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CADWELD INSPECTION ACTIVITIES	PREPARED BY: <i>J. C. Smith</i>		7-11-78 DATE	
	APPROVED BY: <i>A. B. Johnson</i>		7/11/78 DATE	

**FOR INFORMATION ONLY**

- 1.0 REFERENCES
- 1-A Specification 2323-SS-11, "Cadweld Connectors for Reinforcing Steel"
  - 1-b Erico Products, Inc. Manual RB 10M-974, "Cadweld Rebar Splices"
  - 1-C Erico Products, Inc. Catalog RB 5M-274, "Inspection of the Cadweld Rebar Splices"

**HISTORICAL FILE**

- 2.0 GENERAL
- 2.1 PURPOSE

To describe the QC inspection and testing methods for the mechanical splicing of reinforcing bars using the Cadweld Rebar splice method.

- 2.2 SCOPE

The control methods for qualification, requalification, identification of splicer and cadwelds, production records, cadweld inspection, and sampling and testing.

- 3.0 INSTRUCTION
- 3.1 QUALIFICATION OF SPLICERS

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3.1.1 Qualification Methods

- a. Each proposed splicer shall make two qualification splices for each position (horizontal, vertical or diagonal) using the largest bar size to be used in that position.
- b. Qualification splices shall meet visual and tensile test requirements of References 1-A and 1-B.

3.1.2 Documentation of Qualifications

- a. Document splicer qualification on Cadweld Splicer Qualification Form (Figure 1).
- b. Maintain Cadweld Splicer Qualification Status Report (Figure 2) for all splicers.
- c. File splicer qualification documents in QA Vault.

3.2 REQUALIFICATION

- a. Requalification, as stated in Reference 1-A, shall be identical to the original qualification procedure.
- b. The splicer shall be qualified for all positions used at that time.

3.3 IDENTIFICATION OF SPLICER AND CADWELDS

Each qualified cadweld splicer shall receive a unique identification designator in accordance with the following example:

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"AVIP" where"

- A - Denotes the splicer's I.D.
- V - Denotes vertical position (H-horizontal, D-diagonal)
- I - Consecutive number of splices the individual splicer has made.
- P - Denotes a production test splice (S-sister test splice, Q-qualification test splice)

### 3.4 PRODUCTION RECORDS

#### 3.4.1 Cadweld Splicer Consecutive Splice Record

Maintain Cadweld Splicer Consecutive Splice Record (Figure 3) for each splicer, position and bar size.

#### 3.4.2 Mapping Rebar Splice Locations

- a. All rebar splices on the containment wall and dome shall be located on a record drawing prior to concrete placement.
- b. Include replacements for production test samples of splices with identification numbers of all test splices.

#### 3.4.3 Cadweld Sleeve Inspection Record

Maintain Cadweld Sleeve Inspection Record (Figure 4) identifying kind of test splice, splice identification bar size, B&R construction preparation inspection, QC preparation and final visual inspection.

### 3.5 CADWELD INSPECTION

#### 3.5.1 Preparation Inspection

Perform random inspection or as-needed on cadweld preparation and document on Figure 4.

#### 3.5.2 Visual Inspection

- a. Visually inspect all qualification, production and sister splices to requirements of Reference 1-C.

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- b. Indicate acceptance or rejection by initialing Figure 1 or 4 (whichever is applicable).
- c. Initialing shall verify that requirements of Reference 1-C have been considered during inspection.

3.5.3 Acceptance Mark

Identify accepted splice with a permanently marked white stripe after splice has been assigned a white I.D. number by cadweld splicer.

3.5.4 Rejected Splices

- a. Mark rejected splices indelibly with a permanent yellow stripe.
- b. Rejected splices shall be removed, taken from the work area and replaced in accordance with the requirements of Reference 1-A.

3.6 SAMPLING AND TESTING OF CADWELDS

3.6.1 Selection of Splices

Select location of production and sister splices for testing to maintain frequency requirements.

3.6.2 Determination of Test Requirements

- a. Review the Cadweld Splicer's Consecutive Splice Records (Figure 3) and determine whether a production or sister test is required, based on frequency requirements of Reference 1-A.
- b. If a test is required, check the appropriate blank on Cadweld Consecutive Splice Record (Figure 3) under test ("P" for production, "S" for sister).

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3.6.3 Marking Test Splice

- a. Identify the accepted production test splice by a stripe of red permanent marking.
- b. Splice I.D. shall be affixed in white permanent marking by the cadweld splicer.
- c. The test splice shall be removed by B&R Construction, and delivered to the site test lab for tensile testing.

3.6.4 Sister Test Splices

- a. If a sister test splice is required, instruct the splicer to prepare the sister splice immediately after completion of the production splice in preparation.
- b. The sister splice shall be a removable splice made adjacent to and under the same conditions as the production splice.
- c. Identify the accepted sister splice by a stripe of red permanent marking.
- d. The cadweld splicer shall affix the splice I.D. to the sister splice in white permanent marking.

3.6.5 Reporting

- a. Complete items 1, 2 and 3 on Cadweld Splice Testing Report (Figure 5) for each test splice selected and submit form to the site test lab.
- b. The site test lab shall perform each test and record the remaining data on Figure 5.
- c. The site test lab shall submit completed report to the QC Documentation Supervisor for review and subsequent filing in the QA Vault.

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- d. Complete the Cadweld Sleeve Tensile Test Average Report (Figure 6) for each 15 production or tensile tests and file it in the QA Vault.
- e. Complete the Personnel Qualification Review (Figure 7) on a monthly basis and file in the QA Vault.

3.6.6 Test Failures

- a. Evaluate test failures in accordance with Reference 1-A.
- b. Notify the Engineer in writing if a test failure is caused by the breaking of the reinforcing bar.

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Figure 1

CADWELD SPLICER QUALIFICATION

PROJECT: COMANCHE PEAK    JOB NO.: \_\_\_\_\_    UNIT: \_\_\_\_\_    PAGE \_\_\_\_\_ OF \_\_\_\_\_

1. Splicer's Name \_\_\_\_\_ Badge No. \_\_\_\_\_

2. B&R Splice I.D. No. \_\_\_\_\_

3. Position: Horizontal; Vertical; Diagonal (Circle One)

4. Qualification Data

Inspection Accept (✓) Reject (X) (See Para. 5.7.2)	Ultimate Load (lbf)	nom. X Sect Area (in <sup>2</sup> ) <sup>a</sup>	Tensile Strength (psi) <sup>b</sup>	Failure Type <sup>c</sup>
_____	_____	4.0	_____	_____
_____	_____	4.0	_____	_____

5. Average tensile strength equals \_\_\_\_\_ p.s.i.

6. Tensile Testing by \_\_\_\_\_ Date \_\_\_\_\_  
Checked \_\_\_\_\_ Date \_\_\_\_\_

7. Qualification Test Results Satisfactory Un satisfactory (Circle One)  
Quality Control \_\_\_\_\_ Date \_\_\_\_\_

COMMENTS

- NOTES:
- a. All qualification tests performed on #16 rebar.
  - b. Minimum p.s.i. for each test is 75,000 p.s.i.
  - c. Failure Types: (P) Pullout; (S) Sleeve Failure; (BF) Bar Failure

Figure 2

CADWELD SPLICER QUALIFICATION STATUS REPORT

PROJECT: COMANCHE PEAK      JOB NO.:      UNIT      PAGE      OF

SPLICER'S I.D. NO.	SPLICER'S NAME	SPLICER'S BADGE NO.	QUALIFICATION STATUS						
			HORIZONTAL		VERTICAL		DIAGONAL		
			DATE	QC INITIALS	DATE	QC INITIALS	DATE	QC INITIALS	

NOTES:



Figure 3

CADWELD SPLICER CONSECUTIVE SPLICE RECORD

PROJECT: COMANCHE PEAK JOH NO. \_\_\_\_\_ UNIT \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_

CONSEC. NO.	B & R SPLICE I.D.	DRWG. NO.	TEST		CON. NO.	SLEEVE I.D. NO.	DRWG. NO.	TEST	
			P	S				P	S

BAR SIZE \_\_\_\_\_  
POSITION \_\_\_\_\_ SPLICER NO. \_\_\_\_\_

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Figure 4

CADWELD SLEEVE INSPECTION RECORD

PROJECT: COMANCHE PEAK

JOB NO.:

UNIT \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_

DATE SPLICES MADE: \_\_\_\_\_

CADWELD RECORD DWG. NO. \_\_\_\_\_

TEST SPLICE TYPE PROD. (P) SISTER (S)	O & R SPLICE I.D.	BAR SIZE	PREPARATION INSPECTION			COMPLETED SPLICE VISUAL INSPECTION		
			CONSTR. INSP. (INITIALS)	CHECK IF INSPECTED BY UC	QC INSPECTOR (INITIALS)	DATE	RESULTS ACCEPT (✓) REJECT (X)	INSPECTOR (INITIALS)

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Figure 5

CADWELD SPLICE TESTING REPORT

PROJECT: COMANCHE PEAK JOB NO. \_\_\_\_\_ UNIT: \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_

1. Test Splice Type (P) Production, (S) Sitter .....
2. Splice I.D. Number .....
3. Bar Size .....
4. Test Splice Tensile Test Data

Ultimate Load (lbs)	Nominal X Section Area (in <sup>2</sup> )	Tensile Strength (p.s.i.) (a)	Failure Type (b)
_____	_____	_____	_____

5. Tensile Testing By \_\_\_\_\_ DATE \_\_\_\_\_  
 Checked \_\_\_\_\_ DATE \_\_\_\_\_

6. Tensile Test Results (Sat.) Satisfactory; (Unsat.) Unsatisfactory

COMMENTS:

NOTES: (a) Minimum p.s.i. requirement is 75,000  
 (b) Failure Types: (P) Pullout; (S) Sleeve Failure; (BF) Bar Failure.

QA Review \_\_\_\_\_ DATE \_\_\_\_\_

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Figure 6

CADWELD SLEEVE TENSILE TEST AVERAGE REPORT

PROJECT: \_\_\_\_\_ JOB NO: \_\_\_\_\_ UNIT \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_

B & R SPLICE I.D. NO.	BAR SIZE	TEST SPLICE TYPE		INDIVIDUAL TENSILE STRENGTH (p.s.i.)
		PROD. (P)	SISTER (S)	

AVERAGE OF 15 SAMPLES \_\_\_\_\_  
 QUALITY CONTROL:  
 COMPUTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 QA REVIEW: \_\_\_\_\_ DATE: \_\_\_\_\_

