

Stay-form®

*"Tested Superior to Plywood
in Bulkhead Forming"*



And this is the proof!

Recent testing at an independent laboratory has proven Stay-form®, when used for Bulkheads, out performs traditional plywood for shear bond strength, as as much as 21%.



Call 800/366-2642

Carlson Testing, Inc.

Construction Inspection & Related Tests
Geotechnical Consulting

April 17, 1996
#96-4985 . CTI

P.O. Box 23814
Tigard, Oregon 97281
Phone (503) 684-3460
FAX (503) 684-0954

Williams Form Engineering Corp.
809 NE Lombard Street
Portland, Oregon 97211

Attn: Mr. Mike Bowles

Re: Puget Sound Navel Ship Yard Parking Structure
#P-300-T - Bremerton, Washington 98310
Bond Strength Comparison Testing

Gentlemen:

As requested, we have completed concrete bond strength comparison testing to determine if your Stay-Form #66 product produces equal to or greater bond strength values than that of a typical B-Matte form board material. Sixteen 8" x 8" x 8" form boxes were constructed, with eight of these boxes having B-Matte form board bulk head partitions that separated the original form box dimensions into two equal 4" x 8" x 8" sections. In addition, the remaining eight form boxes were bulk head partitioned with your Stay-Form #66 product producing the same equal 4" x 8" x 8" sections. Concrete was placed into the first 4" x 8" x 8" portions of all the form boxes on February 20, 1996, allowed to cure for one day, and the remaining 4" x 8" x 8" portions of the form boxes had concrete placed and filling the form boxes to full on February 21, 1996. Please see concrete mix data and test results in the data portion of the report. All specimens were cured in ambient air until the appropriate test dates. Following is the test data:

SHEAR BOND STRENGTH (Modified ASTM C482):

<u>TEST AGE</u>	<u>B-MATTE TOTAL LOAD</u>	<u>B-MATTE SHEAR BOND STRENGTH</u>	<u>STAY-FORM TOTAL LOAD</u>	<u>STAY-FORM SHEAR BOND STRENGTH</u>
5/6 day	15,725 LB.	244.6 psi	26,700 LB.	414.9 psi
13/14 day	12,750 LB.	200.3 psi	16,200 LB.	249.7 psi
27/28 day	15,200 LB.	238.9 psi	19,525 LB.	303.9 psi

The 5/6 day shear bond test data indicated that the Stay-Form #66 test was 41% greater than that of the identically cast test specimen using the B-Matte form board material.

The 13/14 day shear bond test data indicated that the Stay-Form #66 test was 20% greater than that of the identically cast test specimen using the B-Matte form board material.

The 27/28 day shear bond test data indicated that the Stay-form #66 test was 21% greater than that of the identically cast test specimen using the B-Matte form board material.

DETERMINING BOND STRENGTH BETWEEN HARDENED ROLLER COMPACTED CONCRETE AND OTHER HARDENED CEMENTIOUS MIXTURES - ASTM C1245:

note: Procedures described in ASTM C1245 state that this method is applicable to all type of layered concrete construction involving an upper layer of concrete or mortar bonded to an underlying layer of concrete or mortar where the total depth is sufficient to meet the minimum specimen length and diameter requirements of the test method.

<u>TEST AGE</u>	<u>B-MATTE TOTAL LOAD</u>	<u>B-MATTE SHEAR BOND STRENGTH</u>	<u>STAY-FORM TOTAL LOAD</u>	<u>STAY-FORM SHEAR BOND STRENGTH</u>
5/6 day	2,225 LB.	139 psi	3,475 LB.	217 psi
13/14 day	2,150 LB.	134 psi	3,075 LB.	192 psi
27/28 day	2,425 LB.	152 psi	3,250 LB.	203 psi

Specimen size: 4" diameter x 8" length (drilled cores)

At 5/6 days, the tensile strength (bond) test data indicated that the Stay-Form #66 test was 36% greater than that of the identically cast test specimen using the B-Matte form board material.

At 13/14 days, the tensile strength (bond) test data indicated that the Stay-Form #66 test was 30% greater than that of the identically cast test specimen using the B-Matte form board material.

At 27/28 days, the tensile strength (bond) test data indicated that the Stay-Form #66 test was 25% greater than that of the identically cast test specimen using the B-Matte form board material.

note #1: Roughing of the B-Matte bulk head surfaces to a depth of approximately 1/4-inch was done to all B-Matte specimens cast prior to the adjacent pour.

note #2: No visible voids or air pockets were noted around the concrete adjacent to the Stay-Form #66 bulk head, or for that matter, any bulk heads of specimens tested.

concrete data:

Concrete Producer: Lonestar Northwest

Mix Type: #857 - 3/8" max. aggregate size

Slump: 5 1/2" (pour #1) & 8 1/2" (pour #2)

Air Content: 3.4% (pour #1) & 0.5% (pour #2)

Concrete Temperature: 59° F (pour #1) & 54° F (pour #2)


Unit Weight: 149.6 pcf (pour #1) & 147.5 pcf (pour #2)

Our reports pertain to the material tested/inspected only. Information contained herein is not to be reproduced, except in full, without prior authorization from this office.

If there are any further questions regarding this matter, please do not hesitate to contact this office.

Respectfully submitted,

CARLSON TESTING, INC.



Douglas W. Leach
President

SJ

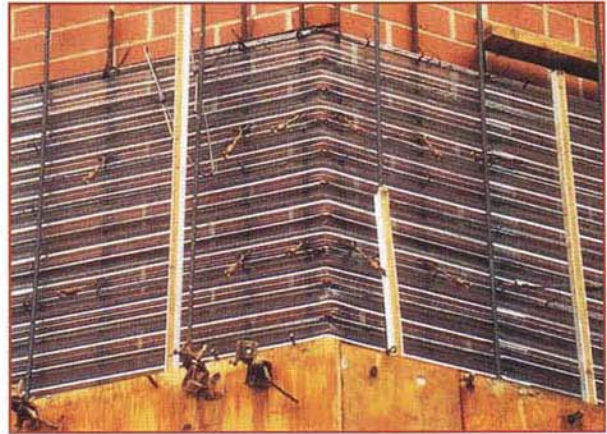


Stay-form®... Additional Applications

PILE CAP



BLINDSIDE WALL



GRADE BEAM



CONSTRUCTION JOINT



BEAM POCKET



COLUMN POCKET

