

# Specifying HRC 500 Mechanical Couplers

V2 7/16/20



## **Introduction:**

This document has been prepared to address questions related to specifying HRC 500 series mechanical couplers in design documents, namely structural drawings and project specifications.

## **Project Specifications - Generic:**

In cases where HRC 500 mechanical couplers are desired over other products, but cannot be specifically identified by product/manufacturer, the following language can be considered for use in project specifications. This language would typically be found in section 03200 – Concrete Reinforcement. [Sample specifications are provided on page 2.](#)

- Mechanical couplers must be capable of developing ultimate capacity for the reinforcing bars being spliced.
- Mechanical couplers must provide a short effective splice length, not to exceed 4db.
- Mechanical couplers must mechanically butt splice reinforcing bars.
- Straight thread position coupler with upset bar ends that are integrally hot forged from the bar.
- Mechanically spliced assembly shall not be produced using a process that reduces the cross-sectional area of the bar.
- Mechanically spliced assembly must be easy to visually inspect after completion to verify correct installation.
- Mechanical splices for reinforcing bars must comply with requirements defined in ACI 318-11 section 12.14.3.2 / ACI 318-14 section 25.5.7.1.
- Mechanical splices must be qualified for use as either Type 1 or Type 2 mechanical splices of deformed steel reinforcing bars in accordance with ACI 318-11 section 21.1.6.1 / ACI 318-14 section 18.2.7.1.

**\*\*Note\*\*** The bar quality is as important as the headed product, and may affect the head-to-bar connection. Although HRC 500 Series Splicing System can be used with A615 reinforcing bar, we recommend that A706 is specified for critical locations or areas of potential inelasticity.

**\*\*Note\*\*** HRC 500 Series Splicing System is designed to exceed the capacity, stress and strain, tension, compression and full plastic, cyclic loading of A706 and A615 reinforcing steel.

## **Project Specifications - Specific:**

In cases where HRC 500 mechanical couplers are desired over other products, and can be specifically identified by product/manufacturer, the following language can be considered for use in project specifications. This language would typically be found in section 03200 – Concrete Reinforcement. [Sample specifications are provided on page 2.](#)

- HRC 500 Series Splicing System manufactured by Headed Reinforcement Corp (HRC).
- HRC 500/510 Xtender Mechanical Coupler System manufactured by Headed Reinforcement Corp (HRC).

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## Sample Product Specifications

DIVISION: 03 00 00 – CONCRETE

SECTION: 03 21 00 – REINFORCING STEEL

### 1. General

#### 1.1 Summary

A. This section includes

- a. Mechanical splicing systems for reinforcing bars

#### 1.2 Related Sections

A. The following sections are related to this section

- a. Section 03 20 00 – Concrete Reinforcing
- b. Section 03 30 00 – Cast-in-Place Concrete

#### 1.3 References

A. American Concrete Institute (ACI)

- a. ACI 318: Building Code Requirements for Structural Concrete

B. American Society of Testing and Materials (ASTM)

- a. ASTM A970: Standard Specification for Headed Steel Bars for Concrete Reinforcement

C. International Building Code (IBC)

- a. 2006, 2009, 2012, 2015, 2018 International Building Code

D. International Code Council Evaluation Services (ICC-ES)

- a. ESR-2764

### 2. Products

#### 2.1 Manufacturers

A. Acceptable manufacturers

- a. Headed Reinforcement Corporation (HRC)  
11200 Condor Ave, Fountain Valley, CA 92708  
(714) 557-1455

[www.hrc-usa.com](http://www.hrc-usa.com)

[engineer@hrc-usa.com](mailto:engineer@hrc-usa.com)

B. Acceptable fabricators (HRC 500 upset heads)

- a. HRC Approved Fabricators as certified and identified by HRC. Inquire with HRC for name, location, contact information of Approved Fabricators.

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## 2.2 Reinforcing Bar Splicing Systems

### A. Straight Threaded Coupler with Upset Bar Ends

- a. HRC product: HRC 500 Series Splicing System
- b. HRC product: HRC 500/510 Xtender Mechanical Coupler System
- c. <https://www.hrc-usa.com/hrc-500-series/>
- d. Reference ICC-ES ESR-2764 section 3.1 for detailed description

## 3. Installation

### 3.1 General

- A. Follow all manufacturer's recommendations and written instructions when installing reinforcing bar, reinforcing bar splicing systems and/or headed reinforcing bars systems.

### 3.2 Installation

- A. HRC 500 Series Splicing System
  - a. Reference ICC-ES ESR-2764 section 4.2

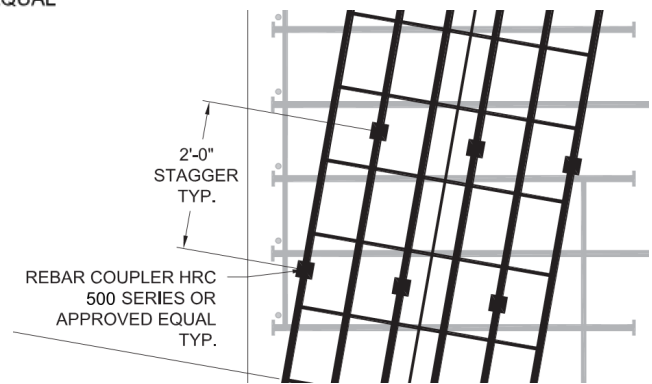
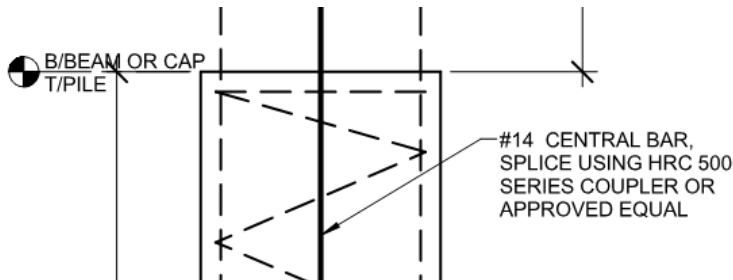
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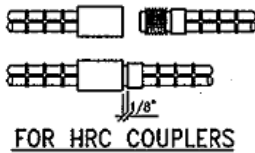
## Structural Drawings - Specific:

In cases where HRC 500 mechanical couplers desired over other products, and can be specifically identified by product/manufacturer, the following details depict examples of how couplers can be shown & called out on structural drawings.



### NOTES:

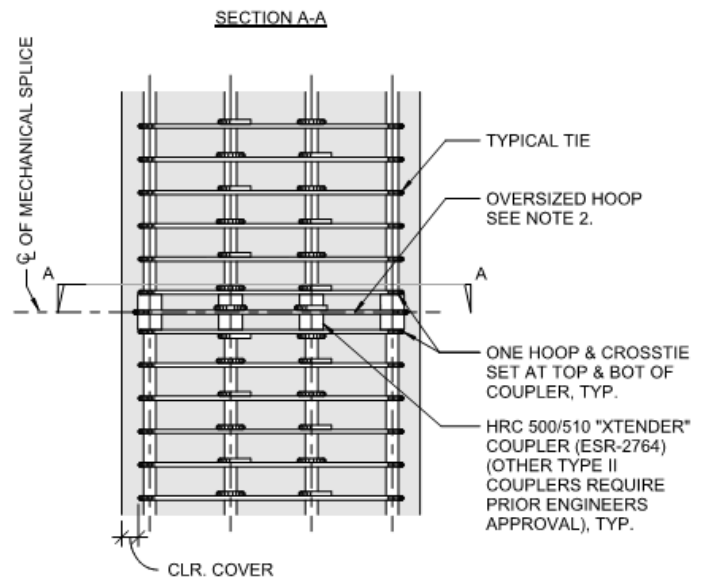
1. ALL MECHANICAL COUPLERS SHALL COMPLY WITH ICC ESR-2764 OR ER-3967.
2. MECHANICAL COUPLERS SHALL OCCUR @ LOCATIONS IDENTIFIED PER PLAN.
3. COUPLERS ARE TYPE II CONNECTORS FOR USE IN SEISMIC FRAMES.
4. INSTALLATION PROCEDURE SHALL FOLLOW MANUFACTURERS RECOMMENDATIONS.
5. MAINTAIN COVER AND CLEAR SPACING PER PLAN AND CODE.
6. COMPLY WITH ACI 318 SECTION 12.14.3.2.
7. ALL MECHANICAL COUPLERS USED ON THE PROJECT MUST BE TESTED. TEST 2% OF ALL COUPLERS TO BE USED ON THE PROJECT FOR EACH BAR SIZE USED. TEST COUPLERS TO THE LESSER OF 100% OF THE ULTIMATE TENSILE STRENGTH OR 125% OF THE SPECIFIED YIELD STRENGTH. THE TEST SAMPLES ARE NOT REQUIRED TO BE CUT FROM PLACED REBAR.



## 19 MECHANICAL COUPLER DETAIL

S105 REF.

SCALE: NONE



### NOTES:

1. HRC COUPLERS (TYPE 2 MECHANICAL SPLICE) MAY BE PLACED IN ANY LOCATION.

### Warning:

HRC products are designed to meet and exceed the standards referenced in this document, but individual project specifications and quality control requirements apply. HRC destructively tensile tests finished products daily as part of our quality control, but cannot be responsible for material furnished by local fabricators and/or contractors using HRC related equipment or components. Aspects of structural design, evaluation of product fitness for use, suitability or similar attributes are the responsibility of others.