

EVALUATION SUBJECT: DEWALT ULTRACON &amp; ULTRACON+ CONCRETE &amp; MASONRY SCREW ANCHOR

20-21685

Florida Building Code Seventh Edition (2020)

**REPORT HOLDER:**

 DEWALT  
 701 EAST JOPPA ROAD  
 TOWNSON, MD 21286 USA  
 (800) 524-3244 | DEWALT.COM

**SCOPE OF EVALUATION** (compliance with the following codes):

**THIS IS A STRUCTURAL PERFORMANCE EVALUATION OF THE COMPONENTS LISTED HEREIN ONLY. NO OTHER PERFORMANCE RATINGS OR CERTIFICATIONS ARE OFFERED OR IMPLIED HEREIN.**

This Product Evaluation Report is being issued in accordance with the requirements of the **Florida Building Code Seventh Edition (2020)** per FBC Section 104.11.2, 1701.2, 1707.1, 1709.3 and 1901.3 for use within and outside the High Velocity Hurricane Zone (HVHZ)

**SUBSTANTIATING DATA:**
**Product Evaluation Documents**

Substantiating documentation has been submitted to provide this report and is summarized in the sections below.

**Test Reports**

Testing has been performed to qualify the following design criteria:

- Maximum allowable tension and shear capacities (per ACI 355.2 & ASTM E488)
- Corrosion resistance (per ASTM G85)

**Test Report(s) by Hurricane Engineering & Testing, Inc.**

HETI-03-1173, HETI-03-C6005, HETI-03-C6006, HETI-08-A414, HETI-08-A416, HETI-08-A417, HETI-08-A432, HETI-08-A434, HETI-08-C104, HETI-19-A3005, HETI-19-A3024, HETI-19-M551, HETI-19-M552, HETI-19-S321A, HETI-19-S324A, HETI-19-C106

**INSTALLATION:**

Anchor installation shall be made in accordance with the manufacturers published installation instructions and this report.

- Drill holes at least 1/4" deeper than the anchor embedment.
- See drill bit schedule to determine appropriate drill bit diameter corresponding to fastener diameter.
- Clean holes of debris and dust before installation of anchor.
- Anchors shall not be installed before the concrete has developed its design strength.
- Anchors shall not be installed in cracked concrete substrates as defined in ACI 355.2.

**LIMITATIONS & CONDITIONS OF USE:**

Use of this product shall be in strict accordance with this report as noted herein. See remaining pages for complete limitations and conditions of use.

**FINISH:**

DeWALT Ultracon+ is a corrosion resistant concrete and masonry fastener finished with Stalgard coating.

**NOTE: THE GRAPHICAL DEPICTIONS IN THIS REPORT ARE FOR ILLUSTRATIVE PURPOSES ONLY AND MAY DIFFER IN APPEARANCE.**

**MATERIAL:**

Carbon Steel. Anchor yield strength  $F_y = 117$  ksi (3/16" diameters),  $F_y = 148$  ksi (1/4" diameters), 155 ksi (5/16" diameter). Anchor ultimate tensile strength  $F_{ut} = 164$  ksi (3/16" and 1/4" diameters), 177 ksi (5/16" diameter).

**OPTIONS:**

This evaluation is valid for the DeWALT Ultracon+ anchor sizes listed herein (3/16", 1/4" and 5/16").

**Head Markings:** DeWALT Ultracon+ and Ultracon Masonry Fasteners are identified with a "D+" in the case of 3/16" and 1/4" diameters 2 1/4" in length and over, and a "D" in the case of 3/16" and 1/4" diameters 1 3/4" in length and under, and the 5/16" diameter. Trimfit Flat Head styles are indicated with a single dot in the case of 1/4" diameter anchors, and 2 dots in the case of 5/16" diameter anchors.

**Length Codes:** All anchor heads are stamped with a length character referenced in this report. Length codes reference the distance from tip to surface below washer in the case of hex washer head styles, and the distance from tip to top of head for flat head styles.

**STRUCTURAL PERFORMANCE:**

For maximum allowable anchor tension/shear capacities (for single anchor), reference the design schedules herein. Allowable loads listed = the ultimate tested load divided by minimum safety factors (4.0 for non-cracked concrete only and 5.0 for hollow and grout-filled block substrates). No allowable stress increase has been used in the preparation of this document.

**VISIT [ECALC.IO/21685](https://ecalculator.com/21685)**

 FOR SITE SPECIFIC DEVIATIONS  
 & MORE INFORMATION ABOUT THIS DOCUMENT  
 OR SCAN THIS QR CODE

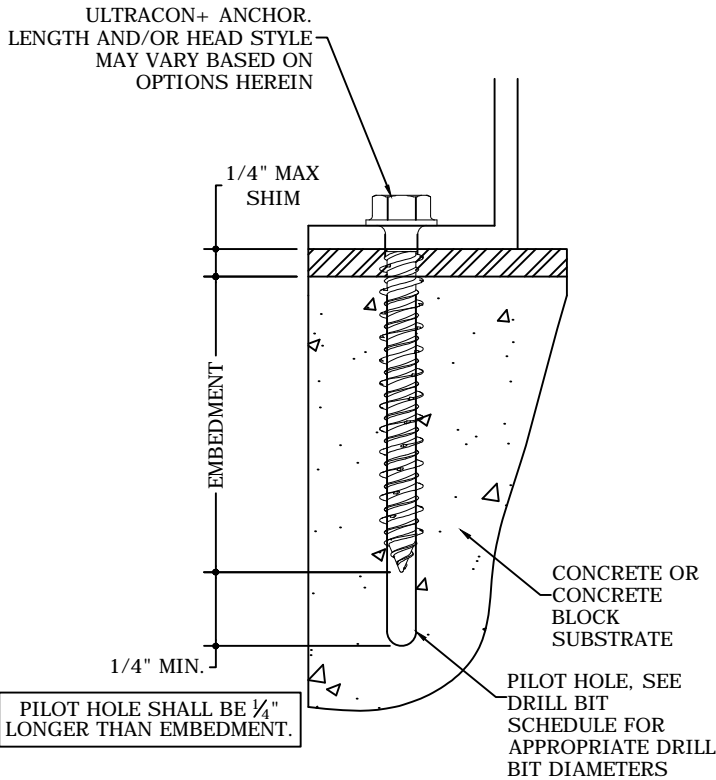
**VISIT [ENGINEERINGEXPRESS.COM/STORE](https://engineeringexpress.com/store)**  
 FOR ADDITIONAL PLANS, REPORTS & RESOURCES

**ENGINEER SIGNATURE AND SEAL:**


August 03, 2020

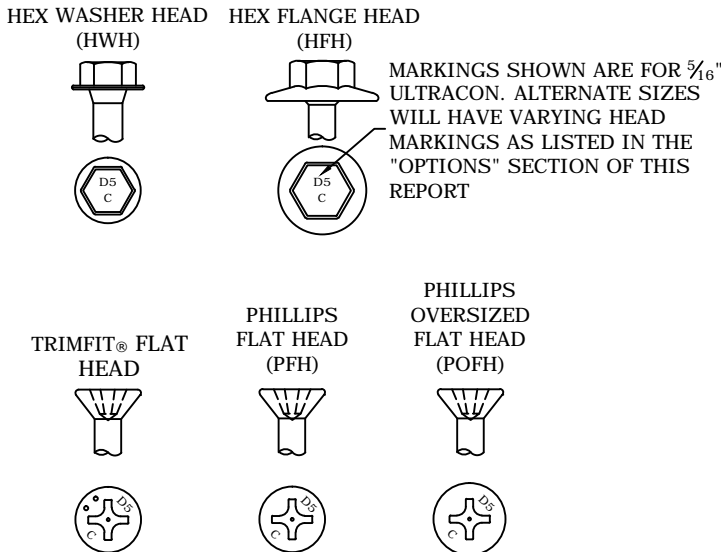
 Richard Neet, P.E.  
 Engineering Express®  
 FL PE #86488 FLCA #9885

**SECTION 2: ANCHOR INSTALLATION**



**1** TYPICAL SECTION  
2 NTS SECTION

**SECTION 3: HEAD STYLES & DIMENSIONS**



**2** HEAD STYLES (5/16"Ø)  
2 NTS

**DRILL BIT SCHEDULE:**

SCREW-ANCHOR DIAMETER	DRILL BIT
5/16"	1/4" DIAMETER DEWALT ULTRACON BIT
1/4"	3/16" DIAMETER DEWALT ULTRACON+ BIT
3/16"	5/32" DIAMETER DEWALT ULTRACON+ BIT

1. INSTALLATION SHALL BE MADE IN ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS AND THIS MIAMI-DADE COUNTY, NOTICE OF ACCEPTANCE.
2. DRILL HOLES AT LEAST 1/4" DEEPER THAN ULTRACON EMBEDMENT.
3. CLEAN HOLES OR DEBRIS AND DUST BEFORE INSTALLATION OF ANCHOR.
4. ANCHORS SHALL NOT BE INSTALLED BEFORE THE CONCRETE HAS DEVELOPED ITS DESIGN STRENGTH.
5. ANCHORS SHALL NOT BE INSTALLED IN CRACKED CONCRETE SUBSTRATES, AS DEFINED IN ACI 355.2.

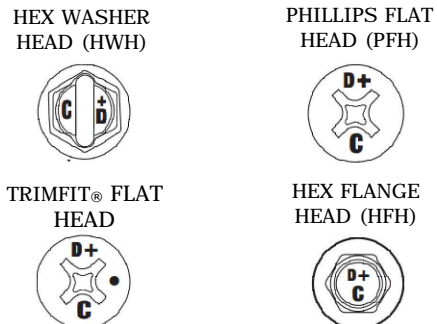
**WASHER HEAD (HWH & HFH)**

**DIMENSIONS:**

HEAD STYLE	WASHER DIAMETER
5/16" HWH	0.415"
5/16" HFH	0.543"
1/4" HWH	0.415"
1/4" HFH	0.615"
3/16" HWH	0.335"

**FLAT HEAD DIMENSIONS:**

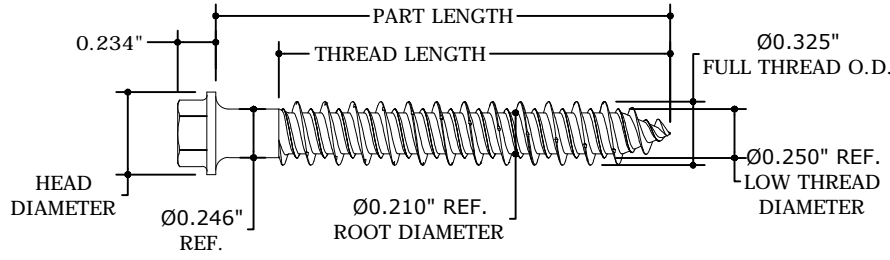
HEAD STYLE	HEAD DIAMETER
5/16" PFH	0.543"
5/16" POFH	0.695"
5/16" TRIMFIT	0.414"
1/4" PFH	0.485"
1/4" TRIMFIT	0.415"
3/16" PFH	0.370"



**3** HEAD STYLES (1/4"Ø & 3/16"Ø)  
2 NTS

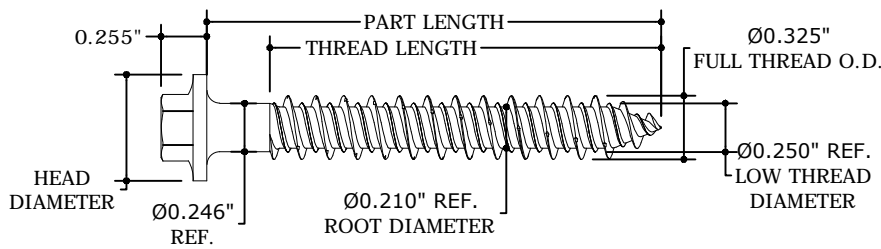
**IN ALL CONDITIONS IT IS THE RESPONSIBILITY OF THE PERMIT HOLDER TO ENSURE THE HOST STRUCTURE IS CAPABLE OF WITHSTANDING THE LOAD RATING HEREIN. NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, IS OFFERED BY ENGINEERING EXPRESS AS TO THE INTEGRITY OF THE HOST STRUCTURE TO CARRY DESIGN FORCE LOADS INCURRED BY THIS PRODUCT.**

**SECTION 4: ANCHOR OPTIONS**



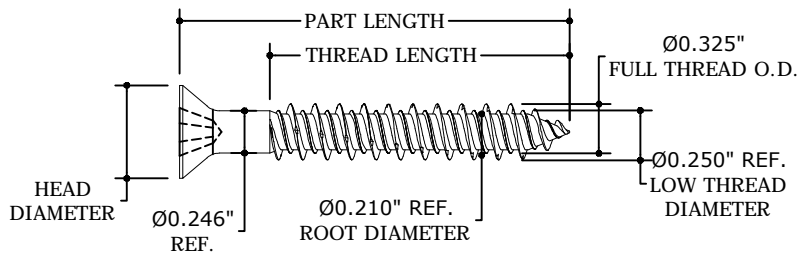
**1** 5/16" HEX WASHER HEAD (HWH)  
 3 NTS SIDE VIEW

LENGTH CODE	PART LENGTH	THREAD LENGTH
A	1-3/4"	1.563"
B	2-1/4"	2.000"
C	2-3/4"	2.000"
D	3-1/4"	2.000"
E	3-3/4"	2.000"



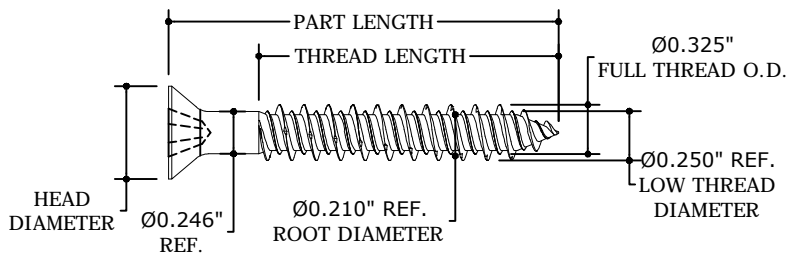
**2** 5/16" HEX FLANGE HEAD (HFH)  
 3 NTS SIDE VIEW

LENGTH CODE	PART LENGTH	THREAD LENGTH
A	1-3/4"	1.563"
B	2-1/4"	2.000"
C	2-3/4"	2.000"
D	3-1/4"	2.000"
E	3-3/4"	2.000"
F	4"	2.000"
G	5"	2.000"
H	6"	2.000"



**3** 5/16" PHILLIPS FLAT HEAD (PFH & TRIMFIT (TFH))  
 3 NTS SIDE VIEW

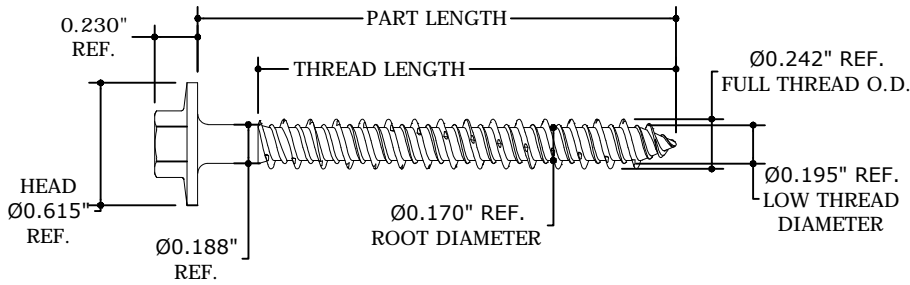
LENGTH CODE	PART LENGTH	THREAD LENGTH (PFH)	THREAD LENGTH (TFH)
B	2-1/4"	1.750"	1.750"
C	2-3/4"	1.750"	1.750"
D	3-1/4"	1.750"	1.750"
E	3-3/4"	1.750"	2.000"
F	4"	1.750"	2.000"
G	5"	1.750"	2.000"



**4** 5/16" PHILLIPS OVERSIZED FLAT HEAD (POFH)  
 3 NTS SIDE VIEW

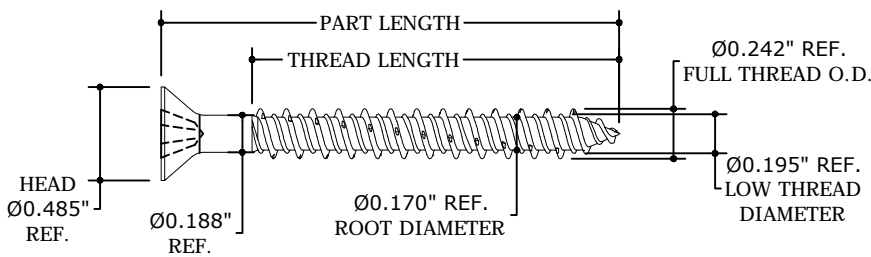
LENGTH CODE	PART LENGTH	THREAD LENGTH
C	3"	1.750"
F	4"	1.750"
G	5"	1.750"
H	6"	1.750"

SECTION 4: ANCHOR OPTIONS (CONTINUED)



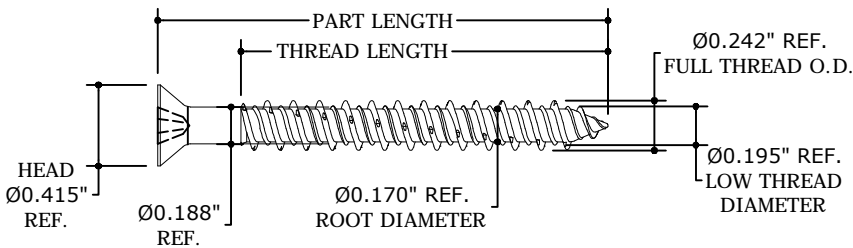
LENGTH CODE	PART LENGTH	THREAD LENGTH
□	1-1/4"	1.000"
A	1-3/4"	1.625"
B	2-1/4"	1.875"
C	2-3/4"	1.875"
D	3-1/4"	1.875"

**1** 1/4" HEX FLANGE HEAD (HFH)  
 4 NTS SIDE VIEW



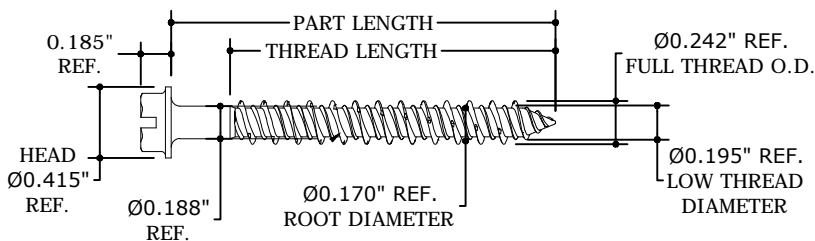
LENGTH CODE	PART LENGTH	THREAD LENGTH
□	1-1/4"	1.000"
A	1-3/4"	1.500"
B	2-1/4"	1.875"
C	2-3/4"	1.875"
D	3-1/4"	1.875"
E	3-3/4"	1.875"
F	4"	1.875"
H	5"	1.875"
J	6"	1.875"

**2** 1/4" PHILLIPS FLAT HEAD (PFH)  
 4 NTS SIDE VIEW



LENGTH CODE	PART LENGTH	THREAD LENGTH
□	1-1/4"	1.000"
A	1-3/4"	1.500"
B	2-1/4"	1.875"
C	2-3/4"	1.875"
D	3-1/4"	1.875"
E	3-3/4"	1.875"
F	4"	1.875"

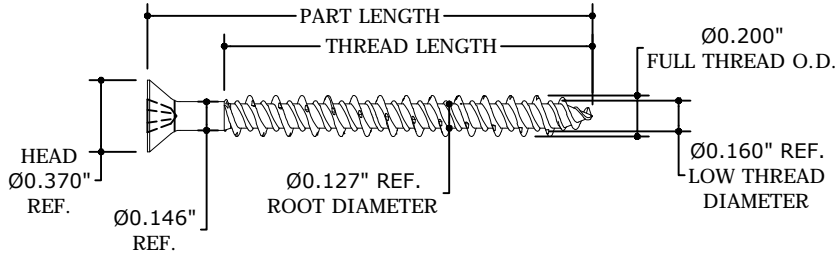
**3** 1/4" TRIMFIT FLAT HEAD (TFH)  
 4 NTS SIDE VIEW



LENGTH CODE	PART LENGTH	THREAD LENGTH
□	1-1/4"	1.000"
A	1-3/4"	1.625"
B	2-1/4"	1.875"
C	2-3/4"	1.875"
D	3-1/4"	1.875"
E	3-3/4"	1.875"
F	4"	1.875"
H	5"	1.875"
J	6"	1.875"

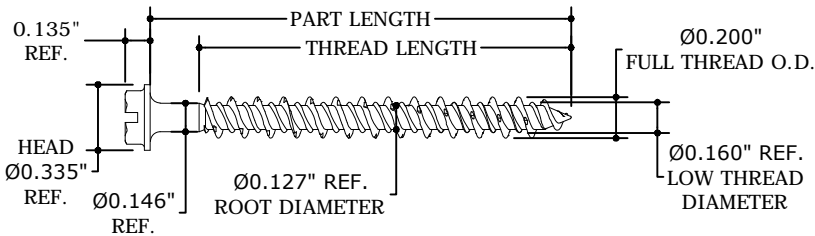
**4** 1/4" HEX WASHER HEAD (HWH)  
 4 NTS SIDE VIEW

**SECTION 4: ANCHOR OPTIONS (CONTINUED)**



**1** **3/16" PHILIPS FLAT HEAD (PFH)**  
**5** NTS SIDE VIEW

LENGTH CODE	PART LENGTH	THREAD LENGTH
□	1-1/4"	1.000"
A	1-3/4"	1.500"
B	2-1/4"	1.875"
C	2-3/4"	1.875"
D	3-1/4"	1.875"
E	3-3/4"	1.875"
F	4"	1.875"



**2** **3/16" HEX WASHER HEAD (HWH)**  
**5** NTS SIDE VIEW

LENGTH CODE	PART LENGTH	THREAD LENGTH
□	1-1/4"	1.125"
A	1-3/4"	1.625"
B	2-1/4"	1.875"
C	2-3/4"	1.875"
D	3-1/4"	1.875"
E	3-3/4"	1.875"
F	4"	1.875"

**SECTION 5: ANCHOR CAPACITIES**

**5/16"Ø ULTRACON ALLOWABLE LOAD CAPACITIES:**

	EDGE DISTANCE	SPACING	EMBEDMENT**	TENSION (LB)	SHEAR (LB)
3,500 P.S.I. CONCRETE*	1-1/4"	1-7/8"	2"	205	120
		3-3/4"	2"	290	120
		5"	1"	180	215
	2-3/16"	5"	1-3/4"	525	330
			1"	205	375
		1-3/4"	600	785	
	3-1/8"	1-7/8"	2"	300	120
			3-3/4"	2"	455
		5"	1"	210	450
			1-3/4"	660	850
2"			835	850	
GROUT FILLED BLOCK	2-1/2"	1-3/4"	230	370	
		2-1/4"	290	375	
HOLLOW BLOCK	1-9/16"	6"	1-1/4"	130	140
				1-7/8"	130
	3-1/8"	3-3/4"		140	175
		6"		225	290

CAPACITY TABLE NOTES (ALL SIZE OPTIONS):

1. ALLOWABLE LOAD CAPACITIES LISTED HEREIN ARE NOT VALID FOR CRACKED CONCRETE SUBSTRATES.
2. EMBEDMENT VALUE LISTED HEREIN CONSIDERS FULL EMBEDMENT TO CONCRETE, GROUT FILLED BLOCK OR HOLLOW BLOCK. EMBEDMENT DEPTH DOES NOT INCLUDE THE THICKNESS OF ANY WOOD BUCKS.
3. UN-CRACKED CONCRETE SHALL HAVE THE MINIMUM COMPRESSIVE STRENGTH (*f*<sub>c</sub>) AS LISTED IN TABLES.
4. ALL HOLLOW AND GROUT-FILLED BLOCK SHALL BE PER ASTM C-90.
5. ANCHOR EDGE DISTANCES, EMBEDMENTS AND SPACINGS SMALLER THAN THOSE SHOWN IN DESIGN TABLES ARE NOT ACCEPTABLE.

**SECTION 5: ANCHOR CAPACITIES (CONTINUED)**

**1/4"Ø ULTRACON+ ALLOWABLE LOAD CAPACITIES:**

	EDGE DISTANCE	SPACING	EMBEDMENT	TENSION (LB)	SHEAR (LB)
3000 P.S.I. CONCRETE	1"	1"	1-3/4"	340	90
		1-1/2"	1-3/4"	340	100
		3"	1-3/4"	460	110
		4"	1"	205	130
			1-3/8"	295	170
	2-1/2"	1-1/2"	1-3/4"	590	425
			3"	1-3/4"	590
		4"	1"	215	335
			1-3/8"	470	435
			1-3/4"	615	435
HOLLOW BLOCK	1"	1-1/2"	1-1/4"	155	95
		3"	1-1/4"	155	160
	2-1/2"	1-1/2"	1-1/4"	160	240
		3"	1-1/4"	175	290
GROUT FILLED BLOCK	1"	1-1/2"	1-3/4"	370	100
		4"	1-3/4"	370	205
	2-1/2"	4"	1-3/4"	395	290
		4"	2-1/4"	625	315
		4-1/2"	2-1/4"	625	330
		4-1/2"	2-1/4"	625	330

SEE PAGE 5 FOR CAPACITY TABLE NOTES

**3/16"Ø ULTRACON+ ALLOWABLE LOAD CAPACITIES:**

	EDGE DISTANCE	SPACING	EMBEDMENT	TENSION (LB)	SHEAR (LB)
3000 P.S.I. CONCRETE	1"	1"	1-3/4"	140	80
		1-1/8"	1-3/4"	340	80
		2-1/4"	1-3/4"	360	155
		3"	1"	150	115
			1-3/8"	215	120
		3-3/8"	1-3/4"	360	155
	2-1/2"	1-1/8"	1-3/4"	385	315
		2-1/4"	1-3/4"	385	315
		3"	1"	150	165
			1-3/8"	300	190
			3-3/8"	1-3/4"	385
		HOLLOW BLOCK	1"	1-1/2"	1-1/4"
3"	1-1/4"			150	115
2-1/2"	1-1/8"		1-1/4"	155	185
	2-1/4"		1-1/4"	155	185
GROUT FILLED BLOCK	1"	1-1/2"	1-3/4"	195	85
		3-3/8"	1-3/4"	280	85
		4-1/2"	2-1/4"	415	150
	2-1/2"	3-3/8"	1-3/4"	280	220
		3-9/16"	1-3/4"	295	250
		4-1/2"	2-1/4"	415	250

SEE SHEET 5 FOR CAPACITY TABLE NOTES

REMARKS	DRWN	CHKD	DATE
INIT ISSUE	RWN	RWN	2/12/2020
-	-	-	-