post-Tensioning Institute > Home**

Concrete cover for reinforcement measured from the outside face of the wall shall not be less than 1 1 / 2 inches (38 mm) for No. 5 bars and smaller, and not less than 2 inches (51 mm)

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for larger bars. 6.

Concrete shall have a specified compressive strength,  $f'_c$ , of not less than 2,500 psi (17.2 MPa). 7.

### **Post-Tensioning Institute > Education > PT Applications ...**

Chapter 9—Design of shrinkage-compensating concrete slabs, p.

360R-34

9.1—Introduction

9.2—Thickness

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determination

9.3—Reinforcement

9.4—Other

considerations Chapter

10—Design of post-  
tensioned slabs-on-  
ground, p. 360R-38

10.1—Introduction

10.2—Applicable  
design procedures

10.3—Slabs post-  
tensioned for crack  
control 10.4 ...

## **Post - Tensioned Concrete Design For ACI 318-08**

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### CHAPTER 5—DESIGN CONSIDERATIONS

5.1—Scope Chapter 5 addresses the design of concrete floors as it relates to their constructibility.

Specific design requirements for concrete floor construction are found in ACI 360R for slabs-on-ground, ACI 223R for shrinkage-compensating concrete floors, and ACI 421.1R and 421.2R for



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**Chapter 7: Fire and  
Smoke Protection  
Features, 2018  
North ...**

suspended floors.

The prestressed concrete bridge girder shown in Fig. 6.9 spans 21.6 m and supports a superimposed dead load  $G$  of 6 kN/m and a live load  $Q$  of 20 kN/m (excluding self-weight). A 150-mm thick topping slab was cast over the top flange of

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the beams after full stressing. The bridge is upgraded for HLPV resulting in an increase in the unfactored live loads applied to the beam.

### **Prestressed Concrete Bridge - an overview | ScienceDirect ...**

bridge design manual  
west virginia  
department of  
transportation division  
of highways

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engineering division  
march 1, 2004

### **Home**

### **[[committees.pci.org](http://committees.pci.org)]**

elastomeric bearings for pretensioned concrete beams, strand-and-tie method, and culverts. This chapter also addresses corrosion protection measures. Chapter 6, Archiving Design Notes. Policy for archiving bridge design notes in TxDOT's

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bridge inspection  
database management  
system.

### **Chapter 7 Post Tensioned Concrete**

Title: Chapter 5  
Concrete Structures -  
Bridge Design Manual  
M 23-50 Author:  
WSDOT Bridge Office  
Created Date:  
10/5/2020 4:56:21 PM

### **CHAPTER 11: PRESTRESSED CONCRETE**

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Chapter 7 Fire and

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702 Definitions. 703

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and Fire Tests. 704 Fire-

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Chapter 19 Concrete

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Chapter 21 Masonry

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Chapter 24 Glass and

Glazing ...

**ACI 360R-10 Guide**

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#### **to Design of Slabs-**

#### **on-Ground Concrete Girders**

concrete via bond.

#### 19.1.2 Post-Tensioning

In post-tensioning, the concrete member is first cast with one or more post-tensioning ducts or tubes for future insertion of tendons. Once the concrete is sufficiently strong, the tendons are stressed by jacking against the concrete.

When the desired prestress level is

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reached, the

## Concrete Girders

### **POST-TENSIONED IN BUILDINGS - STRUCTURAL TECHNOLOGIES**

Typical thickness ranges from 7.5- to 12-inches and any increases in material quantities are compensated by reductions in labor and equipment costs. With the elimination of stiffening ribs, a post-tensioned foundation

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## Chapter 7 Post Tensioned Concrete Slabs

can be constructed rapidly eliminating labor and equipment to dig the ribs and dispose of excavations.

### **Chapter 5 Concrete Structures - Bridge Design Manual M 23-50**

Herein describes in detail the various aspects of the post-tensioned concrete design procedure with the American code ACI 318-08 [ACI 2008].



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Various notations used in this chapter are listed in Table 1-1. For referencing to the pertinent sections of the ACI code in this chapter, a prefix “ACI” followed by the section number is used.

### **BRIDGE DESIGN MANUAL**

Post-tensioning is a method of reinforcing (strengthening) concrete or other materials with high-

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strength steel strands or bars, typically referred to as tendons. Our Future | Vision PTI envisions a future in which post-tensioning is the first choice for reinforcing all structures.

### **WisDOT Bridge Manual Chapter 19 - Prestressed Concrete**

704.7 Reinforcing.  
Thickness of protection  
for concrete or

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masonry reinforcement shall be measured to the outside of the reinforcement except that stirrups and spiral reinforcement ties are permitted to project not more than 0.5-inch (12.7 mm) into the protection.

### **2015 INTERNATIONAL BUILDING CODE (IBC) | ICC DIGITAL CODES**

Post-tensioned slabs

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can also function well with poor subgrades.

Shrinkage

compensating concrete (Type K), with an experienced contractor and designer, can allow a reduction or elimination of joints.

Reinforcement (rebar or steel fibers) is placed and the concrete actually expands as it cures, resulting in tensioning of the steel.

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anchorage details for post-tensioned floors are discussed in Chapter 6. Finally, Fig. 1.4: Total Annual Post-Tensioning Consumption and Percentage Used in Building Structures in Various Countries (1990 Figures) 3 Chapter 7 presents two examples that reiterate

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## Chapter 7 Post Tensioned Concrete Structures

the contents of  
Chapters 3, 5 and 6.  
While post-tensioning  
is a very attractive  
repair and

### **Bridge Design Manual - LRFD (LRF)**

(post-tensioning)  $\Delta\sigma$   
 $p_c = n\sigma_{pg} (C 11.3.2) N$   
 $N = 1 - 2 \cdot 1'$  where  $\Delta\sigma_p$   
= prestress loss in  
tendon  $n =$  Young's  
modulus ratio  $E_p/E_c$   $\sigma'$   
 $c_{pg} =$  compressive  
stress of concrete at  
tendon centroid due to

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tensioning  $N$  = number of tendon tensionings (i.e. number of tendon groups)  $E_c$  = Young's modulus of concrete  $E_p$  = Young's modulus of tendons; for CFRM  $E_p = E_f$  [2] Effects of friction ...

### **Concrete Joints - Types & Purpose of Joints in Concrete ...**

Boral concrete is a supplier to industrial, commercial and residential building



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projects combining technical expertise and on site capability. Boral Concrete has over 240 premix concrete plants around Australia producing a wide range of concrete mixes in metropolitan and country areas.

### **Recommendations for Estimating Prestress Losses**

Design of Post-  
Tensioned Concrete  
Floor Based on ACI

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318-19: 20: Punching:  
Slab Punching Design  
Based on ACI 318-19:  
21: Concrete Slab:  
Concrete Slab  
Perpendicular Flexure  
& Shear Capacity  
Based on ACI 318-19:  
22: Voided Section  
Capacity: Voided  
Section Design Based  
on ACI 318-19: 23:  
Concrete Diaphragm:  
Concrete Diaphragm in-  
plane Shear Design ...

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