

EVALUATION SUBJECT: **ULTRACON & ULTRACON+ CONCRETE & MASONRY SCREW ANCHOR****23-62844****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 ONLY. NO OTHER PERFORMANCE RATINGS OR CERTIFICATIONS ARE OFFERED OR IMPLIED HEREIN.**

This Performance Evaluation is being issued in accordance with the requirements of the **Florida Building Code Eighth Edition (2023)** per FBC section 104.11.2, 1701.2, 1701.1, 1709.3 and 1901.3 for use within and outside the High Velocity Hurricane Zone (HVHZ). The product noted in this performance evaluation has been tested and/or evaluated as summarized herein.

SUBSTANTIATING DATA:**• Product Evaluation Documents**

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

• Test Reports

Testing has been performed to quality 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 manufacturer 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 the product(s) listed herein shall be in strict accordance with this product evaluation as noted herein and manufacturer-provided model specifications. Installation shall conform to the minimum standards stated in the referenced building code(s) in addition to the specifications and limitations stated herein. See herein for complete limitations & conditions of use.

OPTIONS:

This evaluation is valid for the DEWALT Ultracon & Ultracon+ anchor sizes listed herein.

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.

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

For maximum allowable anchor tension/shear capacities (for single anchor) reference the design schedule herein. Allowable loads listed = 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.

MATERIAL:

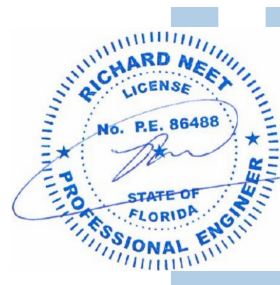
Carbon Steel. Anchor yield strength $F_y = 177$ ksi (3/16" diameter), $F_y = 148$ ksi (1/4" diameter), 155 ksi (5/16" diameter). Anchor ultimate tensile strength $F_{ut} = 164$ ksi (3/16" and 1/4" diameter), 177 ksi (5/16" diameter)

FINISH:

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

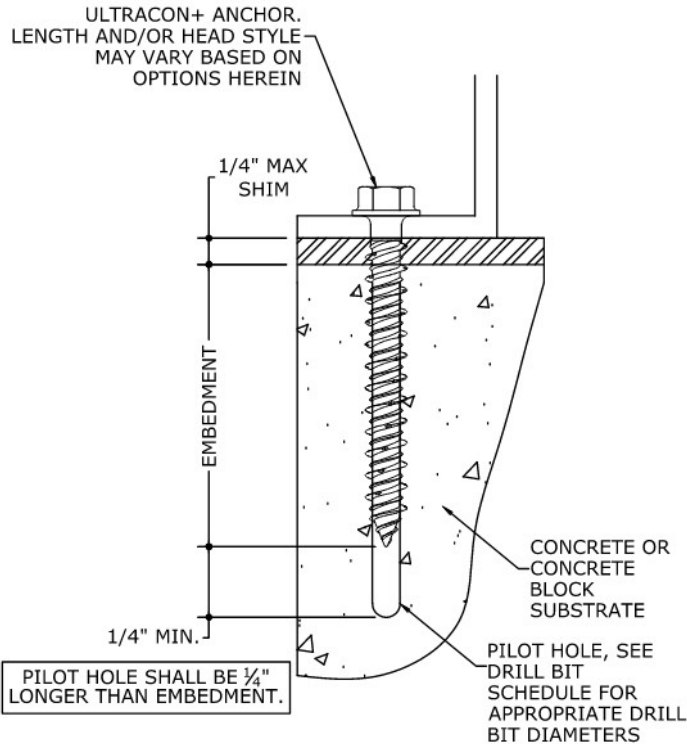
VISIT [ECALC.IO/62844](https://ecalculator.com/23-62844)FOR MORE INFORMATION AND
DEVIATIONS TO THIS EVALUATION OR
SCAN THE QR CODE TO THE RIGHT >

Engineer Signature & Seal:

Digitally signed by Richard Neet
Date: 2023.10.20 11:04:44-04'00'

October 4, 2023

Richard Neet, P.E.
ENGINEERING EXPRESS®
FL PE #86488 FLCA #9885

SECTION 2: ANCHOR INSTALLATION

1 TYPICAL SECTION
2 NTS SECTION

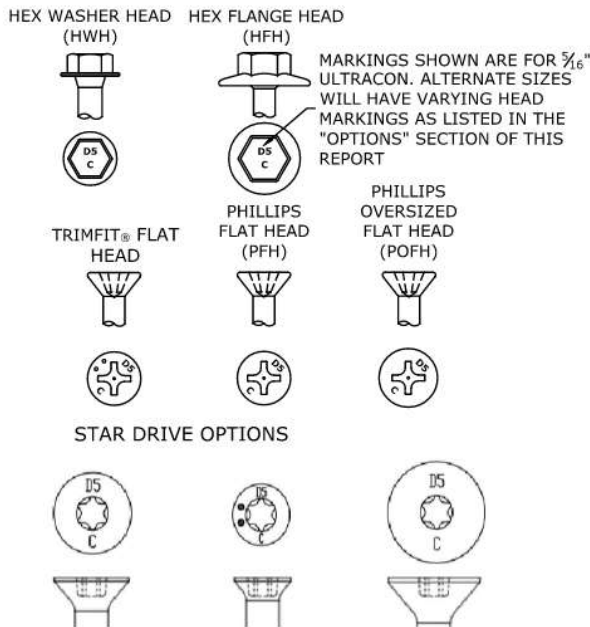
DRILL BIT SCHEDULE:

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"

SECTION 3: HEAD STYLES & DIMENSIONS

2 HEAD STYLES (5/16"Ø)
2 NTS

FLAT HEAD DIMENSIONS:

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

HEX WASHER HEAD (HWH)



TRIMFIT® FLAT HEAD



PHILLIPS FLAT HEAD (PFH)



HEX FLANGE HEAD (HFH)

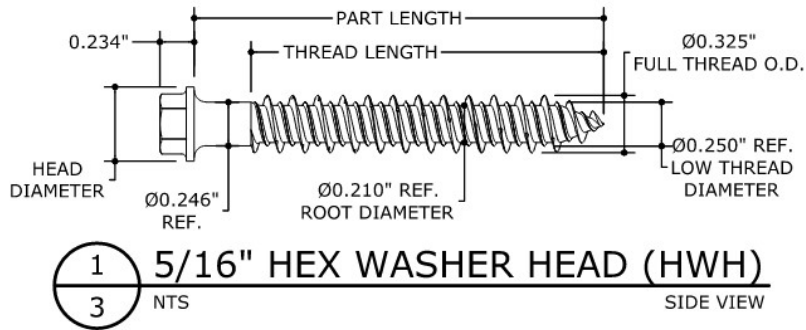


STAR DRIVE OPTIONS

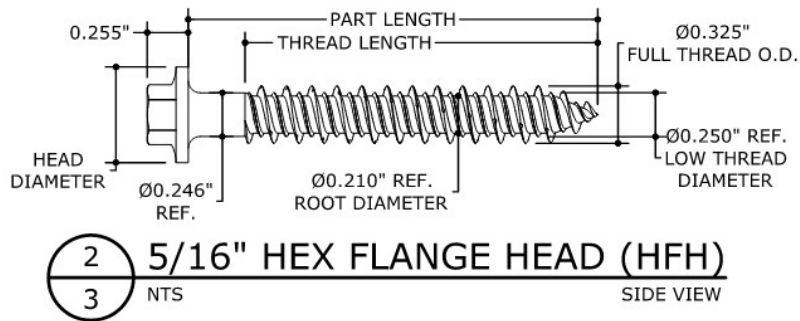


3 HEAD STYLES (1/4"Ø & 3/16"Ø)
2 NTS

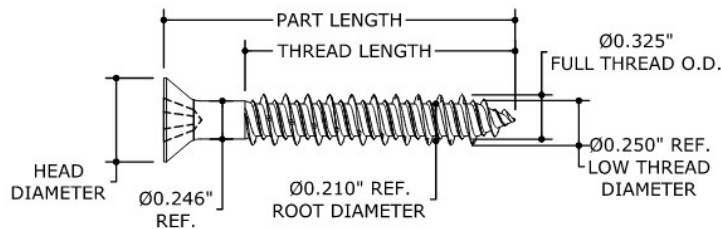
SECTION 4: ANCHOR OPTIONS



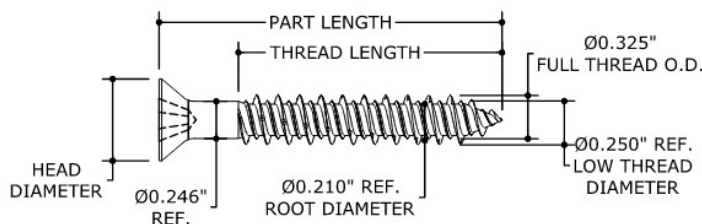
LENGTH CODE	PART LENGTH	THREAD LENGTH
A	1-3/4"	1.563"
B	2-1/4"	2.000"
C	2-3/4"	2.000"
D	3-1/4"	2.000"
E	3-3/4"	2.000"



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"



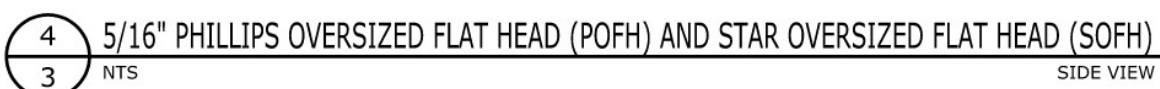
LENGTH CODE	PART LENGTH	THREAD LENGTH (PFH)	THREAD LENGTH (TFH)
B	2-1/4"	1.750"	1.750"
C	2-3/4"	1.750"	1.750"
D	3-1/4"	1.750"	1.750"
E	3-3/4"	1.750"	2.000"
F	4"	1.750"	2.000"
G	5"	1.750"	2.000"



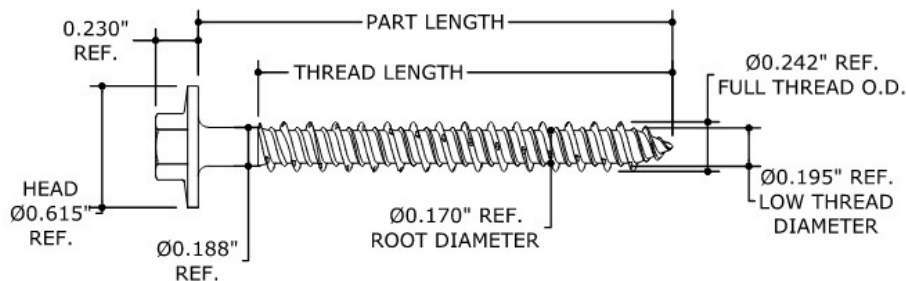
LENGTH CODE	PART LENGTH	THREAD LENGTH (PFH)	THREAD LENGTH (TFH)
B	2-1/4"	1.750"	1.750"
C	2-3/4"	1.750"	1.750"
D	3-1/4"	1.750"	1.750"
E	3-3/4"	1.750"	2.000"
F	4"	1.750"	2.000"
G	5"	1.750"	2.000"



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

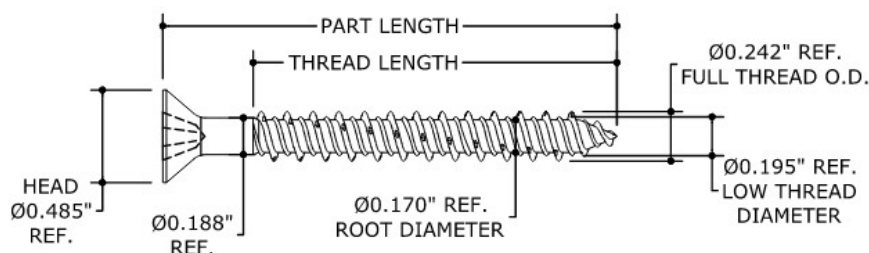


SECTION 4: ANCHOR OPTIONS (CONTINUED)



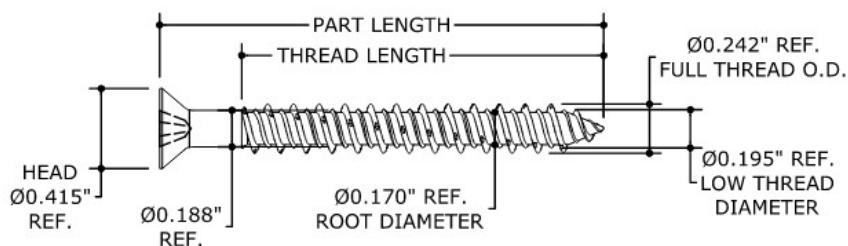
LENGTH CODE	PART LENGTH	THREAD LENGTH
□	1-1/4"	1.000"
A	1-3/4"	1.625"
B	2-1/4"	1.875"
C	2-3/4"	1.875"
D	3-1/4"	1.875"

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



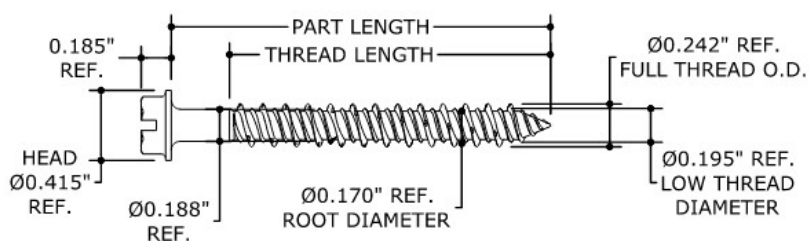
LENGTH CODE	PART LENGTH	THREAD LENGTH
□	1-1/4"	1.000"
A	1-3/4"	1.500"
B	2-1/4"	1.875"
C	2-3/4"	1.875"
D	3-1/4"	1.875"
E	3-3/4"	1.875"
F	4"	1.875"
H	5"	1.875"
J	6"	1.875"

2 **1/4" PHILLIPS FLAT HEAD (PFH) AND STAR FLAT HEAD (SFH)**
 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"

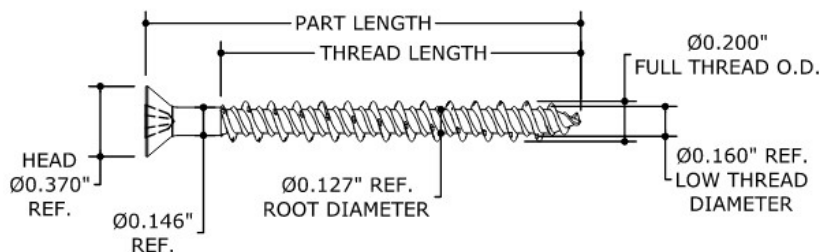
3 **1/4" TRIMFIT FLAT HEAD (TFH) AND STAR TRIMFIT FLAT HEAD (STFH)**
 4 NTS SIDE VIEW



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"

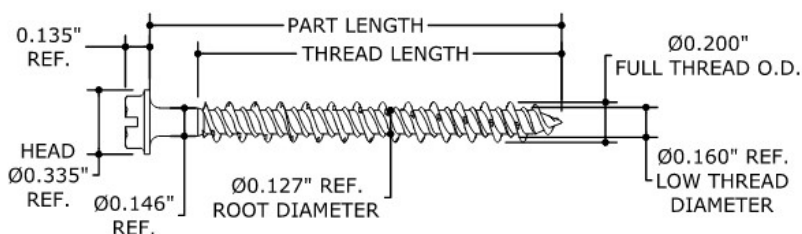
4 **1/4" HEX WASHER HEAD (HWH)**
 4 NTS SIDE VIEW

SECTION 4: ANCHOR OPTIONS (CONTINUED)



1 3/16" PHILIPS FLAT HEAD (PFH) AND STAR FLAT HEAD (SFH)
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	
			1-3/4"	525	330	
	2-3/16"	5"	1"	205	375	
			1-3/4"	600	785	
	3-1/8"	1-7/8"	2"	300	120	
		3-3/4"	2"	455	710	
		5"	1"	210	450	
			1-3/4"	660	850	
			2"	835	850	
			1-3/4"	230	370	
GROUT FILLED BLOCK	2-1/2"	5"	2-1/4"	290	375	
HOLLOW BLOCK	1-9/16"	6"	1-1/4"		130	140
	3-1/8"	1-7/8"			130	175
		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'_c) 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
			1-3/4"	530	170
	2-1/2"	1-1/2"	1-3/4"	590	425
		3"	1-3/4"	590	435
		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

SEE SHEET 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	315
HOLLOW BLOCK	1"	1-1/2"	1-1/4"	145	80
		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

TERMINOLOGY, CONTINUED

The following abbreviations may appear in this report: "Addtl." for "additional", "AHJ" for "Authority Having Jurisdiction", "alum" for "aluminum", "ASCE" for "American Society of Civil Engineers", "ASD" for "Allowable Stress Design", "ASTM" for "American Society for Testing and Materials", "EA." for "each", "E.D." for "edge distance", "EDDS" for "extra deep drawing steel", "e.g." for "*exempli gratia*" or "for example", "equiv." for "equivalent", "FBC" for "Florida Building Code", "FEA" for "Finite Element Analysis", "FLCA" for "Florida Certificate of Authorization", "FS" for "Florida Statutes", "Fu" for "ultimate tensile strength" or "ultimate tensile stress", "Fy" for "yield strength" or "yield stress", "GA" for "gauge", "GR." or "Gr." for "grade", "HVAC" for "heating, ventilation, and air conditioning", "HVHZ" for "High-Velocity Hurricane Zone", "i.e." for "*id est*" or "in other words", "in" for "inch", "lb" for "pound (force)", "max." for "maximum", "min." for "minimum", "mm" for "millimeter", "NTS" for "not to scale", "O.C." for "on center", "OD" for "outer diameter", "pcf" for "pounds (force) per cubic foot", "PE" for "Professional Engineer", "qty" for "quantity", "SAE" for "Society of Automotive Engineering", "SMS" for "sheet metal screws", "SS" for "stainless steel", "TER" for "Technical Evaluation Report", "typ." for "typical", "ult" for "ultimate loads", "U.N.O." for "unless noted otherwise", "UTS" for "ultimate tensile strength" or "ultimate tensile stress", "WLL" for "working load limit", "w/o" for "without", "YS" for "yield strength" or "yield stress", "#" for "number", "&" for "and", and "Ø" for "diameter". For additional abbreviation/terminology clarifications, please contact this office.

Note: The term "Thru-Bolt" or through bolt, if used herein, refers to a bolt passing through the member(s) in contact and is fastened by a nut at the end opposite the screw head. Nut shall be equivalent to or exceed the strength of the bolt U.N.O. Nut shall be sized to accommodate the same nominal diameter as the bolt U.N.O. See diagram above-right for a sample thru-bolt configuration.

Note: For instances herein which list material specifications as "[material type] or stronger":

U.N.O. herein, the term "stronger" refers to a material with a UTS value equal to or greater than the UTS value of the stated material type. Consult appropriate literature for established material UTS values.

Note: Equivalent steel gauge thicknesses as used in this evaluation, U.N.O., are as follows:

22 GA (.030"), 20 GA (.036"), 18 GA (.048"), 16 GA (.060"), 14 GA (.075"), 12 GA (.098").

Proj. #	Remarks	By	Checked	Date	Proj. #	Remarks	By	Checked	Date
20-21685	Initial Issue	RWN	RWN	02/12/2020					
23-62488	2023 FBC Update & Star Drive Options Addition	MRT	RWN	10/04/2023					