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**Product Approval**  
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Search Criteria

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Code Version	2010	FL#	ALL
Application Type	ALL	Product Manufacturer	BMP International Inc.
Category	ALL	Subcategory	ALL
Application Status	ALL	Compliance Method	ALL
Quality Assurance Entity	ALL	Quality Assurance Entity Contract Expired	ALL
Product Model, Number or Name	ALL	Product Description	ALL
Approved for use in HVHZ	ALL	Approved for use outside HVHZ	ALL
Impact Resistant	ALL	Design Pressure	ALL
Other	ALL		

**Search Results - Applications**

FL#	Type	Manufacturer	Validated By	Status
<a href="#">FL14239-R2</a> <a href="#">History</a>	Revision	BMP International Inc. <b>Category:</b> Structural Components <b>Subcategory:</b> Anchors	Ryan J. King, P.E. (813) 787-8283	Approved



\*Approved by DBPR. Approvals by DBPR shall be reviewed and ratified by the POC and/or the Commission if necessary.


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**Product Approval Accepts:**






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# Business & Professional Regulation





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<p>FL #</p> <p>Application Type</p> <p>Code Version</p> <p>Application Status</p> <p>Comments</p> <p>Archived</p> <p>Product Manufacturer</p> <p>Address/Phone/Email</p> <p>Authorized Signature</p> <p>Technical Representative</p> <p>Address/Phone/Email</p> <p>Quality Assurance Representative</p> <p>Address/Phone/Email</p> <p>Category</p> <p>Subcategory</p> <p>Compliance Method</p> <p>Florida Engineer or Architect Name who developed the Evaluation Report</p> <p>Florida License</p> <p>Quality Assurance Entity</p> <p>Quality Assurance Contract Expiration Date</p> <p>Validated By</p> <p>Certificate of Independence</p> <p>Referenced Standard and Year (of Standard)</p> <p>Equivalence of Product Standards Certified By</p>	<p>FL14239-R2</p> <p>Revision</p> <p>2010</p> <p>Approved</p> <p><input type="checkbox"/></p> <p>BMP International Inc.</p> <p>4710 28th Street N</p> <p>St. Petersburg, FL 33714</p> <p>(727) 458-0544</p> <p>benmeng8@yahoo.com</p> <p>Xianbin Meng</p> <p>benmeng8@yahoo.com</p>    <p>Structural Components</p> <p>Anchors</p> <p>Evaluation Report from a Florida Registered Architect or a Licensed Florida Professional Engineer</p> <p><input checked="" type="checkbox"/> Evaluation Report - Hardcopy Received</p> <p>Frank L. Bennardo, P.E.</p> <p>PE-0046549</p> <p>National Accreditation &amp; Management Institute,</p> <p>12/31/2013</p> <p>Ryan J. King, P.E.</p> <p><input checked="" type="checkbox"/> Validation Checklist - Hardcopy Received</p> <p><a href="#">FL14239_R2_COI_COI.pdf</a></p> <table border="0" style="width: 100%; font-size: small;"> <thead> <tr> <th style="text-align: left;"><b>Standard</b></th> <th style="text-align: left;"><b>Year</b></th> </tr> </thead> <tbody> <tr> <td>ASTM D1761-06</td> <td>2006</td> </tr> <tr> <td>ASTM D1761-88</td> <td>2000</td> </tr> </tbody> </table> <p>Florida Licensed Professional Engineer or Architect</p> <p><a href="#">FL14239_R2_Equiv_Equiv.pdf</a></p>	<b>Standard</b>	<b>Year</b>	ASTM D1761-06	2006	ASTM D1761-88	2000
<b>Standard</b>	<b>Year</b>						
ASTM D1761-06	2006						
ASTM D1761-88	2000						

## Sections from the Code

Product Approval Method

Method 1 Option D

Date Submitted

02/21/2013

Date Validated

02/22/2013

Date Pending FBC Approval

02/27/2013

Date Approved

04/09/2013

**Summary of Products**

FL #	Model, Number or Name	Description
14239.1	Slotted Steel Tie-Down Clips, 1" and 2" Models	Steel Tie-Down Clip System (For Use with Mechanical Units at Roof or Grade)
<b>Limits of Use</b> <b>Approved for use in HVHZ:</b> Yes <b>Approved for use outside HVHZ:</b> Yes <b>Impact Resistant:</b> N/A <b>Design Pressure:</b> N/A <b>Other:</b> This design provides allowable capacities for the system. The required site-specific design pressure (demand) shall be calculated by others for use with this design.		<b>Installation Instructions</b> <a href="#">FL14239_R2_II_Dwg.pdf</a> Verified By: Frank L. Bennardo, P.E. 0046549 Created by Independent Third Party: Yes <b>Evaluation Reports</b> <a href="#">FL14239_R2_AE_Eval.pdf</a> Created by Independent Third Party: Yes

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**Product Approval Accepts:**

## Product Evaluation Report

February 21, 2013

Application Number: FL #14239.1  
FLB Project Number: 11-BMP-0001-01

Product Manufacturer: BMP International

Manufacturer Address: 4710 28th Street North  
St. Petersburg, FL 33714

Product Name: Slotted Steel Tie-Down Clips, 1" and 2" Models  
Product Description: Steel Tie-Down Clip System (For Use with Mechanical Units at Roof or Grade)

### Scope of Evaluation:

This Product Evaluation Report is being issued in accordance with the requirements of the Florida Department of Community Affairs (Florida Building Commission) Rule Chapter 9N-3.005, F.A.C., for statewide acceptance per Method 1(d). The product noted above has been tested and/or evaluated as summarized herein to show compliance with the 2010 Florida Building Code and is, for the purpose intended, at least equivalent to that required by the Code. Re-evaluation of this product shall be required following pertinent Florida Building Code modifications or revisions.

### Substantiating Data:

- **PRODUCT EVALUATION DOCUMENTS**

FLB drawing #11-BMP-0001-01 titled "Mechanical Unit Steel Tie-Down Clip Capacities: At-Grade and Roof-Top Mounted Applications", sheets 1-4, prepared by Engineering Express, signed & sealed by Frank L. Bennardo, P.E. is an integral part of this Evaluation Report.

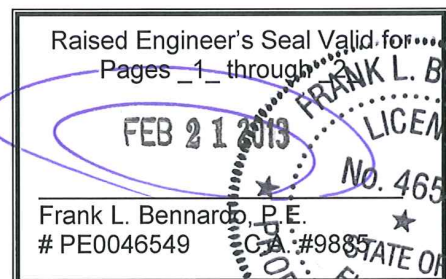
- **TEST REPORTS**

Ultimate test loading structural performance has been tested in accordance with ASTM D1761-88 test standards per test report(s) #TEL 01970387A and #TEL 01970387B by Testing Evaluation Laboratories, Inc.

- **STRUCTURAL ENGINEERING CALCULATIONS**

Structural engineering calculations have been prepared which evaluate the product based on comparative and/or rational analysis to qualify the following design criteria:

1. Maximum Allowable Unit Wind Pressures
2. Minimum Allowable Unit Width
3. Maximum Allowable Unit Height
4. Minimum Unit Weight
5. Maximum Allowable Unit Surface Area
6. Clip Configuration and Anchor Spacing
7. Anchor Capacity for Various Substrates



8. Maximum Allowable Additional Uplift per Clip in Combination with Lateral Forces (For Use with Rooftop Applications)

No 33% increase in allowable stress has been used in the design of this product.

### ***Impact Resistance:***

Not applicable to this product.

### ***Wind Load Resistance***

This product has been designed to resist wind loads as indicated in the design schedule(s) on the Product Evaluation Document (i.e. engineering drawing).

### ***Installation***

The product listed above shall be installed in strict compliance with the Product Evaluation Document (i.e. engineering drawing), along with all components noted therein.

The product components shall be of the material specified in the Product Evaluation Document (i.e. engineering drawing).

### ***Limitations & Conditions of Use:***

Use of this product shall be in strict accordance with the Product Evaluation Document (i.e. engineering drawing) as noted herein.

All supporting host structures shall be designed to resist all superimposed loads and shall be of a material listed in this product's respective anchor schedule. Host structure conditions which are not accounted for in this product's respective anchor schedule shall be designed for on a site-specific basis by a registered professional engineer.

All components which are permanently installed shall be protected against corrosion, contamination, and other such damage at all times.

This product has been designed for use within the High Velocity Hurricane Zone (HVHZ).



## MECHANICAL UNIT STEEL TIE-DOWN CLIP CAPACITIES: AT GRADE & ROOF-TOP MOUNTED APPLICATIONS



ISOMETRIC

\*FOR CLARITY, THIS ISOMETRIC ONLY SHOWS 1" CLIPS. THE ISOMETRIC LAYOUT IS TYPICAL FOR BOTH 1" AND 2" CLIP APPLICATIONS.

(THE FOLLOWING EXAMPLE ILLUSTRATES THE PROCEDURE USED TO DETERMINE THE MAXIMUM ALLOWABLE WIND PRESSURE FOR ANY GIVEN MECHANICAL UNIT THAT CONFORMS TO THE DIMENSION RESTRICTIONS LISTED HEREIN. SEE SHEETS 2&3 FOR TIE-DOWN SCHEDULES.)

MECHANICAL UNIT CRITERIA:  
CONSIDER THE INSTALLATION OF (1) MECHANICAL UNIT WITH THE FOLLOWING CRITERIA=

CONSIDER THE INSTALLATION OF (1) MECHANICAL UNIT WITH THE FOLLOWING CRITERIA= 36" TALL x 36" DEEP x 24" WIDE. 150 LB WEIGHT AS VERIFIED BY OTHERS, INSTALLED TO 3192 KSI MIN. CONCRETE. **AT GRADE** AS VERIFIED BY OTHERS.

## PROCEDURE STEP

PROCEDURE STEP		RESULT
1	LOCATE THE AT GRADE TIE-DOWN SCHEDULE ON SHEET 2 AND SELECT CLIP TYPE	CONSIDER 1" STEEL CLIP
2	DETERMINE LARGEST FACE AREA OF MECHANICAL UNIT TO BE INSTALLED	36"x36"=9FT <sup>2</sup>
3	CHECK MAXIMUM UNIT HEIGHT RESTRICTION	UNIT HEIGHT IS 36" WHICH IS LESS THAN THE MAXIMUM ALLOWABLE HEIGHT OF 48"
4	CHECK MINIMUM UNIT WIDTH RESTRICTION	UNIT WIDTH IS 24" WHICH IS EQUIVALENT TO THE MINIMUM ALLOWABLE WIDTH OF 24"
5	DETERMINE THE NUMBER OF CLIPS TO BE USED AT EACH CORNER OF THE MECHANICAL UNIT	CONSIDER (1) CLIP AT EACH CORNER, INSTALLED TO CONCRETE SUBSTRATE

CONCLUSION: MAXIMUM ALLOWABLE LATERAL DESIGN PRESSURE=

(COMPARE THIS VALUE TO THE SEPARATE SITE SPECIFIC REQUIRED DESIGN WIND PRESSURE PROVIDED BY A LICENSED ENGINEER OR REGISTERED ARCHITECT; NOT INCLUDED IN THIS CERTIFICATION)

1. THIS PRODUCT HAS BEEN DESIGNED AND SHALL BE FABRICATED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2010 FLORIDA BUILDING CODE FOR USE WITH ASCE 7-10. THIS PRODUCT MAY BE USED WITHIN AND OUTSIDE THE HIGH VELOCITY HURRICANE ZONE.
2. NO 33-1/3% INCREASE IN ALLOWABLE STRESS HAS BEEN USED IN THE DESIGN OF THIS SYSTEM.
3. SYSTEM IS BASED ON CLIENT PROVIDED PRODUCT AND DIE SHEETS FROM TEST REPORTS # TEL 01970387A, # TEL 01970387B BY TESTING EVALUATION LABORATORIES, INC.. NO SUBSTITUTIONS WITHOUT WRITTEN APPROVAL BY THIS ENGINEER SHALL BE PERMITTED.
4. DESIGN PRESSURES TO QUALIFY CAPACITY OF CLIPS AS LISTED HEREIN ARE DETERMINED THROUGH TESTING REPORT DATA AND RATIONALLY CHECKED FOR CONSISTENCY WITH EACH TEST PERFORMED.
5. THIS SYSTEM LATERAL AND/OR UPLIFT DESIGN PRESSURES CALCULATED FOR USE WITH REQUIRED SUELLER SHALL BE DETERMINED BY OTHERS ON A SITE-SPECIFIC BASIS IN ACCORDANCE WITH THE GOVERNING CODE.
6. MAXIMUM & MINIMUM DIMENSIONS AND MINIMUM WEIGHT OF MECHANICAL UNIT SHALL CONFORM TO SPECIFICATIONS STATED HEREIN. ALL MECHANICAL SPECIFICATIONS (CLEAR SPACE, TONNAGE, ETC.) SHALL BE AS PER MANUFACTURER RECOMMENDATIONS AND ARE THE EXPRESS RESPONSIBILITY OF THE CONTRACTOR.
7. FASTENERS TO BE # 12 X 3/4" OR GREATER SAE GRADE 5 UNLESS NOTED OTHERWISE. INSTALL TO 3192 KSI MIN CONCRETE - SEE ANCHOR SCHEDULE FOR ANCHOR REQUIREMENTS. ALL FASTENERS SHALL HAVE APPROPRIATE CORROSION PROTECTION TO PREVENT ELECTROLYSIS.
8. ALL STEEL CLIPS SHALL BE ASTM A283 STEEL (GRADE D) WITH Fy = 33 KSI OR BETTER. STEEL MEMBERS SHALL BE PROTECTED AGAINST CORROSION WITH AN APPROVED COAT OF PAINT, ENAMEL OR OTHER APPROVED PROTECTION IN ACCORDANCE WITH THE 2010 FBC SECTIONS 2203-2 AND 2220. G90-RATED COATING REQUIRED FOR ALL COASTAL INSTALLATIONS.
9. ALL CONCRETE SPECIFIED HEREIN IS NOT PART OF THIS CERTIFICATION. AS A MINIMUM, ALL CLIPS SHALL BE INSTALLED TO 3192 KSI MIN CONCRETE. ALL STEEL MEMBERS SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF 3192 PSI UNLESS NOTED OTHERWISE.
10. ALL WOOD MEMBERS SHALL BE PRESSURE TREATED SOUTHERN YELLOW PINE GRADE #2 WITH SPECIFIC GRAVITY G = 0.55 OR GREATER. DIRECT CONNECTION TO WOOD MEMBERS/SLEEPERS IS NOT PERMITTED FOR ROOF-TOP APPLICATIONS PER FBC SECTION 1522.
11. THE CONTRACTOR IS RESPONSIBLE TO INSULATE ALL MEMBERS FROM DISSIMILAR MATERIALS TO PREVENT ELECTROLYSIS. I.E. ALUMINUM PER F.B.C. 2003.8.4.
12. ELECTRICAL GROUND, WHEN REQUIRED, TO BE DESIGNED & INSTALLED BY OTHERS.
13. THE ADEQUACY OF ANY EXISTING STRUCTURE TO WITHSTAND SUPERIMPOSED LOADS SHALL BE VERIFIED BY THE ENGINEER BEFORE DESIGN. DESIGN AND IS NOT INCLUDED IN THIS CERTIFICATION. THE ENGINEER EXPRESSLY PROVIDES HEREIN, NO ADDITIONAL CERTIFICATIONS OR AFFIRMATIONS ARE INTENDED.
14. THE SYSTEM DETAILER FOR THIS SITE IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SPECIFIC SITE. FOR SITE CONDITIONS DIFFERENT FROM THE CONDITIONS DETAILED HEREIN, A LICENSED ENGINEER OR REGISTERED ARCHITECT SHALL PREPARE SITE SPECIFIC DOCUMENTS FOR USE IN CONJUNCTION WITH THIS DOCUMENT.
15. WATER-TIGHTNESS OF EXISTING HOST SUBSTRATE SHALL BE THE FULL RESPONSIBILITY OF THE INSTALLING CONTRACTOR. CONTRACTOR SHALL ENSURE THAT ANY REMOVED OR ALTERED WATERPROOFING MEMBRANE IS RESTORED AFTER FABRICATION AND INSTALLATION OF STRUCTURE. REMOVED WATERPROOFING MEMBRANE SHALL NOT BE REUSED. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ISSUES WHICH MAY OCCUR AS WATER-TIGHTNESS SHALL BE THE FULL RESPONSIBILITY OF THE INSTALLING CONTRACTOR.

SEE SHEET 4 FOR A SITE-SPECIFIC DESIGN PRESSURE EXAMPLE & ACCOMPANYING UNIT CONFIGURATIONS WITH TIE-DOWN CLIP REQUIREMENTS.

REMARKS	DRWN	CHKD	DATE	TSB	FLB	CSL	KEY FOR UNITS
UNIT ISSUE			12-1-11	TSB	FLB	CSL	
			02-15-13				

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11-BMP-0001

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1" STEEL CLIP TIE-DOWN SCHEDULE: AT GRADE INSTALLATIONS:

[illegible]

- TIE-DOWN CLIPS SHALL BE FASTENED TO MECHANICAL HOUSING UNIT WITH (3) #12 SAE GRADE 5 SHEET METAL SCREWS. [NOTE: FOR LONGER CLIPS UTILIZE (5) #12 SMS OR (4) 3/8" SMS].
2. MECHANICAL HOUSING UNIT SHALL CONFORM TO THE FOLLOWING:
- 2.1. ALUMINUM HOUSING UNITS SHALL BE 6063-T6 MIN. ALUMINUM SHEET WITH F<sub>y</sub>=30 KSI, 0.125" MIN. THICKNESS.
- 2.2. STEEL HOUSING UNITS SHALL BE 33KSI MIN. STEEL, GRADE 33, 2/32" MIN. (t=0.0299").
3. MAXIMUM ALLOWABLE WIND PRESSURES FOR EACH INDIVIDUAL SUBSTRATE MAY BE EQUIVALENT DUE TO THE LIMITING CAPACITY OF THE 1" CLIP.
4. A MAXIMUM ALLOWABLE V<sub>10</sub> VALUE OF 200 PSF HAS BEEN UTILIZED. FOR HIGHER DEMAND CAPACITIES CONTACT THIS ENGINEER FOR SITE-SPECIFIC ENGINEERING.



ANCHOR SCHEDULE:

SUBSTRATE	ANCHOR
CONCRETE: (4" THICK MIN., 3192KSI MIN.)	(1)-¾" Ø CARBON STEEL ITW BULDEX TAPCON, 1 ¼" FULL EMBED TO CONCRETE, 2 ½" MIN. PENETRATION, 3" MIN. SPACING TO ANY ADJACENT ANCHOR.
ALUMINUM: (0.125" MIN. THICK, 6061-T6 MIN. ALUMINUM)	(1)-#14 SAE GRADE 5 SHEET METAL SCREW TO ALUMINUM, PROVIDE (5) FINCHES MIN. PAST THREAD PLANE FOR SHEET METAL SCREW.
STEEL: (0.125" MIN. THICK, 33 KSI MIN. STEEL)	(1)-#14 SAE GRADE 5 SHEET METAL SCREW TO STEEL, PROVIDE (5) PINCHES MIN. PAST THREAD PLANE FOR SHEET METAL SCREW.
SEALED WOOD: (SOUTHERN YELLOW PINE, G-50 OR BETTER)	(1)-#14 SAE GRADE 5 WOOD SCREW TO WOOD MEMBER, PROVIDE 1 ½" MIN. THREAD PENETRATION, 1" MIN. EDGE DISTANCE, 1" MIN. END DISTANCE.

**ANCHOR SCHEDULE NOTES:**

1. EMBEDMENT AND EDGE DISTANCE EXCLUDES FINISHES, IF APPLICABLE.
2. ENSURE MINIMUM EDGE DISTANCE AS NOTED IN ANCHOR SCHEDULE.

TABLE LEGEND:

	-DENOTES EXAMPLE VALUE FOR USE WITH COVER PAGE DIRECTIVE
	-DENOTES VALUES NOT APPROVED FOR USE
++	--SEE ALTERNATE CLIP DETAIL 5/4 ON SHEET 4

**2" STEEL CLIP TIE-DOWN SCHEDULE: AT GRADE INSTALLATIONS:**

[illegible]

1. TIE-DOWN CLIPS SHALL BE FASTENED TO MECHANICAL HOUSING UNIT WITH (3)- $\frac{3}{8}$ " SAE GRADE 5 SHEET METAL SCREWS OR (2)- $\frac{3}{8}$ " SAE GRADE 5 SHEET METAL SCREWS, [NOTE: FOR LONGER CLIPS UTILIZE (2)- $\frac{3}{8}$ " SAE GRADE 5 SHEET METAL SCREWS]
2. MECHANICAL HOUSING UNIT SHALL CONFORM TO THE FOLLOWING:
  - 2.1. ALUMINUM HOUSING UNITS SHALL BE 6063-T6 MIN. ALUMINUM SHEET WITH F<sub>y</sub>=30 KSI, 0.125" MIN. THICKNESS.
  - 2.2. STEEL HOUSING UNITS SHALL BE 30X31 MIN. STEEL, GRADE 33, 22GA MIN. (t=0.0299")
  - 2.3. A MAXIMUM ALLOWABLE WAVE OF 200 PSF HAS BEEN UTILIZED; FOR HIGHER DEMAND CAPACITIES CONTACT THIS ENGINEER FOR SITE-SPECIFIC ENGINEERING.

ANCHOR SCHEDULE:


ANCHOR	ANCHOR
<p>(1) <math>\frac{1}{4}</math>" Ø CARBON STEEL ITW BUILDEX TAPCON, 1 <math>\frac{3}{4}</math>" FULL EMBED TO CONCRETE, 2 <math>\frac{1}{2}</math>" MIN. EDGE DISTANCE, 3" MIN. SPACING TO ANY ADJACENT ANCHOR.</p>	
<p>(2) #14 SAE GRADE 5 SHEET METAL SCREW TO ALUMINUM, PROVIDE (5) PINCHES MIN. PAST THREAD PLANE FOR SHEET METAL SCREW.</p>	
<p>(3) #14 SAE GRADE 5 SHEET METAL SCREW TO STEEL, PROVIDE (5) PINCHES MIN. PAST THREAD PLANE FOR SHEET METAL SCREW.</p>	
<p>(4) #14 SAE GRADE 5 WOOD SCREW TO WOOD MEMBER, PROVIDE 1 <math>\frac{1}{2}</math>" MIN. THREAD PENETRATION, 1" MIN. EDGE DISTANCE, 1" MIN. END DISTANCE.</p>	

**ANCHOR SCHEDULE NOTES:**

1. EMBEDMENT AND EDGE DISTANCE EXCLUDES FINISHES, IF APPLICABLE.
2. ENSURE MINIMUM EDGE DISTANCE AS NOTED IN ANCHOR SCHEDULE.

**TABLE LEGEND:**

	-DENOTES VALUES NOT APPROVED FOR USE
++	-SEE ALTERNATE CLIP DETAIL 5/4 ON SHEET 4

	<b>BMP INTERNATIONAL, INC.</b> 4710 28TH STREET NORTH ST. PETERSBURG, FL 33471 PH: (727) 577-1613 MECHANICAL UNIT STEEL TIE-DOWN CLIPS FLORIDA STATEWIDE APPROVAL	160 SW 12TH AVENUE DEERFIELD BEACH, FL 33442 PH: (954) 354-0660 FAX: (954) 354-0665 WWW.ENGP.FL.COM A FRANK L. BENARDINO, P.E., INC. SUBMITTAL OFFICE OF MATTHEW BENARDINO
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- ## ANCHOR SCHEDULE:

1. EMBEDMENT AND EDGE DISTANCE EXCLUDES FINISHES, IF APPLICABLE.  
ENSURE MINIMUM EDGE DISTANCE AS NOTED IN ANCHOR SCHEDULE.

[illegible]

- ANCHOR SCHEDULE:

1. EMBEDMENT AND EDGE DISTANCE EXCLUDES FINISHES, IF APPLICABLE.
2. ENSURE MINIMUM EDGE DISTANCE AS NOTED IN ANCHOR SCHEDULE.

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UNIT ISSUE	TSB	F.L.B	12-11-11
REV FOR UNITS	CSL	TSB	02-15-13
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