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# TEST REPORT

| | | | |
|---|---|---|---|
| TESTED FOR: | TRU-WELD DIVISION<br>TFP CORPORATION<br>PO BOX 702<br>460 LAKE ROAD<br>MEDINA, OHIO 44256 | PROJECT: | RE-QUALIFICATION TESTS<br>WELD STUDS |
| DATE: | JUNE 8, 2006 | OUR REPORT NO.: | 138-68016 |

On May 3 and 4, 2006 our representative (Larry Mach) was at TFP Corporation to witness the welding and testing of 3/8", 1/2", 5/8", 3/4", and 7/8" diameter weld studs.

The welding and testing were conducted in accordance with the AWS Structural Code, D1.1, Section 7 and Annex G.

Data pertinent to material used, welding and test results are contained in the accompanying reports.

Respectfully submitted,
***Professional Service Industries, Inc.***

Edward M. Kudlaty,
Department Manager
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Technician: L Mach

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TRU-WELD
3/8" DIAMETER WELD STUDS

QUALIFICATION TESTS

## I. PURPOSE

To test and re-qualify Tru-Weld 3/8" diameter weld studs for weldability and physical properties per AWS D1.1, Section 7 and Annex G.

## II. EQUIPMENT AND MATERIALS

Prior to automatic stud welding the proper equipment is to be selected based on the diameter of the stud to be welded and the conditions under which the stud is to be welded.

Based on the optimum time and current requirements for a specific diameter stud the stud welding equipment chosen must have sufficient current output and time control to achieve an acceptable weld per AWS D1.1 Section 7.7.

## III. PROCEDURE AND RESULTS

Specimens were prepared by welding the 3/8" diameter stud to the 1/2" x 2-1/2" x 2-1/2" mild steel plates.

Weldability was evaluated by testing specimens specified in AWS D1.1 and Annex G.

## IV. CONCLUSIONS

1. Weldability of Tru-Weld 3/8" diameter studs was established by the ability of the weld to consistently develop the full strength during the stud- bending test.

2. Physical and chemical properties of the subject studs conform to the requirements of ASTM-A-108 carbon steel bars.

3. Results of the Mechanical Properties and Chemical Analysis of the studs and plates used in these tests are show in the attached test data forms.

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## TABLE I

MECHANICAL PROPERTIES OF TRU-WELD 3/8" DEFORMED BAR

| | |
|---|---|
| HEAT NUMBER | F149699-6 |
| AISI GRADE | C1018 |
| TENSILE | 95973 PSI |
| YIELD | 81487 PSI |

## TABLE II

CHEMICAL PROPERTIES OF TRU-WELD 3/8" DEFORMED BAR

| | |
|---|---|
| HEAT NUMBER | F149699-6 |
| CARBON | .170 |
| MANGANESE | .700 |
| SULFUR | .020 |
| SILICON | .190 |

## TABLE IIII

MECHANICAL ANALYSIS OF BASE PLATES (A36)

| | |
|---|---|
| HEAT NUMBER | N545509 |
| CARBON | .170 |
| MANGANESE | .590 |
| PHOSPHORUS | .023 |
| SULFUR | .042 |

STUD BASE QUALIFICATION TEST
3/10/2006
10% BELOW OPTIMUM

OPTIMUM TIME .350 SECONDS
OPTIMUM CURRENT 600 AMPS

| SPECIMEN # | SIZE | TIME | AMPS | BEND TEST | LOCATION OF FAILURE | TENSILE | YIELD |
|---|---|---|---|---|---|---|---|
| 1 | RB 3/8 X 12-1/8 | 0.350 | 544 | PASSED | SHANK | | |
| 2 | RB 3/8 X 12-1/8 | 0.350 | 540 | PASSED | SHANK | | |
| 3 | RB 3/8 X 12-1/8 | 0.350 | 541 | PASSED | SHANK | | |
| 4 | RB 3/8 X 12-1/8 | 0.350 | 540 | PASSED | SHANK | | |
| 5 | RB 3/8 X 12-1/8 | 0.350 | 540 | PASSED | SHANK | | |
| 6 | RB 3/8 X 12-1/8 | 0.350 | 540 | PASSED | SHANK | | |
| 7 | RB 3/8 X 12-1/8 | 0.350 | 540 | PASSED | SHANK | | |
| 8 | RB 3/8 X 12-1/8 | 0.350 | 540 | PASSED | SHANK | | |
| 9 | RB 3/8 X 12-1/8 | 0.350 | 540 | PASSED | SHANK | | |
| 10 | RB 3/8 X 12-1/8 | 0.350 | 540 | PASSED | SHANK | | |
| 11 | RB 3/8 X 12-1/8 | 0.350 | 540 | PASSED | SHANK | | |
| 12 | RB 3/8 X 12-1/8 | 0.350 | 540 | PASSED | SHANK | | |
| 13 | RB 3/8 X 12-1/8 | 0.350 | 540 | PASSED | SHANK | | |
| 14 | RB 3/8 X 12-1/8 | 0.350 | 540 | PASSED | SHANK | | |
| 15 | RB 3/8 X 12-1/8 | 0.350 | 540 | PASSED | SHANK | | |
| 16 | RB 3/8 X 12-1/8 | 0.350 | 540 | PASSED | SHANK | | |
| 17 | RB 3/8 X 12-1/8 | 0.350 | 540 | PASSED | SHANK | | |
| 18 | RB 3/8 X 12-1/8 | 0.350 | 540 | PASSED | SHANK | | |
| 19 | RB 3/8 X 12-1/8 | 0.350 | 544 | PASSED | SHANK | | |
| 20 | RB 3/8 X 12-1/8 | 0.350 | 544 | PASSED | SHANK | | |
| 21 | RB 3/8 X 12-1/8 | 0.350 | 540 | | SHANK | 99143 | |
| 22 | RB 3/8 X 12-1/8 | 0.350 | 540 | | SHANK | 97785 | 88278 |
| 23 | RB 3/8 X 12-1/8 | 0.350 | 540 | | SHANK | 98464 | |
| 24 | RB 3/8 X 12-1/8 | 0.350 | 540 | | SHANK | 99143 | |
| 25 | RB 3/8 X 12-1/8 | 0.350 | 540 | | SHANK | 98464 | |
| 26 | RB 3/8 X 12-1/8 | 0.350 | 540 | | SHANK | 98690 | |
| 27 | RB 3/8 X 12-1/8 | 0.350 | 540 | | SHANK | 98238 | |
| 28 | RB 3/8 X 12-1/8 | 0.350 | 540 | | SHANK | 95069 | |
| 29 | RB 3/8 X 12-1/8 | 0.350 | 540 | | SHANK | 92805 | |
| 30 | RB 3/8 X 12-1/8 | 0.350 | 540 | | SHANK | 99369 | |

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STUD BASE QUALIFICATION TEST
3/10/2006
10% ABOVE OPTIMUM

OPTIMUM TIME .350 SECONDS
OPTIMUM CURRENT 600 AMPS

| SPECIMEN # | SIZE | TIME | AMPS | BEND TEST | LOCATION OF FAILURE | TENSILE | YIELD |
|---|---|---|---|---|---|---|---|
| 1 | RB 3/8 X 12-1/8 | 0.350 | 672 | PASSED | SHANK | | |
| 2 | RB 3/8 X 12-1/8 | 0.350 | 672 | PASSED | SHANK | | |
| 3 | RB 3/8 X 12-1/8 | 0.350 | 672 | PASSED | SHANK | | |
| 4 | RB 3/8 X 12-1/8 | 0.350 | 672 | PASSED | SHANK | | |
| 5 | RB 3/8 X 12-1/8 | 0.350 | 672 | PASSED | SHANK | | |
| 6 | RB 3/8 X 12-1/8 | 0.350 | 676 | PASSED | SHANK | | |
| 7 | RB 3/8 X 12-1/8 | 0.350 | 668 | PASSED | SHANK | | |
| 8 | RB 3/8 X 12-1/8 | 0.350 | 672 | PASSED | SHANK | | |
| 9 | RB 3/8 X 12-1/8 | 0.350 | 672 | PASSED | SHANK | | |
| 10 | RB 3/8 X 12-1/8 | 0.350 | 672 | PASSED | SHANK | | |
| 11 | RB 3/8 X 12-1/8 | 0.350 | 672 | PASSED | SHANK | | |
| 12 | RB 3/8 X 12-1/8 | 0.350 | 672 | PASSED | SHANK | | |
| 13 | RB 3/8 X 12-1/8 | 0.350 | 672 | PASSED | SHANK | | |
| 14 | RB 3/8 X 12-1/8 | 0.350 | 672 | PASSED | SHANK | | |
| 15 | RB 3/8 X 12-1/8 | 0.350 | 672 | PASSED | SHANK | | |
| 16 | RB 3/8 X 12-1/8 | 0.350 | 672 | PASSED | SHANK | | |
| 17 | RB 3/8 X 12-1/8 | 0.350 | 672 | PASSED | SHANK | | |
| 18 | RB 3/8 X 12-1/8 | 0.350 | 668 | PASSED | SHANK | | |
| 19 | RB 3/8 X 12-1/8 | 0.350 | 672 | PASSED | SHANK | | |
| 20 | RB 3/8 X 12-1/8 | 0.350 | 672 | PASSED | SHANK | | |
| 21 | RB 3/8 X 12-1/8 | 0.350 | 672 | | SHANK | 98238 | |
| 22 | RB 3/8 X 12-1/8 | 0.350 | 668 | | SHANK | 98464 | 93258 |
| 23 | RB 3/8 X 12-1/8 | 0.350 | 672 | | SHANK | 96200 | |
| 24 | RB 3/8 X 12-1/8 | 0.350 | 672 | | SHANK | 98690 | |
| 25 | RB 3/8 X 12-1/8 | 0.350 | 672 | | SHANK | 96200 | |
| 26 | RB 3/8 X 12-1/8 | 0.350 | 672 | | SHANK | 95069 | |
| 27 | RB 3/8 X 12-1/8 | 0.350 | 672 | | SHANK | 98464 | |
| 28 | RB 3/8 X 12-1/8 | 0.350 | 672 | | SHANK | 99596 | |
| 29 | RB 3/8 X 12-1/8 | 0.350 | 672 | | SHANK | 97785 | |
| 30 | RB 3/8 X 12-1/8 | 0.350 | 672 | | SHANK | 97332 | |

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TRU-WELD
1/2" DIAMETER WELD STUDS

QUALIFICATION TESTS

## I. PURPOSE

To test and re-qualify Tru-Weld 1/2" diameter weld studs for weldability and physical properties per AWS D1.1, Section 7 and Annex G.

## II. EQUIPMENT AND MATERIALS

Prior to automatic stud welding the proper equipment is to be selected based on the diameter of the stud to be welded and the conditions under which the stud is to be welded.

Based on the optimum time and current requirements for a specific diameter stud, the stud welding equipment chosen must have sufficient current output and time control to achieve an acceptable weld per AWS D1.1 Section 7.7.

## III. PROCEDURE AND RESULTS

Specimens were prepared by welding the 1/2" diameter stud to the 1/2" x 2-1/2" x 2-1/2" mild steel plates.

Weldability was evaluated by testing specimens specified in AWS D1.1 and Annex G.

## IV. CONCLUSIONS

4. Weldability of Tru-Weld 1/2" diameter studs was established by the ability of the weld to consistently develop the full strength during the stud- bending test.

5. Physical and chemical properties of the subject studs conform to the requirements of ASTM-A-108 carbon steel bars.

6. Results of the Mechanical Properties and Chemical Analysis of the studs and plates used in these tests are show in the attached test data forms.

REPORTS MAY NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT WRITTEN PERMISSION BY PROFESSIONAL SERVICE INDUSTRIES, INC.

## TABLE I

MECHANICAL PROPERTIES OF TRU-WELD 1/2" CONCRETE ANCHORS

| | |
|---|---|
| HEAT NUMBER | F150935-4 |
| AISI GRADE | C1015 |
| TENSILE | 77285 PSI |
| YIELD | 62134 PSI |

## TABLE II

CHEMICAL PROPERTIES OF TRU-WELD 1/2" CONCRETE ANCHORS

| | |
|---|---|
| HEAT NUMBER | F150935-4 |
| CARBON | .160 |
| MANGANESE | .480 |
| SULFUR | .016 |
| SILICON | .210 |

## TABLE IIII

MECHANICAL ANALYSIS OF BASE PLATES (A36)

| | |
|---|---|
| HEAT NUMBER | N545509 |
| CARBON | .170 |
| MANGANESE | .590 |
| PHOSPHORUS | .023 |
| SULFUR | .042 |

STUD BASE QUALIFICATION TEST
5/3/2006
10% BELOW OPTIMUM

OPTIMUM TIME 0.500 SECONDS
OPTIMUM CURRENT 900 AMPS

| SPECIMEN # | SIZE | TIME | AMPS | BEND TEST | LOCATION OF FAILURE | TENSILE | YIELD |
|---|---|---|---|---|---|---|---|
| 1 | CA 1/2 X 5-5/16 | 0.510 | 810 | PASSED | SHANK | | |
| 2 | CA 1/2 X 5-5/16 | 0.500 | 808 | PASSED | SHANK | | |
| 3 | CA 1/2 X 5-5/16 | 0.500 | 810 | PASSED | SHANK | | |
| 4 | CA 1/2 X 5-5/16 | 0.500 | 808 | PASSED | SHANK | | |
| 5 | CA 1/2 X 5-5/16 | 0.500 | 810 | PASSED | SHANK | | |
| 6 | CA 1/2 X 5-5/16 | 0.500 | 810 | PASSED | SHANK | | |
| 7 | CA 1/2 X 5-5/16 | 0.500 | 810 | PASSED | SHANK | | |
| 8 | CA 1/2 X 5-5/16 | 0.500 | 810 | PASSED | SHANK | | |
| 9 | CA 1/2 X 5-5/16 | 0.500 | 810 | PASSED | SHANK | | |
| 10 | CA 1/2 X 5-5/16 | 0.500 | 810 | PASSED | SHANK | | |
| 11 | CA 1/2 X 5-5/16 | 0.500 | 810 | PASSED | SHANK | | |
| 12 | CA 1/2 X 5-5/16 | 0.500 | 810 | PASSED | SHANK | | |
| 13 | CA 1/2 X 5-5/16 | 0.500 | 810 | PASSED | SHANK | | |
| 14 | CA 1/2 X 5-5/16 | 0.500 | 810 | PASSED | SHANK | | |
| 15 | CA 1/2 X 5-5/16 | 0.500 | 808 | PASSED | SHANK | | |
| 16 | CA 1/2 X 5-5/16 | 0.500 | 810 | PASSED | SHANK | | |
| 17 | CA 1/2 X 5-5/16 | 0.500 | 810 | PASSED | SHANK | | |
| 18 | CA 1/2 X 5-5/16 | 0.500 | 807 | PASSED | SHANK | | |
| 19 | CA 1/2 X 5-5/16 | 0.500 | 810 | PASSED | SHANK | | |
| 20 | CA 1/2 X 5-5/16 | 0.500 | 810 | PASSED | SHANK | | |
| 21 | CA 1/2 X 5-5/16 | 0.500 | 807 | | SHANK | 83813 | 64919 |
| 22 | CA 1/2 X 5-5/16 | 0.500 | 810 | | SHANK | 87322 | 70010 |
| 23 | CA 1/2 X 5-5/16 | 0.500 | 810 | | SHANK | 86940 | 66191 |
| 24 | CA 1/2 X 5-5/16 | 0.500 | 808 | | SHANK | 87185 | 66828 |
| 25 | CA 1/2 X 5-5/16 | 0.500 | 810 | | SHANK | 86049 | 63646 |
| 26 | CA 1/2 X 5-5/16 | 0.500 | 810 | | SHANK | 85540 | 68737 |
| 27 | CA 1/2 X 5-5/16 | 0.500 | 810 | | SHANK | 87704 | 66191 |
| 28 | CA 1/2 X 5-5/16 | 0.500 | 810 | | SHANK | 87322 | 64282 |
| 29 | CA 1/2 X 5-5/16 | 0.500 | 807 | | SHANK | 86813 | 66191 |
| 30 | CA 1/2 X 5-5/16 | 0.500 | 800 | | SHANK | 86685 | 66191 |

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STUD BASE QUALIFICATION TEST
5/3/2006
10% ABOVE OPTIMUM

OPTIMUM TIME 0.500 SECONDS
OPTIMUM CURRENT 900 AMPS

| SPECIMEN # | SIZE | TIME | AMPS | BEND TEST | LOCATION OF FAILURE | TENSILE | YIELD |
|---|---|---|---|---|---|---|---|
| 1 | CA 1/2 X 5-5/16 | 0.500 | 998 | PASSED | SHANK | | |
| 2 | CA 1/2 X 5-5/16 | 0.500 | 998 | PASSED | SHANK | | |
| 3 | CA 1/2 X 5-5/16 | 0.500 | 990 | PASSED | SHANK | | |
| 4 | CA 1/2 X 5-5/16 | 0.500 | 996 | PASSED | SHANK | | |
| 5 | CA 1/2 X 5-5/16 | 0.500 | 991 | PASSED | SHANK | | |
| 6 | CA 1/2 X 5-5/16 | 0.500 | 992 | PASSED | SHANK | | |
| 7 | CA 1/2 X 5-5/16 | 0.500 | 990 | PASSED | SHANK | | |
| 8 | CA 1/2 X 5-5/16 | 0.500 | 990 | PASSED | SHANK | | |
| 9 | CA 1/2 X 5-5/16 | 0.500 | 990 | PASSED | SHANK | | |
| 10 | CA 1/2 X 5-5/16 | 0.500 | 992 | PASSED | SHANK | | |
| 11 | CA 1/2 X 5-5/16 | 0.500 | 990 | PASSED | SHANK | | |
| 12 | CA 1/2 X 5-5/16 | 0.500 | 998 | PASSED | SHANK | | |
| 13 | CA 1/2 X 5-5/16 | 0.500 | 995 | PASSED | SHANK | | |
| 14 | CA 1/2 X 5-5/16 | 0.500 | 993 | PASSED | SHANK | | |
| 15 | CA 1/2 X 5-5/16 | 0.500 | 990 | PASSED | SHANK | | |
| 16 | CA 1/2 X 5-5/16 | 0.500 | 990 | PASSED | SHANK | | |
| 17 | CA 1/2 X 5-5/16 | 0.490 | 994 | PASSED | SHANK | | |
| 18 | CA 1/2 X 5-5/16 | 0.500 | 990 | PASSED | SHANK | | |
| 19 | CA 1/2 X 5-5/16 | 0.500 | 990 | PASSED | SHANK | | |
| 20 | CA 1/2 X 5-5/16 | 0.500 | 990 | PASSED | SHANK | | |
| 21 | CA 1/2 X 5-5/16 | 0.500 | 990 | | SHANK | 87217 | 66208 |
| 22 | CA 1/2 X 5-5/16 | 0.500 | 994 | | SHANK | 77031 | 68755 |
| 23 | CA 1/2 X 5-5/16 | 0.500 | 990 | | SHANK | 86835 | 71301 |
| 24 | CA 1/2 X 5-5/16 | 0.500 | 998 | | SHANK | 73211 | 68755 |
| 25 | CA 1/2 X 5-5/16 | 0.500 | 998 | | SHANK | 87089 | 71301 |
| 26 | CA 1/2 X 5-5/16 | 0.500 | 997 | | SHANK | 79068 | 63662 |
| 27 | CA 1/2 X 5-5/16 | 0.500 | 990 | | SHANK | 76903 | 68755 |
| 28 | CA 1/2 X 5-5/16 | 0.500 | 994 | | SHANK | 80978 | 68755 |
| 29 | CA 1/2 X 5-5/16 | 0.500 | 998 | | SHANK | 87471 | 68755 |
| 30 | CA 1/2 X 5-5/16 | 0.500 | 998 | | SHANK | 85561 | 62389 |

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TRU-WELD
5/8" DIAMETER WELD STUDS

QUALIFICATION TESTS

## I. PURPOSE

To test and re-qualify Tru-Weld 5/8" diameter weld studs for weldability and physical properties per AWS D1.1, Section 7 and Annex G.

## II. EQUIPMENT AND MATERIALS

Prior to automatic stud welding the proper equipment is to be selected based on the diameter of the stud to be welded and the conditions under which the stud is to be welded.

Based on the optimum time and current requirements for a specific diameter stud, the stud welding equipment chosen must have sufficient current output and time control to achieve an acceptable weld per AWS D1.1 Section 7.7.

## III. PROCEDURE AND RESULTS

Specimens were prepared by welding the 5/8" diameter stud to the 1/2" x 2-1/2" x 2-1/2" mild steel plates.

Weldability was evaluated by testing specimens specified in AWS D1.1 and Annex G.

## IV. CONCLUSIONS

7. Weldability of Tru-Weld 5/8" diameter studs was established by the ability of the weld to consistently develop the full strength during the stud- bending test.

8. Physical and chemical properties of the subject studs conform to the requirements of ASTM-A-108 carbon steel bars.

9. Results of the Mechanical Properties and Chemical Analysis of the studs and plates used in these tests are show in the attached test data forms.

REPORTS MAY NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT WRITTEN PERMISSION BY PROFESSIONAL SERVICE INDUSTRIES, INC.

## TABLE I

MECHANICAL PROPERTIES OF TRU-WELD 5/8" CONCRETE ANCHORS

| | |
|---|---|
| HEAT NUMBER | 387100 |
| AISI GRADE | C1015 |
| TENSILE | 72116 PSI |
| YIELD | 60300 PSI |

## TABLE II

CHEMICAL PROPERTIES OF TRU-WELD 5/8" CONCRETE ANCHORS

| | |
|---|---|
| HEAT NUMBER | 387100 |
| CARBON | .160 |
| MANGANESE | .500 |
| SULFUR | .013 |
| SILICON | .140 |

## TABLE IIII

MECHANICAL ANALYSIS OF BASE PLATES (A36)

| | |
|---|---|
| HEAT NUMBER | A2925 |
| CARBON | .150 |
| MANGANESE | .670 |
| PHOSPHORUS | .017 |
| SULFUR | .034 |

STUD BASE QUALIFICATION TEST
5/3/2006
10% BELOW OPTIMUM

OPTIMUM TIME 0.700 SECONDS
OPTIMUM CURRENT 1200 AMPS

| SPECIMEN # | SIZE | TIME | AMPS | BEND TEST | LOCATION OF FAILURE | TENSILE | YIELD |
|---|---|---|---|---|---|---|---|
| 1 | CA 5/8 X 5-3/16 | 0.700 | 1070 | PASSED | SHANK | | |
| 2 | CA 5/8 X 5-3/16 | 0.700 | 1080 | PASSED | SHANK | | |
| 3 | CA 5/8 X 5-3/16 | 0.700 | 1060 | PASSED | SHANK | | |
| 4 | CA 5/8 X 5-3/16 | 0.700 | 1060 | PASSED | SHANK | | |
| 5 | CA 5/8 X 5-3/16 | 0.700 | 1070 | PASSED | SHANK | | |
| 6 | CA 5/8 X 5-3/16 | 0.690 | 1070 | PASSED | SHANK | | |
| 7 | CA 5/8 X 5-3/16 | 0.700 | 1080 | PASSED | SHANK | | |
| 8 | CA 5/8 X 5-3/16 | 0.690 | 1078 | PASSED | SHANK | | |
| 9 | CA 5/8 X 5-3/16 | 0.700 | 1078 | PASSED | SHANK | | |
| 10 | CA 5/8 X 5-3/16 | 0.680 | 1078 | PASSED | SHANK | | |
| 11 | CA 5/8 X 5-3/16 | 0.680 | 1070 | PASSED | SHANK | | |
| 12 | CA 5/8 X 5-3/16 | 0.690 | 1080 | PASSED | SHANK | | |
| 13 | CA 5/8 X 5-3/16 | 0.700 | 1080 | PASSED | SHANK | | |
| 14 | CA 5/8 X 5-3/16 | 0.690 | 1075 | PASSED | SHANK | | |
| 15 | CA 5/8 X 5-3/16 | 0.700 | 1080 | PASSED | SHANK | | |
| 16 | CA 5/8 X 5-3/16 | 0.700 | 1080 | PASSED | SHANK | | |
| 17 | CA 5/8 X 5-3/16 | 0.700 | 1080 | PASSED | SHANK | | |
| 18 | CA 5/8 X 5-3/16 | 0.700 | 1078 | PASSED | SHANK | | |
| 19 | CA 5/8 X 5-3/16 | 0.700 | 1080 | PASSED | SHANK | | |
| 20 | CA 5/8 X 5-3/16 | 0.690 | 1080 | PASSED | SHANK | | |
| 21 | CA 5/8 X 5-3/16 | 0.700 | 1080 | | SHANK | 75130 | 58018 |
| 22 | CA 5/8 X 5-3/16 | 0.690 | 1080 | | SHANK | 76532 | 55411 |
| 23 | CA 5/8 X 5-3/16 | 0.690 | 1078 | | SHANK | 71056 | 57040 |
| 24 | CA 5/8 X 5-3/16 | 0.690 | 1080 | | SHANK | 76434 | 60300 |
| 25 | CA 5/8 X 5-3/16 | 0.700 | 1080 | | SHANK | 73664 | 57040 |
| 26 | CA 5/8 X 5-3/16 | 0.690 | 1080 | | SHANK | 73664 | 53781 |
| 27 | CA 5/8 X 5-3/16 | 0.690 | 1080 | | SHANK | 74967 | 60300 |
| 28 | CA 5/8 X 5-3/16 | 0.690 | 1080 | | SHANK | 73338 | 59185 |
| 29 | CA 5/8 X 5-3/16 | 0.690 | 1080 | | SHANK | 77086 | 60300 |
| 30 | CA 5/8 X 5-3/16 | 0.690 | 1080 | | SHANK | 76434 | 61930 |

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STUD BASE QUALIFICATION TEST
5/3/2006
10% ABOVE OPTIMUM

OPTIMUM TIME 0.700 SECONDS
OPTIMUM CURRENT 1200 AMPS

| SPECIMEN # | SIZE | TIME | AMPS | BEND TEST | LOCATION OF FAILURE | TENSILE | YIELD |
|---|---|---|---|---|---|---|---|
| 1 | CA 5/8 X 5-3/16 | 0.700 | 1320 | PASSED | SHANK | | |
| 2 | CA 5/8 X 5-3/16 | 0.700 | 1320 | PASSED | SHANK | | |
| 3 | CA 5/8 X 5-3/16 | 0.700 | 1320 | PASSED | SHANK | | |
| 4 | CA 5/8 X 5-3/16 | 0.700 | 1325 | PASSED | SHANK | | |
| 5 | CA 5/8 X 5-3/16 | 0.700 | 1330 | PASSED | SHANK | | |
| 6 | CA 5/8 X 5-3/16 | 0.700 | 1335 | PASSED | SHANK | | |
| 7 | CA 5/8 X 5-3/16 | 0.700 | 1325 | PASSED | SHANK | | |
| 8 | CA 5/8 X 5-3/16 | 0.690 | 1330 | PASSED | SHANK | | |
| 9 | CA 5/8 X 5-3/16 | 0.690 | 1345 | PASSED | SHANK | | |
| 10 | CA 5/8 X 5-3/16 | 0.690 | 1330 | PASSED | SHANK | | |
| 11 | CA 5/8 X 5-3/16 | 0.690 | 1330 | PASSED | SHANK | | |
| 12 | CA 5/8 X 5-3/16 | 0.680 | 1340 | PASSED | SHANK | | |
| 13 | CA 5/8 X 5-3/16 | 0.690 | 1340 | PASSED | SHANK | | |
| 14 | CA 5/8 X 5-3/16 | 0.690 | 1330 | PASSED | SHANK | | |
| 15 | CA 5/8 X 5-3/16 | 0.700 | 1340 | PASSED | SHANK | | |
| 16 | CA 5/8 X 5-3/16 | 0.690 | 1335 | PASSED | SHANK | | |
| 17 | CA 5/8 X 5-3/16 | 0.690 | 1330 | PASSED | SHANK | | |
| 18 | CA 5/8 X 5-3/16 | 0.690 | 1330 | PASSED | SHANK | | |
| 19 | CA 5/8 X 5-3/16 | 0.700 | 1330 | PASSED | SHANK | | |
| 20 | CA 5/8 X 5-3/16 | 0.700 | 1325 | PASSED | SHANK | | |
| 21 | CA 5/8 X 5-3/16 | 0.700 | 1330 | | SHANK | 76924 | 60300 |
| 22 | CA 5/8 X 5-3/16 | 0.700 | 1325 | | SHANK | 75457 | 61930 |
| 23 | CA 5/8 X 5-3/16 | 0.700 | 1325 | | SHANK | 76924 | 63560 |
| 24 | CA 5/8 X 5-3/16 | 0.700 | 1325 | | SHANK | 75620 | 90219 |
| 25 | CA 5/8 X 5-3/16 | 0.690 | 1330 | | SHANK | 76598 | 61390 |
| 26 | CA 5/8 X 5-3/16 | 0.680 | 1320 | | SHANK | 76761 | 61930 |
| 27 | CA 5/8 X 5-3/16 | 0.690 | 1325 | | SHANK | 77576 | 55411 |
| 28 | CA 5/8 X 5-3/16 | 0.700 | 1330 | | SHANK | 77739 | 58671 |
| 29 | CA 5/8 X 5-3/16 | 0.690 | 1340 | | SHANK | 75457 | 55411 |
| 30 | CA 5/8 X 5-3/16 | 0.690 | 1330 | | SHANK | 76598 | 58671 |

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TRU-WELD
3/4" DIAMETER WELD STUDS

QUALIFICATION TESTS

## I. PURPOSE

To test and re-qualify Tru-Weld 3/4" diameter weld studs for weldability and physical properties per AWS D1.1, Section 7 and Annex G.

## II. EQUIPMENT AND MATERIALS

Prior to automatic stud welding the proper equipment is to be selected based on the diameter of the stud to be welded and the conditions under which the stud is to be welded.

Based on the optimum time and current requirements for a specific diameter stud, the stud welding equipment chosen must have sufficient current output and time control to achieve an acceptable weld per AWS D1.1 Section 7.7.

## III. PROCEDURE AND RESULTS

Specimens were prepared by welding the 3/4" diameter stud to the 1/2" x 2-1/2" x 2-1/2" mild steel plates.

Weldability was evaluated by testing specimens specified in AWS D1.1 and Annex G.

## IV. CONCLUSIONS

10. Weldability of Tru-Weld 3/4" diameter studs was established by the ability of the weld to consistently develop the full strength during the stud- bending test.

11. Physical and chemical properties of the subject studs conform to the requirements of ASTM-A-108 carbon steel bars.

12. Results of the Mechanical Properties and Chemical Analysis of the studs and plates used in these tests are show in the attached test data forms.

REPORTS MAY NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT WRITTEN PERMISSION BY PROFESSIONAL SERVICE INDUSTRIES, INC.

TRU-WELD
3/4" DIAMETER WELD STUDS

QUALIFICATION TESTS

## I. PURPOSE

To test and re-qualify Tru-Weld 3/4" diameter weld studs for weldability and physical properties per AWS D1.1, Section 7 and Annex G.

## II. EQUIPMENT AND MATERIALS

Prior to automatic stud welding the proper equipment is to be selected based on the diameter of the stud to be welded and the conditions under which the stud is to be welded.

Based on the optimum time and current requirements for a specific diameter stud, the stud welding equipment chosen must have sufficient current output and time control to achieve an acceptable weld per AWS D1.1 Section 7.7.

## III. PROCEDURE AND RESULTS

Specimens were prepared by welding the 3/4" diameter stud to the 1/2" x 2-1/2" x 2-1/2" mild steel plates.

Weldability was evaluated by testing specimens specified in AWS D1.1 and Annex G.

## IV. CONCLUSIONS

10. Weldability of Tru-Weld 3/4" diameter studs was established by the ability of the weld to consistently develop the full strength during the stud- bending test.

11. Physical and chemical properties of the subject studs conform to the requirements of ASTM-A-108 carbon steel bars.

12. Results of the Mechanical Properties and Chemical Analysis of the studs and plates used in these tests are show in the attached test data forms.

REPORTS MAY NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT WRITTEN PERMISSION BY PROFESSIONAL SERVICE INDUSTRIES, INC.

## TABLE I

MECHANICAL PROPERTIES OF TRU-WELD 3/4" SHEAR CONNECTOR

| | |
|---|---|
| HEAT NUMBER | 400370 |
| AISI GRADE | C1015 |
| TENSILE | 70169 PSI |
| YIELD | 53476 PSI |

## TABLE II

CHEMICAL PROPERTIES OF TRU-WELD 3/4" SHEAR CONNECTOR

| | |
|---|---|
| HEAT NUMBER | 400370 |
| CARBON | .150 |
| MANGANESE | .480 |
| SULFUR | .011 |
| SILICON | .120 |

## TABLE IIII

MECHANICAL ANALYSIS OF BASE PLATES (A36)

| | |
|---|---|
| HEAT NUMBER | A2925 |
| CARBON | .150 |
| MANGANESE | .670 |
| PHOSPHORUS | .017 |
| SULFUR | .034 |

STUD BASE QUALIFICATION TEST
5/3/2006
OPTIMUM

OPTIMUM TIME 0.700 SECONDS
OPTIMUM CURRENT 1600 AMPS

| SPECIMEN # | SIZE | TIME | AMPS | BEND TEST | LOCATION OF FAILURE | TENSILE | YIELD |
|---|---|---|---|---|---|---|---|
| 1 | SC 3/4 X 5-3/16 | 0.690 | 1638 | PASSED | SHANK | | |
| 2 | SC 3/4 X 5-3/16 | 0.700 | 1680 | PASSED | SHANK | | |
| 3 | SC 3/4 X 5-3/16 | 0.680 | 1640 | PASSED | SHANK | | |
| 4 | SC 3/4 X 5-3/16 | 0.700 | 1600 | PASSED | SHANK | | |
| 5 | SC 3/4 X 5-3/16 | 0.690 | 1620 | PASSED | SHANK | | |
| 6 | SC 3/4 X 5-3/16 | 0.670 | 1640 | PASSED | SHANK | | |
| 7 | SC 3/4 X 5-3/16 | 0.690 | 1598 | PASSED | SHANK | | |
| 8 | SC 3/4 X 5-3/16 | 0.690 | 1605 | PASSED | SHANK | | |
| 9 | SC 3/4 X 5-3/16 | 0.700 | 1612 | PASSED | SHANK | | |
| 10 | SC 3/4 X 5-3/16 | 0.710 | 1610 | PASSED | SHANK | | |
| 11 | SC 3/4 X 5-3/16 | 0.700 | 1601 | PASSED | SHANK | | |
| 12 | SC 3/4 X 5-3/16 | 0.710 | 1597 | PASSED | SHANK | | |
| 13 | SC 3/4 X 5-3/16 | 0.690 | 1599 | PASSED | SHANK | | |
| 14 | SC 3/4 X 5-3/16 | 0.690 | 1602 | PASSED | SHANK | | |
| 15 | SC 3/4 X 5-3/16 | 0.710 | 1599 | PASSED | SHANK | | |
| 16 | SC 3/4 X 5-3/16 | 0.690 | 1610 | PASSED | SHANK | | |
| 17 | SC 3/4 X 5-3/16 | 0.700 | 1598 | PASSED | SHANK | | |
| 18 | SC 3/4 X 5-3/16 | 0.690 | 1599 | PASSED | SHANK | | |
| 19 | SC 3/4 X 5-3/16 | 0.710 | 1598 | PASSED | SHANK | | |
| 20 | SC 3/4 X 5-3/16 | 0.700 | 1600 | PASSED | SHANK | | |
| 21 | SC 3/4 X 5-3/16 | 0.690 | 1597 | | SHANK | 74357 | 54325 |
| 22 | SC 3/4 X 5-3/16 | 0.690 | 1598 | | SHANK | 73452 | 55457 |
| 23 | SC 3/4 X 5-3/16 | 0.710 | 1602 | | SHANK | 75941 | 57720 |
| 24 | SC 3/4 X 5-3/16 | 0.690 | 1607 | | SHANK | 74017 | 54891 |
| 25 | SC 3/4 X 5-3/16 | 0.690 | 1611 | | SHANK | 75149 | 57720 |
| 26 | SC 3/4 X 5-3/16 | 0.700 | 1599 | | SHANK | 74357 | 54325 |
| 27 | SC 3/4 X 5-3/16 | 0.690 | 1598 | | SHANK | 74470 | 56588 |
| 28 | SC 3/4 X 5-3/16 | 0.710 | 1599 | | SHANK | 75376 | 56588 |
| 29 | SC 3/4 X 5-3/16 | 0.680 | 1597 | | SHANK | 75941 | 58060 |
| 30 | SC 3/4 X 5-3/16 | 0.700 | 1596 | | SHANK | 75489 | 56588 |

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STUD BASE QUALIFICATION TEST
5/3/2006
10% BELOW OPTIMUM

OPTIMUM TIME 0.700 SECONDS
OPTIMUM CURRENT 1600 AMPS

| SPECIMEN # | SIZE | TIME | AMPS | BEND TEST | LOCATION OF FAILURE | TENSILE | YIELD |
|---|---|---|---|---|---|---|---|
| 1 | SC 3/4 X 5-3/16 | 0.710 | 1401 | PASSED | SHANK | | |
| 2 | SC 3/4 X 5-3/16 | 0.720 | 1417 | PASSED | SHANK | | |
| 3 | SC 3/4 X 5-3/16 | 0.700 | 1410 | PASSED | SHANK | | |
| 4 | SC 3/4 X 5-3/16 | 0.720 | 1397 | PASSED | SHANK | | |
| 5 | SC 3/4 X 5-3/16 | 0.700 | 1400 | PASSED | SHANK | | |
| 6 | SC 3/4 X 5-3/16 | 0.690 | 1405 | PASSED | SHANK | | |
| 7 | SC 3/4 X 5-3/16 | 0.710 | 1405 | PASSED | SHANK | | |
| 8 | SC 3/4 X 5-3/16 | 0.710 | 1405 | PASSED | SHANK | | |
| 9 | SC 3/4 X 5-3/16 | 0.700 | 1405 | PASSED | SHANK | | |
| 10 | SC 3/4 X 5-3/16 | 0.700 | 1401 | PASSED | SHANK | | |
| 11 | SC 3/4 X 5-3/16 | 0.700 | 1400 | PASSED | SHANK | | |
| 12 | SC 3/4 X 5-3/16 | 0.700 | 1400 | PASSED | SHANK | | |
| 13 | SC 3/4 X 5-3/16 | 0.700 | 1420 | PASSED | SHANK | | |
| 14 | SC 3/4 X 5-3/16 | 0.750 | 1400 | PASSED | SHANK | | |
| 15 | SC 3/4 X 5-3/16 | 0.750 | 1410 | PASSED | SHANK | | |
| 16 | SC 3/4 X 5-3/16 | 0.750 | 1412 | PASSED | SHANK | | |
| 17 | SC 3/4 X 5-3/16 | 0.740 | 1400 | PASSED | SHANK | | |
| 18 | SC 3/4 X 5-3/16 | 0.750 | 1410 | PASSED | SHANK | | |
| 19 | SC 3/4 X 5-3/16 | 0.740 | 1410 | PASSED | SHANK | | |
| 20 | SC 3/4 X 5-3/16 | 0.750 | 1420 | PASSED | SHANK | | |
| 21 | SC 3/4 X 5-3/16 | 0.750 | 1410 | | SHANK | 73904 | 56588 |
| 22 | SC 3/4 X 5-3/16 | 0.740 | 1420 | | SHANK | 75715 | 56871 |
| 23 | SC 3/4 X 5-3/16 | 0.750 | 1400 | | SHANK | 74131 | 55457 |
| 24 | SC 3/4 X 5-3/16 | 0.750 | 1400 | | SHANK | 74697 | 56362 |
| 25 | SC 3/4 X 5-3/16 | 0.750 | 1400 | | SHANK | 74697 | 52061 |
| 26 | SC 3/4 X 5-3/16 | 0.750 | 1400 | | SHANK | 75489 | 63379 |
| 27 | SC 3/4 X 5-3/16 | 0.750 | 1400 | | SHANK | 72546 | 54891 |
| 28 | SC 3/4 X 5-3/16 | 0.750 | 1400 | | SHANK | 74244 | 57720 |
| 29 | SC 3/4 X 5-3/16 | 0.750 | 1400 | | SHANK | 75941 | 56588 |
| 30 | SC 3/4 X 5-3/16 | 0.750 | 1410 | | SHANK | 74923 | 55457 |

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STUD BASE QUALIFICATION TEST
5/3/2006
10% ABOVE OPTIMUM

OPTIMUM TIME 0.700 SECONDS
OPTIMUM CURRENT 1600 AMPS

| SPECIMEN # | SIZE | TIME | AMPS | BEND TEST | LOCATION OF FAILURE | TENSILE | YIELD |
|---|---|---|---|---|---|---|---|
| 1 | SC 3/4 X 5-3/16 | 0.700 | 1770 | PASSED | SHANK | | |
| 2 | SC 3/4 X 5-3/16 | 0.700 | 1780 | PASSED | SHANK | | |
| 3 | SC 3/4 X 5-3/16 | 0.700 | 1790 | PASSED | SHANK | | |
| 4 | SC 3/4 X 5-3/16 | 0.700 | 1760 | PASSED | SHANK | | |
| 5 | SC 3/4 X 5-3/16 | 0.690 | 1760 | PASSED | SHANK | | |
| 6 | SC 3/4 X 5-3/16 | 0.700 | 1770 | PASSED | SHANK | | |
| 7 | SC 3/4 X 5-3/16 | 0.700 | 1790 | PASSED | SHANK | | |
| 8 | SC 3/4 X 5-3/16 | 0.700 | 1770 | PASSED | SHANK | | |
| 9 | SC 3/4 X 5-3/16 | 0.700 | 1760 | PASSED | SHANK | | |
| 10 | SC 3/4 X 5-3/16 | 0.700 | 1760 | PASSED | SHANK | | |
| 11 | SC 3/4 X 5-3/16 | 0.700 | 1760 | PASSED | SHANK | | |
| 12 | SC 3/4 X 5-3/16 | 0.700 | 1790 | PASSED | SHANK | | |
| 13 | SC 3/4 X 5-3/16 | 0.700 | 1760 | PASSED | SHANK | | |
| 14 | SC 3/4 X 5-3/16 | 0.700 | 1780 | PASSED | SHANK | | |
| 15 | SC 3/4 X 5-3/16 | 0.710 | 1760 | PASSED | SHANK | | |
| 16 | SC 3/4 X 5-3/16 | 0.710 | 1760 | PASSED | SHANK | | |
| 17 | SC 3/4 X 5-3/16 | 0.710 | 1780 | PASSED | SHANK | | |
| 18 | SC 3/4 X 5-3/16 | 0.710 | 1760 | PASSED | SHANK | | |
| 19 | SC 3/4 X 5-3/16 | 0.710 | 1800 | PASSED | SHANK | | |
| 20 | SC 3/4 X 5-3/16 | 0.710 | 1760 | PASSED | SHANK | | |
| 21 | SC 3/4 X 5-3/16 | 0.710 | 1760 | | SHANK | 72773 | 55457 |
| 22 | SC 3/4 X 5-3/16 | 0.700 | 1760 | | SHANK | 73565 | 57720 |
| 23 | SC 3/4 X 5-3/16 | 0.720 | 1760 | | SHANK | 73791 | 53193 |
| 24 | SC 3/4 X 5-3/16 | 0.700 | 1780 | | SHANK | 72773 | 57720 |
| 25 | SC 3/4 X 5-3/16 | 0.710 | 1770 | | SHANK | 72207 | 54325 |
| 26 | SC 3/4 X 5-3/16 | 0.700 | 1760 | | SHANK | 73338 | 56871 |
| 27 | SC 3/4 X 5-3/16 | 0.710 | 1770 | | SHANK | 74357 | 60323 |
| 28 | SC 3/4 X 5-3/16 | 0.710 | 1760 | | SHANK | 74470 | 57154 |
| 29 | SC 3/4 X 5-3/16 | 0.710 | 1760 | | SHANK | 73452 | 58625 |
| 30 | SC 3/4 X 5-3/16 | 0.710 | 1780 | | SHANK | 73452 | 57154 |

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TRU-WELD
7/8" DIAMETER WELD STUDS

QUALIFICATION TESTS

## I. PURPOSE

To test and re-qualify Tru-Weld 7/8" diameter weld studs for weldability and physical properties per AWS D1.1, Section 7 and Annex G.

## II. EQUIPMENT AND MATERIALS

Prior to automatic stud welding the proper equipment is to be selected based on the diameter of the stud to be welded and the conditions under which the stud is to be welded.

Based on the optimum time and current requirements for a specific diameter stud, the stud welding equipment chosen must have sufficient current output and time control to achieve an acceptable weld per AWS D1.1 Section 7.7.

## III. PROCEDURE AND RESULTS

Specimens were prepared by welding the 7/8" diameter stud to the 1/2" x 2-1/2" x 2-1/2" mild steel plates.

Weldability was evaluated by testing specimens specified in AWS D1.1 and Annex G.

## IV. CONCLUSIONS

13. Weldability of Tru-Weld 7/8" diameter studs was established by the ability of the weld to consistently develop the full strength during the stud- bending test.

14. Physical and chemical properties of the subject studs conform to the requirements of ASTM-A-108 carbon steel bars.

15. Results of the Mechanical Properties and Chemical Analysis of the studs and plates used in these tests are show in the attached test data forms.

REPORTS MAY NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT WRITTEN PERMISSION BY PROFESSIONAL SERVICE INDUSTRIES, INC.

## TABLE I

MECHANICAL PROPERTIES OF TRU-WELD 7/8" SHEAR CONNECTOR

| | |
|---|---|
| HEAT NUMBER | 373470 |
| AISI GRADE | C1015 |
| REDUCTION | 61.9% |
| ELONGATION | 29.5% |
| TENSILE | 71093 PSI |
| YIELD | 61198 PSI |

## TABLE II

CHEMICAL PROPERTIES OF TRU-WELD 7/8" SHEAR CONNECTOR

| | |
|---|---|
| HEAT NUMBER | 373470 |
| CARBON | .140 |
| MANGANESE | .480 |
| SULFUR | .010 |
| SILICON | .160 |

## TABLE IIII

MECHANICAL ANALYSIS OF BASE PLATES (A36)

| | |
|---|---|
| HEAT NUMBER | A2925 |
| CARBON | .150 |
| MANGANESE | .670 |
| PHOSPHORUS | .017 |
| SULFUR | .034 |

STUD BASE QUALIFICATION TEST
5/3/2006
OPTIMUM

OPTIMUM TIME 0.900 SECONDS
OPTIMUM CURRENT 1800 AMPS

| SPECIMEN # | SIZE | TIME | AMPS | BEND TEST | LOCATION OF FAILURE | TENSILE | YIELD |
|---|---|---|---|---|---|---|---|
| 1 | SC 7/8 X 5-3/16 | 0.910 | 1800 | PASSED | SHANK | | |
| 2 | SC 7/8 X 5-3/16 | 0.910 | 1807 | PASSED | SHANK | | |
| 3 | SC 7/8 X 5-3/16 | 0.910 | 1805 | PASSED | SHANK | | |
| 4 | SC 7/8 X 5-3/16 | 0.910 | 1800 | PASSED | SHANK | | |
| 5 | SC 7/8 X 5-3/16 | 0.900 | 1800 | PASSED | SHANK | | |
| 6 | SC 7/8 X 5-3/16 | 0.900 | 1790 | PASSED | SHANK | | |
| 7 | SC 7/8 X 5-3/16 | 0.900 | 1807 | PASSED | SHANK | | |
| 8 | SC 7/8 X 5-3/16 | 0.900 | 1800 | PASSED | SHANK | | |
| 9 | SC 7/8 X 5-3/16 | 0.900 | 1805 | PASSED | SHANK | | |
| 10 | SC 7/8 X 5-3/16 | 0.900 | 1800 | PASSED | SHANK | | |
| 11 | SC 7/8 X 5-3/16 | 0.900 | 1805 | PASSED | SHANK | | |
| 12 | SC 7/8 X 5-3/16 | 0.900 | 1820 | PASSED | SHANK | | |
| 13 | SC 7/8 X 5-3/16 | 0.900 | 1790 | PASSED | SHANK | | |
| 14 | SC 7/8 X 5-3/16 | 0.900 | 1800 | PASSED | SHANK | | |
| 15 | SC 7/8 X 5-3/16 | 0.900 | 1800 | PASSED | SHANK | | |
| 16 | SC 7/8 X 5-3/16 | 0.900 | 1800 | PASSED | SHANK | | |
| 17 | SC 7/8 X 5-3/16 | 0.900 | 1790 | PASSED | SHANK | | |
| 18 | SC 7/8 X 5-3/16 | 0.900 | 1800 | PASSED | SHANK | | |
| 19 | SC 7/8 X 5-3/16 | 0.900 | 1795 | PASSED | SHANK | | |
| 20 | SC 7/8 X 5-3/16 | 0.910 | 1800 | PASSED | SHANK | | |
| 21 | SC 7/8 X 5-3/16 | 0.910 | 1800 | | SHANK | 73255 | 62363 |
| 22 | SC 7/8 X 5-3/16 | 0.900 | 1800 | | SHANK | 75251 | 63194 |
| 23 | SC 7/8 X 5-3/16 | 0.900 | 1790 | | SHANK | 66686 | 53632 |
| 24 | SC 7/8 X 5-3/16 | 0.910 | 1800 | | SHANK | 66936 | 55711 |
| 25 | SC 7/8 X 5-3/16 | 0.910 | 1795 | | SHANK | 71426 | 60700 |
| 26 | SC 7/8 X 5-3/16 | 0.900 | 1800 | | SHANK | 68349 | 54048 |
| 27 | SC 7/8 X 5-3/16 | 0.910 | 1800 | | SHANK | 72341 | 52385 |
| 28 | SC 7/8 X 5-3/16 | 0.900 | 1800 | | SHANK | 77330 | 64857 |
| 29 | SC 7/8 X 5-3/16 | 0.900 | 1795 | | SHANK | 72923 | 61947 |
| 30 | SC 7/8 X 5-3/16 | 0.900 | 1800 | | SHANK | 69929 | 58205 |

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STUD BASE QUALIFICATION TEST
5/3/2006
10% BELOW OPTIMUM

OPTIMUM TIME 0.900 SECONDS
OPTIMUM CURRENT 1800 AMPS

| SPECIMEN # | SIZE | TIME | AMPS | BEND TEST | LOCATION OF FAILURE | TENSILE | YIELD |
|---|---|---|---|---|---|---|---|
| 1 | SC 7/8 X 5-3/16 | 0.910 | 1610 | PASSED | SHANK | | |
| 2 | SC 7/8 X 5-3/16 | 0.910 | 1621 | PASSED | SHANK | | |
| 3 | SC 7/8 X 5-3/16 | 0.910 | 1620 | PASSED | SHANK | | |
| 4 | SC 7/8 X 5-3/16 | 0.910 | 1610 | PASSED | SHANK | | |
| 5 | SC 7/8 X 5-3/16 | 0.930 | 1610 | PASSED | SHANK | | |
| 6 | SC 7/8 X 5-3/16 | 0.920 | 1607 | PASSED | SHANK | | |
| 7 | SC 7/8 X 5-3/16 | 0.930 | 1607 | PASSED | SHANK | | |
| 8 | SC 7/8 X 5-3/16 | 0.910 | 1605 | PASSED | SHANK | | |
| 9 | SC 7/8 X 5-3/16 | 0.920 | 1602 | PASSED | SHANK | | |
| 10 | SC 7/8 X 5-3/16 | 0.910 | 1590 | PASSED | SHANK | | |
| 11 | SC 7/8 X 5-3/16 | 0.900 | 1620 | PASSED | SHANK | | |
| 12 | SC 7/8 X 5-3/16 | 0.900 | 1582 | PASSED | SHANK | | |
| 13 | SC 7/8 X 5-3/16 | 0.900 | 1580 | PASSED | SHANK | | |
| 14 | SC 7/8 X 5-3/16 | 0.910 | 1581 | PASSED | SHANK | | |
| 15 | SC 7/8 X 5-3/16 | 0.900 | 1580 | PASSED | SHANK | | |
| 16 | SC 7/8 X 5-3/16 | 0.900 | 1581 | PASSED | SHANK | | |
| 17 | SC 7/8 X 5-3/16 | 0.900 | 1581 | PASSED | SHANK | | |
| 18 | SC 7/8 X 5-3/16 | 0.900 | 1590 | PASSED | SHANK | | |
| 19 | SC 7/8 X 5-3/16 | 0.900 | 1580 | PASSED | SHANK | | |
| 20 | SC 7/8 X 5-3/16 | 0.900 | 1500 | PASSED | SHANK | | |
| 21 | SC 7/8 X 5-3/16 | 0.900 | 1580 | | SHANK | 75999 | 64857 |
| 22 | SC 7/8 X 5-3/16 | 0.900 | 1585 | | SHANK | 72091 | 54879 |
| 23 | SC 7/8 X 5-3/16 | 0.910 | 1580 | | SHANK | 65772 | 55627 |
| 24 | SC 7/8 X 5-3/16 | 0.900 | 1575 | | SHANK | 67102 | 54048 |
| 25 | SC 7/8 X 5-3/16 | 0.900 | 1590 | | SHANK | 75417 | 63194 |
| 26 | SC 7/8 X 5-3/16 | 0.900 | 1590 | | SHANK | 76498 | 62363 |
| 27 | SC 7/8 X 5-3/16 | 0.900 | 1585 | | SHANK | 69015 | 59037 |
| 28 | SC 7/8 X 5-3/16 | 0.900 | 1580 | | SHANK | 69430 | 59452 |
| 29 | SC 7/8 X 5-3/16 | 0.900 | 1585 | | SHANK | 70511 | 59037 |
| 30 | SC 7/8 X 5-3/16 | 0.900 | 1585 | | SHANK | 70678 | 58205 |

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STUD BASE QUALIFICATION TEST
5/3/2006
10% ABOVE OPTIMUM

OPTIMUM TIME 0.900 SECONDS
OPTIMUM CURRENT 1800 AMPS

| SPECIMEN # | SIZE | TIME | AMPS | BEND TEST | LOCATION OF FAILURE | TENSILE | YIELD |
|---|---|---|---|---|---|---|---|
| 1 | SC 7/8 X 5-3/16 | 0.910 | 1990 | PASSED | SHANK | | |
| 2 | SC 7/8 X 5-3/16 | 0.910 | 1980 | PASSED | SHANK | | |
| 3 | SC 7/8 X 5-3/16 | 0.910 | 1965 | PASSED | SHANK | | |
| 4 | SC 7/8 X 5-3/16 | 0.910 | 1980 | PASSED | SHANK | | |
| 5 | SC 7/8 X 5-3/16 | 0.910 | 1975 | PASSED | SHANK | | |
| 6 | SC 7/8 X 5-3/16 | 0.910 | 1977 | PASSED | SHANK | | |
| 7 | SC 7/8 X 5-3/16 | 0.910 | 1978 | PASSED | SHANK | | |
| 8 | SC 7/8 X 5-3/16 | 0.910 | 1981 | PASSED | SHANK | | |
| 9 | SC 7/8 X 5-3/16 | 0.910 | 1975 | PASSED | SHANK | | |
| 10 | SC 7/8 X 5-3/16 | 0.910 | 1980 | PASSED | SHANK | | |
| 11 | SC 7/8 X 5-3/16 | 0.910 | 1980 | PASSED | SHANK | | |
| 12 | SC 7/8 X 5-3/16 | 0.910 | 1980 | PASSED | SHANK | | |
| 13 | SC 7/8 X 5-3/16 | 0.910 | 1985 | PASSED | SHANK | | |
| 14 | SC 7/8 X 5-3/16 | 0.910 | 1980 | PASSED | SHANK | | |
| 15 | SC 7/8 X 5-3/16 | 0.910 | 1987 | PASSED | SHANK | | |
| 16 | SC 7/8 X 5-3/16 | 0.910 | 1980 | PASSED | SHANK | | |
| 17 | SC 7/8 X 5-3/16 | 0.910 | 1971 | PASSED | SHANK | | |
| 18 | SC 7/8 X 5-3/16 | 0.910 | 1987 | PASSED | SHANK | | |
| 19 | SC 7/8 X 5-3/16 | 0.910 | 1980 | PASSED | SHANK | | |
| 20 | SC 7/8 X 5-3/16 | 0.910 | 1980 | PASSED | SHANK | | |
| 21 | SC 7/8 X 5-3/16 | 0.910 | 1981 | | SHANK | 69846 | 55295 |
| 22 | SC 7/8 X 5-3/16 | 0.910 | 1981 | | SHANK | 67934 | 52717 |
| 23 | SC 7/8 X 5-3/16 | 0.910 | 1980 | | SHANK | 76498 | 64026 |
| 24 | SC 7/8 X 5-3/16 | 0.910 | 1980 | | SHANK | 67268 | 57374 |
| 25 | SC 7/8 X 5-3/16 | 0.910 | 1980 | | SHANK | 66686 | 52385 |
| 26 | SC 7/8 X 5-3/16 | 0.910 | 1980 | | SHANK | 65772 | 55711 |
| 27 | SC 7/8 X 5-3/16 | 0.910 | 1985 | | SHANK | 75251 | 58122 |
| 28 | SC 7/8 X 5-3/16 | 0.910 | 1980 | | SHANK | 68266 | 58205 |
| 29 | SC 7/8 X 5-3/16 | 0.900 | 1987 | | SHANK | 70096 | 59037 |
| 30 | SC 7/8 X 5-3/16 | 0.910 | 1980 | | SHANK | 72756 | 53632 |

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