EARTHBOUND ™

"Holdowns That Work"

The first and only continuous tension holdown system.
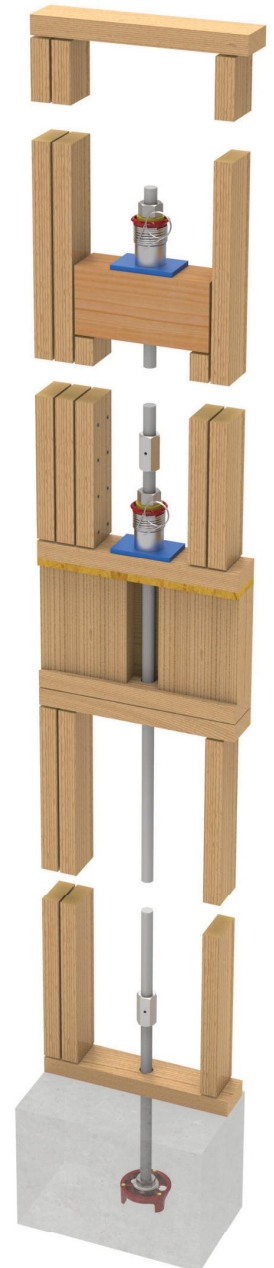
Earthbound Seismic and Wind Holdown Systems.
The industry leader in hardware and design technology.

FEATURES AND BENEFITS OF THE EARTHBOUND SYSTEM®

Features:

- **ChubbySmack™ now has IAPMO UES Report ES-0734!**

- Standardized anchor bolt placement.

- Shrinkage and compression compensating devices. See the SlackJack®, HeavyJack™ and the MiniJack™ inside!

- 3-inch travel compensation available for six and seven story buildings.

- Color-coded components.

- Continuous connections.

- No welded parts.

- IAPMO UES Evaluation Report: ER-429 *Updated*

- IAPMO ER-429 Supplements for California, City of LA, & Florida

- The first and only continuous threaded rod holdown to provide tension in the system.

Benefits:

- Higher tolerance to anchor bolt misplacement.

- Holdowns that work after shrinkage and compression occur during the life of a building.

- Fewer devices required means material savings.

- Straight load path to foundation anchor.

- Color-coded plates and components provide straightforward identification and inspection.

- Only one vertical hole drilled per floor

- Installation labor savings.

- No ladder required.

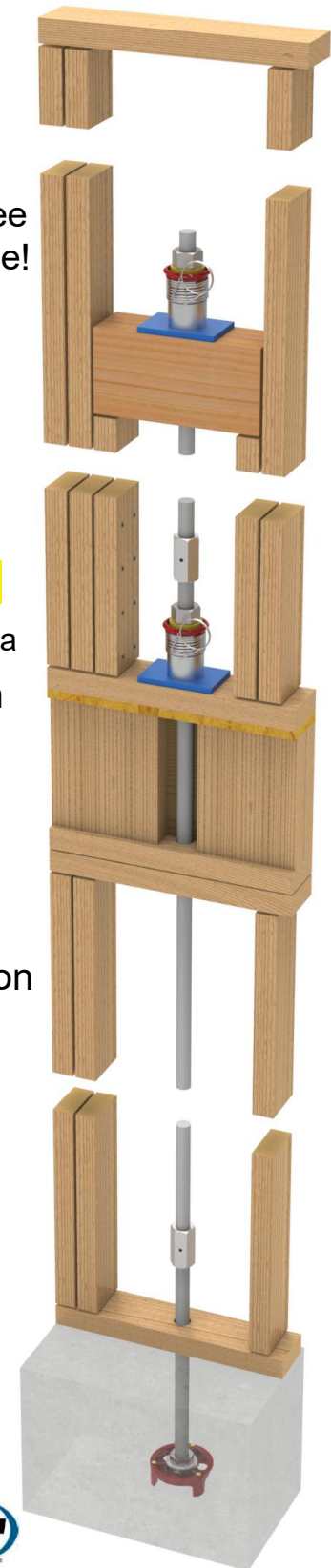- No eccentric loading.

- Proven corrosion resistance.

EARTHBOUND
"Holdowns That Work"

Earthbound Corporation
17361 Tye Street SE
Monroe, WA 98272

www.holdown.com
Telephone (360) 863-0722
Fax (360) 863-0724

TABLE OF CONTENTS AND INTRODUCTION

Updated for Earthbound for 2022:

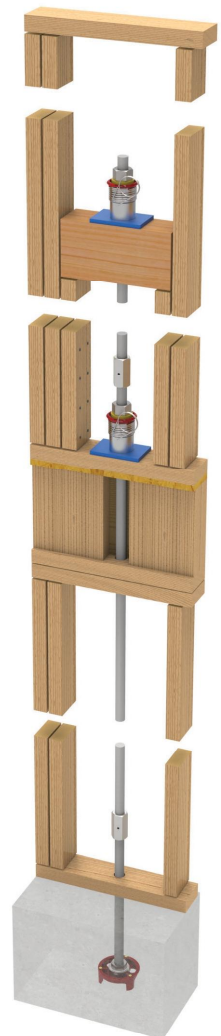**ChubbySmack™ Anchoring Products now recognized under IAPMO ER-0734!**

In July 2022 we updated our IAPMO recognition which includes our ChubbyNut™ and HeavySet™ concrete anchoring nuts. Our report also includes the SmackChair™, SmackFlat™ and our new popular SnapChair™ line of anchor stands. The new SnapChair™ is available in 1/2 thru 3/4 inch anchor rod sizes.

SlackJack® with new HeavyJacks™ line of Shrinkage Fasteners now updated in IAPMO ER-0429!

We released the new line of HeavyJack™ shrinkage devices that have greater capacities, improved deflection and Delta R (Δ_R) values.

Earthbound SuperCoupler™ patented and patent pending extended length coupler component to lower system elongation!

We now provide a new product to effectively provide lower elongation values per story with high tension loads that are commonly specified on lower stories. This enables us to maintain a maximum 1-1/2" diameter rod thru the floor systems and our shrinkage devices.

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COMPENSATION FOR SHRINKAGE AND BUILDING SETTLEMENT

The Earthbound System is proud to feature the HeavyJack™, SlackJack® and MiniJack™ shrinkage and building settlement compensation devices. These devices are revolutionary to the holddown industry and contain many features and benefits not found in other devices. Available with three inch compensation for six to seven stories.

SlackJack®　　　MiniJack™

1" Travel SlackJack®　　2" Travel SlackJack®　　1" Travel MiniJack™　1 1/2" Travel MiniJack™

- The SlackJack®, HeavyJack™ and MiniJack™ are fully evaluated and tested.
- Installs easier and faster than other take up devices.
- Salt spray tested to verify corrosion resistance and proven capability to continue to actuate.
- The SlackJack® and HeavyJack™ features a patent-pending self-aligning swivel feature for rods out of plumb and keeps device flat on the plate. No other shrinkage device on the market can offer this.
- Can be reset in the field without tools.
- No lag screws to buy separately and install.
- No set screw to forget to remove.
- No baling wire to remove or tie strap to cut.
- Clip is specially designed to not be left behind.
- Heavy duty compression spring to prevent rods from bowing.
- Color coded for threaded rod size and travel distance.
- Devices are available up to 1-1/2" diameter rods in 1 inch through 3 inch shrinkage compensation capacity.
- MiniJacks are available for up to 1/2" dia. rods and up to 2 inches travel.
- IAPMO ES ER-429 with California CBC, Florida FBC & City of LA supplements.

SLACKJACK® DEVICE INSTALLATION

SLIDE   SPIN   PULL   FINISHED!

Slide Slackjack® on top of color bearing plate.
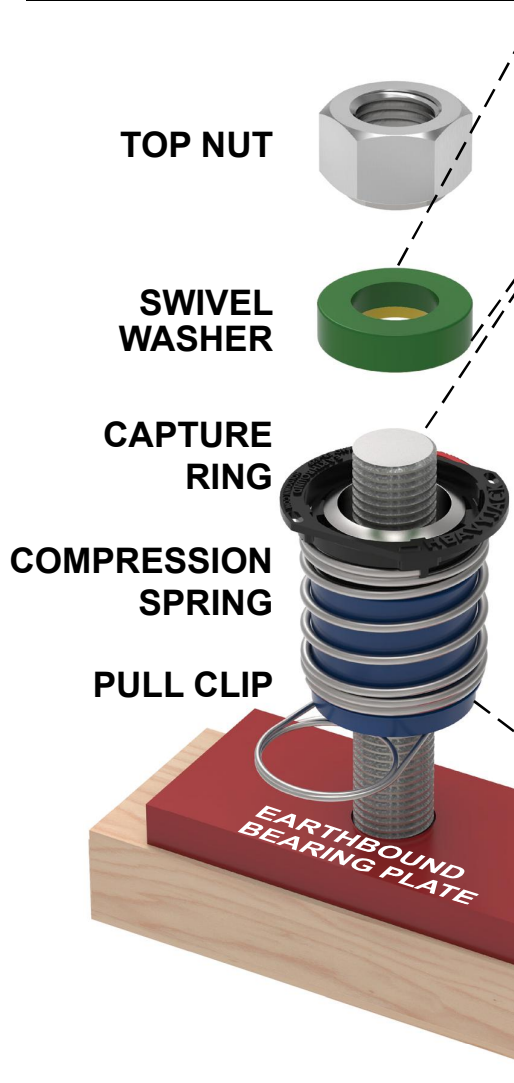
Place color coded washer and spin nut down hand tight.

Pull clip away from device.

Place clip in capture ring holder to show activation!

MINIJACK™, HEAVYJACK™ & SLACKJACK® DEVICE SELECTION TABLE

SWIVEL COLOR	THREADED ROD APPLICATION	ROD DIAMETER (in)
ORANGE	R3	3/8 in
PURPLE	R4 or R4HS	1/2 in
BLACK	R5 OR R5HS	5/8 in
GRAY	R6 OR R6HS	3/4 in
BLUE	R7 OR R7HS	7/8 in
YELLOW	R8 OR R8HS	1 in
WHITE	R9 OR R9HS	1 1/8 in
GREEN	R10 OR R10HS	1 1/4 in
RED	R12 OR R12HS	1 1/2 in

TOP NUT

SWIVEL WASHER

CAPTURE RING

COMPRESSION SPRING

PULL CLIP

Swivel Washer Note: Swivel washers are not available for MiniJack™ MJ series.

SLACKJACK MODEL	CAPTURE RING COLOR	ADDITIONAL COLOR CODE	TRAVEL AMOUNT (in)	ALLOWABLE LOAD (lbs)	DEFLECTION AT LOAD (in)
MJ100	RED	N/A	1.00 in	5,000 lbs	0.028 in
MJ150	GREEN	N/A	1.50 in	5,000 lbs	0.030 in
MJ200	ORANGE	N/A	2.00 in	4,900 lbs	0.033 in
SJA-210	BLUE	N/A	1.00 in	7,360 lbs	0.013 in
SJA-21-50	WHITE	N/A	1.50 in	8,000 lbs	0.018 in
SJA-220	YELLOW	N/A	2.00 in	7,730 lbs	0.018 in
SJT-410	ORANGE	N/A	1.00 in	9,000 lbs	0.020 in
SJT-420	BLACK	N/A	2.00 in	9,000 lbs	0.018 in
SJA-410	RED	N/A	1.00 in	14,000 lbs	0.022 in
SJA-420	GREEN	N/A	2.00 in	14,000 lbs	0.030 in
SJA-430	BROWN	N/A	3.00 in	14,750 lbs	0.033 in
SJT-610	GRAY	N/A	1.00 in	15,000 lbs	0.019 in
SJT-620	PURPLE	N/A	2.00 in	15,000 lbs	0.019 in
SJA-610	TAN	N/A	1.00 in	20,340 lbs	0.028 in
SJA-620	WHITE	BLUE*	2.00 in	20,100 lbs	0.038 in
HJA-710	PURPLE	N/A	1.00 in	15,650 lbs	0.015 in
HJA-720	GRAY	N/A	2.00 in	15,590 lbs	0.018 in
HJS-410	BLACK	BLUE*	1.00 in	22,000 lbs	0.020 in
HJS-420	BLACK	YELLOW*	2.00 in	22,000 lbs	0.026 in
HJS-710	BLACK	GREEN*	1.00 in	39,190 lbs	0.029 in
HJS-720	BLACK	ORANGE*	2.00 in	37,770 lbs	0.030 in
HJX-410	BLACK	GOLD*	1.00 in	34,220 lbs	0.035 in

SlackJack Selection Note: For all parts except "MJ" series, replace the last digit "0" with rod size. For example, to select the SJA410 series for 3/4-in rod = SJA416.
  * = Color coding will be painted compression spring or painted HeavyJack™ outer cylinders.
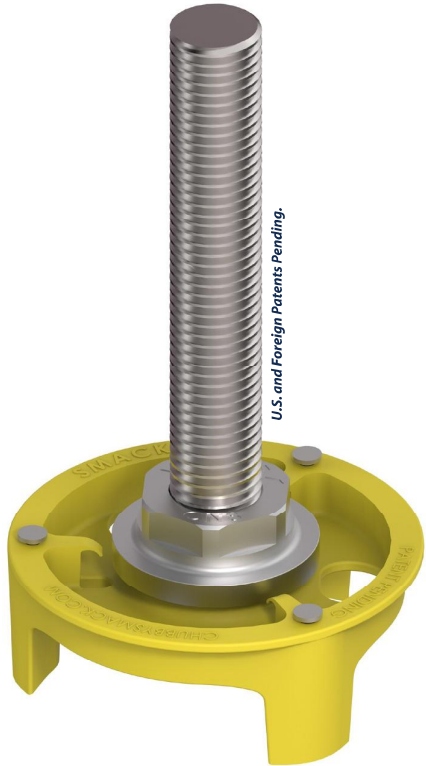 HeavyJack™ HJS-4110 shown (one inch travel for R10 rod size).

EARTHBOUND BEARING PLATE

IAPMO ES ER-429

CHUBBYSMACK™ ANCHOR PRODUCTS

*Chubby***Smack**™

UPDATED IAPMO UES ER-0734

Concrete Anchoring Products for podiums, slabs & foundations

U.S. and Foreign Patents Pending.
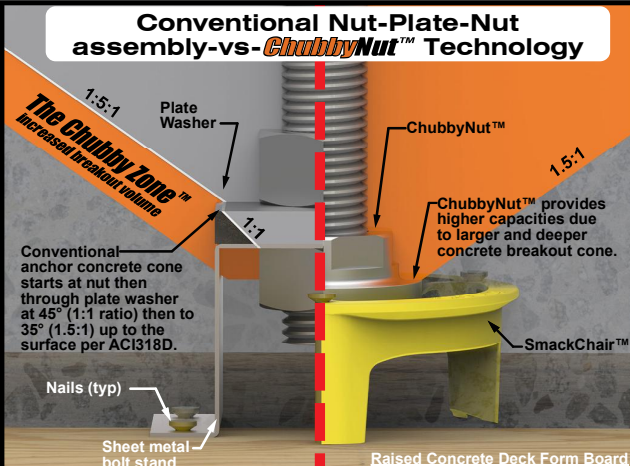
*Chubby***Nut**™	• Replaces nut-plate-nut anchors and J-bolts. • Use with A36/A307 threaded rod up to 1 1/2".
*Heavy***Set**™	• Replaces high strength nut-plate-nut anchors. • Use with A449, A193B7 threaded rod up to 1 1/2"
*Smack***Chair**™	• Use on raised podium and post tensioned decks. • Allows for required 1 inch concrete cover underneath. • Use in footings and slab on grade. • Color coded for rod size.
*Smack***Flat**™	• Use on raised decks over walls or where concrete cover is not critical. • Color coded for rod size.

• *Replaces* conventional nut-plate-nut embeds
• *Optimize* slab design thickness
• *Simplify* anchor design in ACI 318
• *Specify* with confidence!

ACI 318
Calculations available
at ***chubbysmack.com***
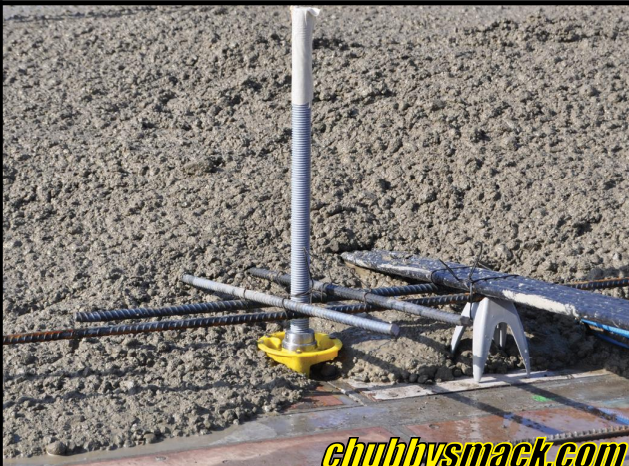
Conventional Nut-Plate-Nut assembly-vs-*Chubby*Nut**™ Technology**

The Chubby Zone™
Increased breakout volume

1.5:1

Plate Washer

ChubbyNut™

1.5:1

ChubbyNut™ provides higher capacities due to larger and deeper concrete breakout cone.

1:1

Conventional anchor concrete cone starts at nut then through plate washer at 45° (1:1 ratio) then to 35° (1.5:1) up to the surface per ACI318D.

SmackChair™

Nails (typ)

Sheet metal bolt stand

Raised Concrete Deck Form Board
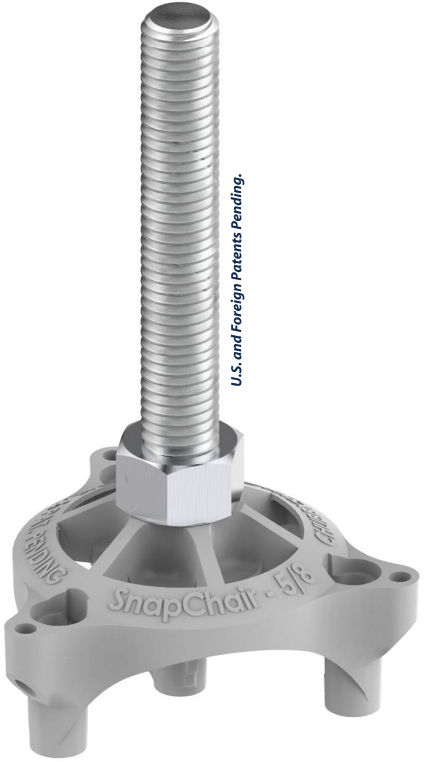
chubbysmack.com

SnapChair™

NOW AVAILABLE!

Concrete Anchoring Products for podiums, slabs & foundations

U.S. and Foreign Patents Pending.
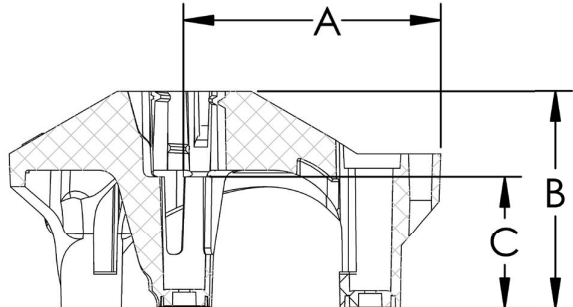
SnapChair™

**Part #: SNAP4 / 1/2" UNC
SNAP5 / 5/8" UNC
SNAP6 / 3/4" UNC**

Color: Gray

Box: 100 qty

Can be used with nails or screws (screws included)

U.S. and Foreign Patents Pending.

Snapchair™ Dimension and Clearances

A = 1.96 in
B = 1.64 in
C = 1.00 in

- *Optimized for Raised Podium Decks*
- *Easy to inspect*
- *One chair can be used with plain, zinc or HDG anchor rods*
- *Installation hardware included*
- *Provides 1 inch concrete cover for fire protection*
- *Most stable anchoring chair on the market*
- *Insulates anchor from corrosion exposure from below*
- *Stackable design providing ease of handling*
- *Gray chair color can't be seen from underneath*
- *No exposed screws after concrete form removal*

STANDARDIZED EARTHBOUND SYSTEM ANCHOR BOLT LAYOUT

ANCHOR BOLT
LOCATION ZONE (TYP)

9"
16" STUD BAY

STRAIGHT WALL

16" STUD BAY
9"
9"

WALL INTERSECTION

16" STUD BAY
9"
9"

CORNER INSTALLATION
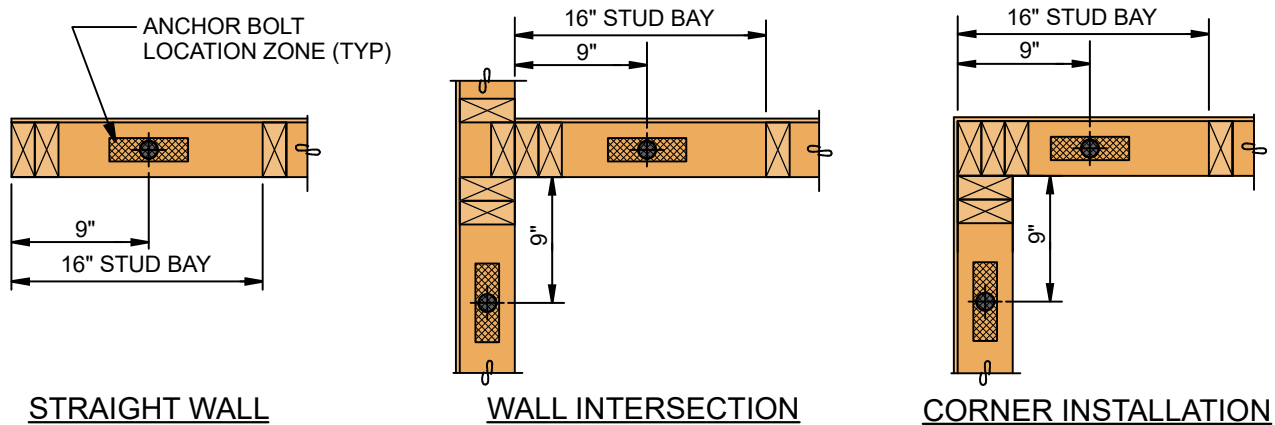
The Earthbound System features standardized anchor bolt placement.

What does this mean? - We want the anchor to be in the center of the first stud bay at each end of a shear wall. It means that no matter what compression members are required for the rod system holddown run, you can expect the anchor bolt location to remain nine (9") inches away from end of wall as shown above in all scenarios. It also means that your designed tension or overturning loads will not increase if anchor bolts are located further inward like other rod systems. A fixed layout dimension means easier anchor bolt layout before the pour.

How is the compression lumber distributed? - We want the additional compression lumber to occupy the first 16 inch on center stud bay, then start to fill in 2x studs inward away from end of wall. This maintains our maximum distance between anchor bolts in a shear wall and minimizes the calculated overturning load.

TYPICAL ANCHORING TYPES

**CHUBBYSMACK™
RAISED PODIUM**

**CHUBBYNUT™
SLAB ON GRADE**

EPOXY ANCHOR

**WOOD BEAM
CONNECTION**

**STEEL BEAM
CONNECTION**
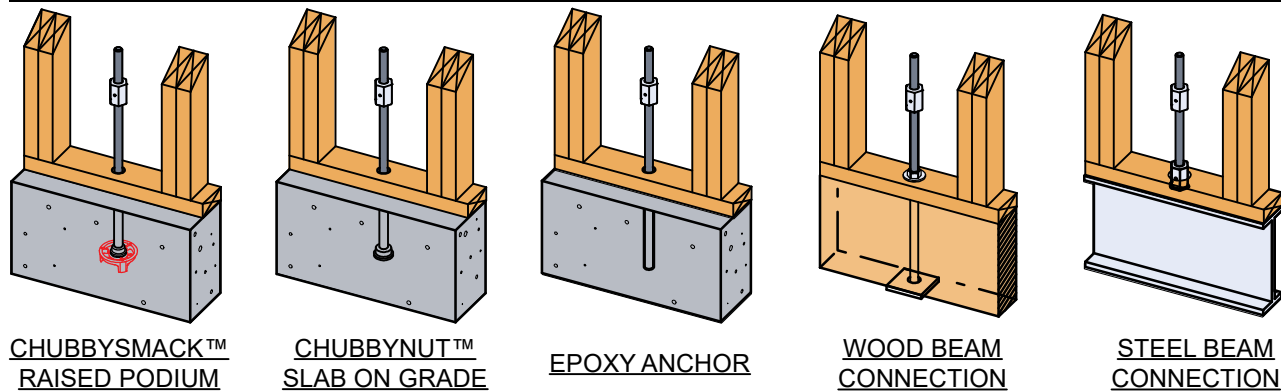
Anchoring Notes: The holddown anchor design is by the design professional. Typically the anchor bolt diameter matches the first wood level threaded rod material specification and size. Earthbound can supply the new ChubbySmack™ anchoring assemblies or include standard embedded plate washers per drawing requirements needed to furnish a complete system package. The wood beam plate shown must be sized to handle the entire run load. For steel beam runs, we recommend our exclusive Earthbound Welded Anchor directly to the beam. Welding requirements is per the design professional. Contact Earthbound for design information.

EARTHBOUND SYSTEM® COMPONENT SELECTION TABLES

EARTHBOUND SYSTEM THREADED ROD CAPACITIES

ROD NAME	ROD SIZE (in)	A_n ROD AREA (in²)	A_{se} ROD AREA (in²)	F'_u (psi)	TENSION LOAD CAPACITY		ROD SPEC[1,2,3]
					IBC 2018 LRFD[4A]	IBC 2018 ASD[4B]	
R3*	3/8"	0.1104	0.0775	60,000	3,490 LBS	2,440 LBS	ASTM A307
R4	1/2"	0.1963	0.1419	60,000	6,390 LBS	4,470 LBS	ASTM A307
R5	5/8"	0.3068	0.2260	60,000	10,170 LBS	7,120 LBS	ASTM A307
R6	3/4"	0.4418	0.3345	60,000	15,050 LBS	10,540 LBS	ASTM A307
R7	7/8"	0.6013	0.4617	60,000	20,780 LBS	14,540 LBS	ASTM A307
R8	1"	0.7854	0.6057	60,000	27,260 LBS	19,080 LBS	ASTM A307
R9	1 1/8"	0.9940	0.7633	60,000	34,350 LBS	24,040 LBS	ASTM A307
R10	1 1/4"	1.2272	0.9691	60,000	43,610 LBS	30,530 LBS	ASTM A307
R12	1 1/2"	1.7671	1.4052	60,000	63,240 LBS	44,270 LBS	ASTM A307
R14*	1 3/4"	2.4053	1.8995	60,000	85,480 LBS	59,830 LBS	ASTM A307
R16*	2"	3.1416	2.4982	60,000	112,420 LBS	78,690 LBS	ASTM A307
SR4	1/2"	0.1963	0.1419	75,000	7,980 LBS	5,590 LBS	ASTM F1554 GR55
SR5	5/8"	0.3068	0.2260	75,000	12,710 LBS	8,900 LBS	ASTM F1554 GR55
SR6	3/4"	0.4418	0.3345	75,000	18,810 LBS	13,170 LBS	ASTM F1554 GR55
SR7	7/8"	0.6013	0.4617	75,000	25,970 LBS	18,180 LBS	ASTM F1554 GR55
SR8	1"	0.7854	0.6057	75,000	34,070 LBS	23,850 LBS	ASTM F1554 GR55
SR9	1 1/8"	0.9940	0.7633	75,000	42,930 LBS	30,050 LBS	ASTM F1554 GR55
SR10	1 1/4"	1.2272	0.9691	75,000	54,510 LBS	38,160 LBS	ASTM F1554 GR55
SR12	1 1/2"	1.7671	1.4052	75,000	79,050 LBS	55,330 LBS	ASTM F1554 GR55
R5HS*	5/8"	0.3068	0.2260	125,000	21,190 LBS	14,830 LBS	ASTM A193 B7
R6HS	3/4"	0.4418	0.3345	125,000	31,360 LBS	21,950 LBS	ASTM A193 B7
R7HS	7/8"	0.6013	0.4617	125,000	43,290 LBS	30,300 LBS	ASTM A193 B7
R8HS	1"	0.7854	0.6057	125,000	56,790 LBS	39,750 LBS	ASTM A193 B7
R9HS	1 1/8"	0.9940	0.7633	125,000	71,560 LBS	50,090 LBS	ASTM A193 B7
R10HS	1 1/4"	1.2272	0.9691	125,000	90,850 LBS	63,600 LBS	ASTM A193 B7
R12HS	1 1/2"	1.7671	1.4052	125,000	131,740 LBS	92,220 LBS	ASTM A193 B7
R14HS*	1 3/4"	2.4053	1.8995	125,000	178,070 LBS	124,650 LBS	ASTM A193 B7

SMOOTH ROD ("SR") DIAGRAM:

SMOOTH ROD PART NUMBER:
SRxP -##
X = ROD SIZE IN EIGHTHS
(5 = 5/8")
P = PLAIN FINISH
(ASTM F1554 GR 55)
= ROD LENGTH IN FEET
(10.5 = 10.5 FT)

ROD END WITH 3 INCHES OF THREAD ALWAYS DOWNWARD IN COUPLER.

COUPLING NUT (STRAIGHT COUPLER WITH SIGHT HOLE SHOWN)

SMOOTH ROD MAY BE INTERCHANGABLE WITH ALL THREAD OF SAME OR SUPERIOR GRADE AND DIAMETER.
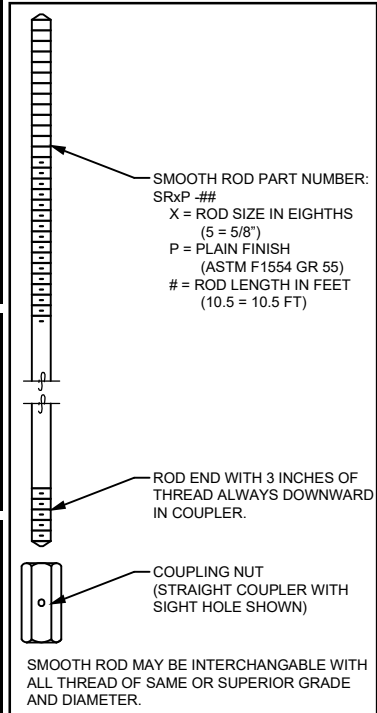
THREADED ROD NOTES:
1. STANDARD STRENGTH ROD / ASTM A307: F'_u = 60,000 PSI. AVAILABLE IN 10 AND 12 FOOT LENGTHS.
2. SMOOTH ROD ("SR") / ASTM F1554 GR 55: F'_u = 75,000 PSI. AVAILABLE 10, 10.5 AND 12 FT LENGTHS. SEE DIAGRAM.
3. HIGH STRENGTH ROD / ASTM A193B7: F'_u = 125,000 PSI. AVAILABLE IN 12 FOOT LENGTH.
4. TENSION LOADS ARE CALCULATED FROM THE FOLLOWING EQUATIONS:
    A. (IBC 2018 **LRFD**) THREADED ROD CAPACITY = [(0.75 * F'u * Ase)] - **STRENGTH DESIGN ONLY**
    B. (IBC 2018 **ASD**) THREADED ROD CAPACITY = [(0.75 * F'u * Ase) / 1.428] - **ALLOWABLE STRESS DESIGN ONLY**
5. (*) = AVAILABLE BY SPECIAL ORDER, CHECK WITH EARTHBOUND FOR AVAILABILITY.
6. ALL RODS SHALL BE UNIFIED SCREW THREAD - UNC ("COARSE")

EARTHBOUND BEARING PLATE CAPACITIES

PLATE PART NO.	DIFFERENTIAL LOAD	COLOR CODE	PLATE DIMENSIONS (INCHES)		
			WIDTH	LENGTH	THICK.
P6	6,650 LBS	GREEN	3"	3 1/2"	1/4"
P8	8,470 LBS	BLACK	3-1/4"	4 1/4"	1/4"
P10	10,320 LBS	BLUE	3-1/4"	5"	3/8"
P12	12,230 LBS	GRAY	3-1/4"	6"	5/8"
P14	13,660 LBS	RED	3-1/4"	7"	3/4"
P16	16,650 LBS	TAN	3-1/2"	8"	3/4"
P18	18,840 LBS	YELLOW	3-1/2"	9"	1"
P20	21,020 LBS	BROWN	3-1/2"	10"	1"
P22	23,210 LBS	WHITE	3-1/2"	11"	1 1/4"
P24	24,310 LBS	GOLD	3-1/2"	11 1/2"	1 1/4"
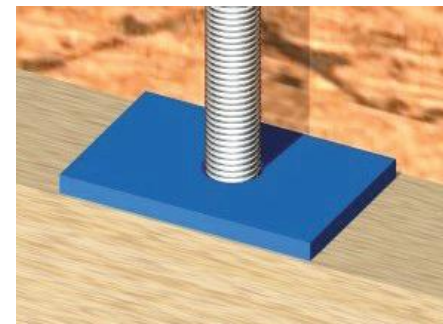
Color coded P10 (Blue) shown.

BEARING PLATE NOTES:
1. PLATE STEEL SHALL BE ASTM A36: F'_u = 60,000 PSI.
2. CUSTOM OR LARGER PLATE SIZES ARE AVAILABLE BY EARTHBOUND.
3. BEARING AREA BASED ON DOUGLAS FIR LARCH AT $F_{C(perp)}$ = 625 PSI.
4. THE ENGINEER OF RECORD SHALL REVIEW AND APPROVE CAPACITIES.

INTRODUCING THE EARTHBOUND SUPERCOUPLER™

SuperCoupler™

A simple way to control rod elongation for heavy tension loads

The Problem: All threaded rod systems have a deflection design constraint of 0.200 inches per floor. In the Earthbound System, we try to keep rod diameters at maximum 1 1/2 inches diameter which prevents large holes to be bored thru the floor system and slips thru our SlackJackTM and HeavyJackTM devices easily.

In a typical 10 foot story, tension loads that exceed 65,000 lbs will require the rod to be oversized larger than 1-1/2 inch diameter to increase cross sectional area in order to conform the 0.200 inch maximum per story limitation.

For these heavy loaded conditions, below on the left is one method we developed to minimize elongation by inserting a larger rod segment (1-3/4 inch to 2 inch diameter threaded rod) above the anchor bolt then couple back down to 1 1/2 inch diameter as we go thru the floor system and thru our devices. With this method the coupling nuts and the large threaded rod are very expensive components.

The Solution: Below on the right, we developed the SuperCouplerTM. This is simply a solid bar manufactured from ASTM A108 AISI 1144 steel with tapped threaded rod ends designed for 1-1/2" ASTM A193 B7 capacity.

Features and Specifications:
- Available in 36 and 48 inch lengths to mix and match what length is needed.
- Tapped ends for 1 inch thru 1 1/2 inch diameters UNC and overtapped for galvanized anchors
- 1-1/2 inch ASTM A193B7 connecting stud between SuperCouplers™ included by Earthbound.
- Bar material made from round bar steel conforming to ASTM A108 (AISI 1144) 89.9 ksi ultimate
- Standard bar diameter is 2 1/4 inches, 2 1/2 inch available special order
- Standard Capacity (ASD) is 92,220 lbs
- Color coded bands for easy identification
- Coupling nut sight holes provided at each end to verify rod engagement

• Oversized threaded rod betwen couplers

• Two SuperCoupler™ Segments

1-1/2 inch dia. rod thru floor system

2 inch dia. rod betwen couplers

1-1/2 inch dia. anchor bolt

1-1/2 inch dia. rod thru floor system

SuperCoupler™ Upper Segment

SuperCoupler™ Lower Segment

1-1/2 inch dia. anchor bolt

US Patents and Patents Pending
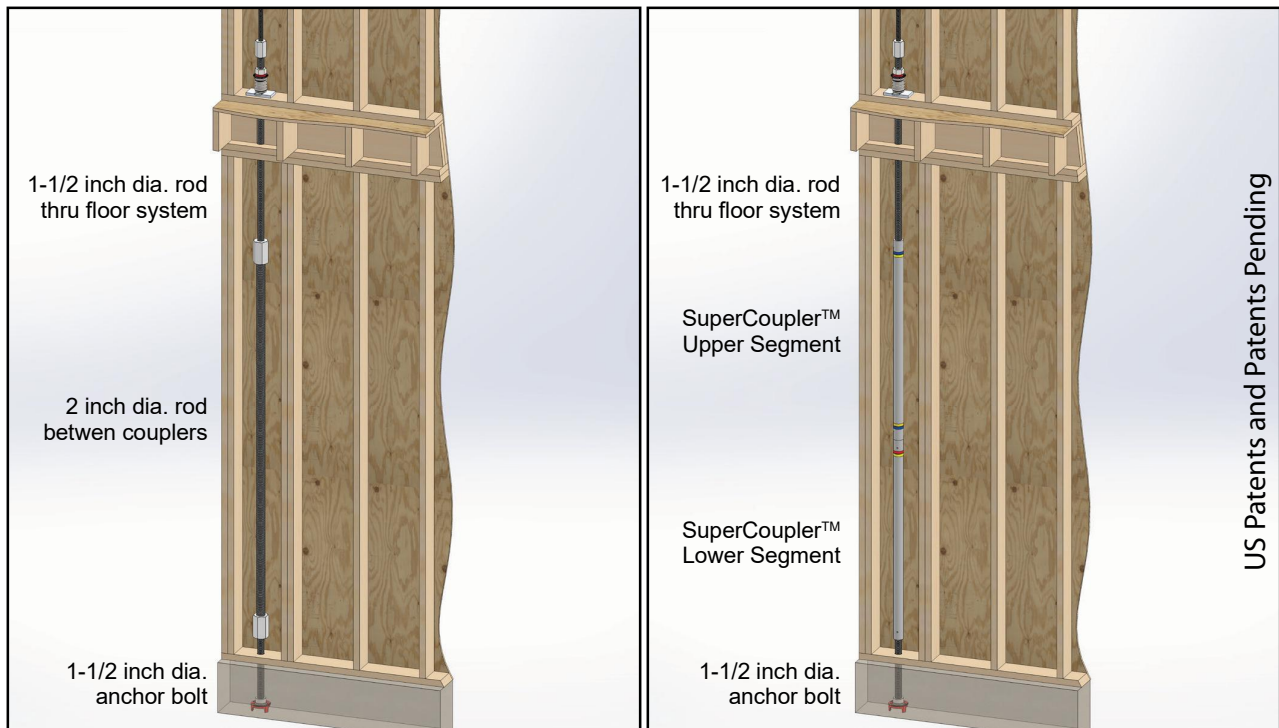
EARTHBOUND SUPERCOUPLER™ SAMPLE COLOR CODE CONFIGURATION

SuperCoupler™
Color Coding for sizes 1-1/4 thru 2 in rod diameters

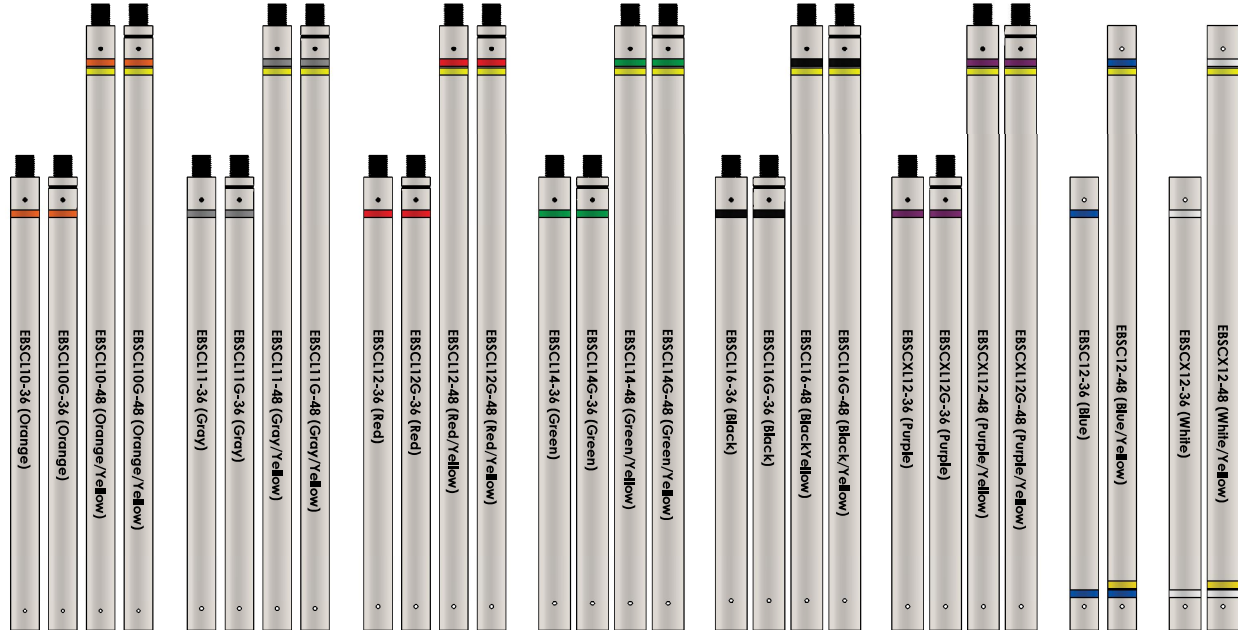# EARTHBOUND SUPERCOUPLER™ SELECTION TABLE AND CAPACITIES

EARTHBOUND SUPERCOUPLER™ SELECTION TABLE

EBSC PART	SEGMENT	LEGNTH (in)	BAR DIAMETER	BAR AREA (IN²)	TAPPED END DIA (UNC)	THREADED ROD GRADE	COLOR BANDS	CAPACITY (ASD)
EBSCL8-36	LOWER	36	2-1/4 IN	3.98 SQ IN	1 IN	ASTM A193 B7 / A449 / F1554GR105	BROWN	49,690 LBS
EBSCL9-36	LOWER	36	2-1/4 IN	3.98 SQ IN	1-1/8 IN	ASTM A193 B7 / A449 / F1554GR105	YELLOW	62,610 LBS
EBSCL10-36	LOWER	36	2-1/4 IN	3.98 SQ IN	1-1/4 IN	ASTM A193 B7 / A449 / F1554GR105	ORANGE	79,500 LBS
EBSCL11-36	LOWER	36	2-1/4 IN	3.98 SQ IN	1-3/8 IN	ASTM A193 B7 / A449 / F1554GR105	GRAY	94,740 LBS
EBSCL12-36	LOWER	36	2-1/4 IN	3.98 SQ IN	1-1/2 IN	ASTM A193 B7 / A449 / F1554GR105	RED	115,280 LBS
EBSCL14-36	LOWER	36	2-1/4 IN	3.98 SQ IN	1-3/4 IN	ASTM A36 / A307 / F1554 GR 36	GREEN	74,790 LBS
EBSCL16-36	LOWER	36	2-1/4 IN	3.98 SQ IN	2 IN	ASTM A36 / A307 / F1554 GR 36	BLACK	98,360 LBS
EBSCL8-48	LOWER	48	2-1/4 IN	3.98 SQ IN	1 IN	ASTM A193 B7 / A449 / F1554GR105	BROWN & YELLOW	49,690 LBS
EBSCL9-48	LOWER	48	2-1/4 IN	3.98 SQ IN	1-1/8 IN	ASTM A193 B7 / A449 / F1554GR105	YELLOW & YELLOW	62,610 LBS
EBSCL10-48	LOWER	48	2-1/4 IN	3.98 SQ IN	1-1/4 IN	ASTM A193 B7 / A449 / F1554GR105	ORANGE & YELLOW	79,500 LBS
EBSCL11-48	LOWER	48	2-1/4 IN	3.98 SQ IN	1-3/8 IN	ASTM A193 B7 / A449 / F1554GR105	GRAY & YELLOW	94,740 LBS
EBSCL12-48	LOWER	48	2-1/4 IN	3.98 SQ IN	1-1/2 IN	ASTM A193 B7 / A449 / F1554GR105	RED & YELLOW	115,280 LBS
EBSCL14-48	LOWER	48	2-1/4 IN	3.98 SQ IN	1-3/4 IN	ASTM A36 / A307 / F1554 GR 36	GREEN & YELLOW	74,790 LBS
EBSCL16-48	LOWER	48	2-1/4 IN	3.98 SQ IN	2 IN	ASTM A36 / A307 / F1554 GR 36	BLACK & YELLOW	98,360 LBS
EBSC12-36	UPPER	36	2-1/4 IN	3.98 SQ IN	1-1/2 IN	ASTM A193 B7 / A449 / F1554GR105	BLUE	115,275 LBS
EBSC12-48	UPPER	48	2-1/4 IN	3.98 SQ IN	1-1/2 IN	ASTM A193 B7 / A449 / F1554GR105	BLUE & YELLOW	115,275 LBS
EBSCXL12-36	LOWER	36	2-1/2 IN	4.91 SQ IN	1-1/2 IN	ASTM A193 B7 / A449 / F1554GR105	PURPLE	115,275 LBS
EBSCXL12-48	LOWER	48	2-1/2 IN	4.91 SQ IN	1-1/2 IN	ASTM A193 B7 / A449 / F1554GR105	PURPLE & YELLOW	115,275 LBS
EBSCX12-36	UPPER	36	2-1/2 IN	4.91 SQ IN	1-1/2 IN	ASTM A193 B7 / A449 / F1554GR105	WHITE	115,275 LBS
EBSCX12-48	UPPER	48	2-1/2 IN	4.91 SQ IN	1-1/2 IN	ASTM A193 B7 / A449 / F1554GR105	WHITE & YELLOW	115,275 LBS

NOTES:
1) LOWER SUPERCOUPLERS INCLUDE CONNECTING STUD FOR UPPER SUPERCOUPLERS
2) ALL LOWER SIZES ARE AVAILABLE OVERTAPPED FOR HOT DIPPED GALVANIZED ANCHOR BOLTS. ADD "G" TO EBSC PART NUMBER.
   EXAMPLE EBSCL-12G-48 EQUALS LOWER SUPERCOUPLER IN 48 IN LENGTH TAPPED FOR 1-1/2 (R12) GALVANIZED ANCHOR BOLT.
   SUPERCOUPLERS FOR GALVANIZED ANCHORS WILL HAVE MACHINED GROOVE AT THE UPPER END OF COUPLER.
3) USE GIVEN TENSION LOAD, BAR CROSS SECTIONAL AREA AND TOTAL OVERALL LENGTH TO CALCULATE SUPERCOUPLER ELONGATION.

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Earthbound Corporation
17361 Tye Street SE
Monroe, WA 98272

www.holdown.com
Telephone (360) 863-0722
Fax (360) 863-0724

IAPMO UES EVALUATION REPORT ER-429 for SlackJack™, HeavyJack™ & MiniJack™

SlackJack® with new HeavyJack® line of Shrinkage Fasteners now updated in IAPMO ER-0429!

We released the new line of HeavyJack® shrinkage devices that have greater capacities, reduced deflection and improved Delta R (Δ_R) values.

EVALUATION REPORT   **Number:**   **429**

EARTHBOUND CORPORATION
17361 Tye Street S.E.
Monroe, Washington 98272
(800) 944-5669
www.slackjack.com

**SLACKJACK®, HEAVYJACK™ AND
MINIJACK® SHRINKAGE
COMPENSATION DEVICES**

CSI Section:
    06 05 23 Wood, Plastic and Composite Fastenings

1.0 RECOGNITION

SlackJack®, HeavyJack™ and MiniJack®, manufactured by Earthbound Corporation, were evaluated for use as compression-controlled shrinkage compensation devices in wood-framed construction. The structural properties of the devices were evaluated for compliance with the following codes and regulations:

2.4 No increase in the allowable capacities shown in Table 4 of this report shall be permitted.

2.5 The dead load is limited to the self-weight of the SlackJack, HeavyJack, and MiniJack devices. Additional dead load on the devices is beyond the scope of this report.

2.6 The maximum offset tolerance shall be 1.33 degrees from vertical.

2.7 "When the devices are used in continuous rod systems that resist light-frame shear wall overturning forces, calculations shall be submitted to the building official confirming that the total vertical displacement, which would include steel rod elongation and the shrinkage compensating device deflection is less than or equal to 0.20 inch (5 mm) for each story, or between restraints, whichever is more restrictive, using allowable stress design (ASD). Shear wall drift limit calculations shall consider the 0.20 inch (5 mm) vertical displacement limit. This 0.20-inch (5 mm) vertical displacement limit may be exceeded when it can be demonstrated that the shear wall story drift limit and the deformation compatibility requirements of IBC Section

IAPMO UES EVALUATION REPORT ER-734 for ChubbySmack™ Anchor Products

ChubbySmack™ Anchoring Products now recognized under IAPMO ER-0734!

In July 2021 we received IAPMO recognition which includes our ChubbyNut™, HeavySet™ concrete anchoring nuts. Our report also includes the SmackChair™, SmackFlat™ and our new popular SnapChair™ line of anchor stands. The new SnapChair™ is available in 1/2 thru 3/4 inch anchor rod sizes.

EVALUATION REPORT   **Number:**   **734**

DIVERSE TECHNOLOGIES, LLC
17361 Tye Street SE
Monroe, WA 98272
www.chubbysmack.com

ADDITIONAL LISTEE:

EARTHBOUND CORPORATION
17361 Tye Street SE
Monroe, WA 98272

**CAST-IN CONCRETE ANCHOR with
CHUBBYNUT™ or HEAVYSET™ NUT IN
CRACKED and UNCRACKED CONCRETE**

concrete having a specified compressive strength, f'_c, of 2,500 psi to 10,000 psi (17.2 MPa to 68.9 MPa).

2.4 The values of f'_c used for calculation purposes shall not exceed 10,000 psi (68.9 MPa).

2.5 The concrete shall have achieved the specified minimum compressive strength prior to loading of the anchors.

2.6 Strength design values shall be established in accordance with Section 3.1 of this report.

2.7 Allowable design values are established in accordance with Section 3.2 of this report.

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17361 Tye Street SE   Telephone (360) 863-0722
Monroe, WA 98272   Fax (360) 863-0724

COMPRESSION MEMBER SELECTION TABLES

The following compression member capacity tables are for Doug Fir Larch or Hem Fir single stud or post column capacity based on NDS 2018 and is typical wood members used in the Earthbound System. The capacities shown below are calculated individually. The members may be combined in multiples and do not require stitch nailing. The capacities shown are the lower of either compression perpendicular to grain or column buckling which is a function of the stud or post height. Other lumber grades are available upon request. Please visit ***http://www.holdown.com*** to use our free online stud and post design calculator!

COMPRESSION MEMBER SELECTION - DOUG FIR STUDS/POSTS on DOUG FIR PLATES

FRAMING	LUMBER SIZE (SINGLE MEMBER)	LUMBER GRADE	PERP. TO GRAIN.	PARALLEL TO GRAIN, Pc (LBS) - SINGLE MEMBER STUD OR POST MEMBER HEIGHT (FT)				
				8 FT	**9 FT**	**10 FT**	**11 FT**	**12 FT**
4-inch Wall	2x4	NO. 2	3,281 LBS	3,281 LBS	2,739 LBS	2,225 LBS	1,840 LBS	1,546 LBS
	3x4	NO. 2	5,469 LBS	5,469 LBS	4,565 LBS	3,708 LBS	3,067 LBS	2,577 LBS
	4x4	NO. 1	7,656 LBS	7,656 LBS	6,808 LBS	5,526 LBS	4,569 LBS	3,838 LBS
	4x6	NO. 1	12,031 LBS	12,031 LBS	10,670 LBS	8,667 LBS	7,170 LBS	6,024 LBS
	4x8	NO. 1	15,859 LBS	15,859 LBS	14,025 LBS	11,400 LBS	9,435 LBS	7,930 LBS
	4x10	NO. 1	20,234 LBS	20,234 LBS	17,836 LBS	14,510 LBS	12,014 LBS	10,102 LBS
	4x12	NO. 1	24,609 LBS	24,609 LBS	21,693 LBS	17,647 LBS	14,612 LBS	12,286 LBS
6-inch Wall	2x6	NO. 2	5,156 LBS	5,156 LBS	5,156 LBS	5,156 LBS	5,156 LBS	5,156 LBS
	6x4	NO. 1	12,031 LBS	12,031 LBS	12,031 LBS	12,031 LBS	12,031 LBS	12,031 LBS
	6x6	NO. 1	18,906 LBS	18,906 LBS	18,906 LBS	18,906 LBS	18,906 LBS	18,906 LBS
	6x8	NO. 1	24,922 LBS	24,922 LBS	24,922 LBS	24,922 LBS	24,922 LBS	24,922 LBS
	6x10	NO. 1	31,797 LBS	31,797 LBS	31,797 LBS	31,797 LBS	31,797 LBS	31,797 LBS
	6x12	NO. 1	38,672 LBS	38,672 LBS	38,672 LBS	38,672 LBS	38,672 LBS	38,672 LBS

COMPRESSION MEMBER SELECTION - HEM FIR STUDS/POSTS on HEM FIR PLATES

FRAMING	LUMBER SIZE (SINGLE MEMBER)	LUMBER GRADE	PERP. TO GRAIN.	PARALLEL TO GRAIN, Pc (LBS) - SINGLE MEMBER STUD OR POST MEMBER HEIGHT (FT)				
				8 FT	**9 FT**	**10 FT**	**11 FT**	**12 FT**
4-inch Wall	2x4	NO. 2	2,126 LBS	2,126 LBS	2,126 LBS	1,820 LBS	1,503 LBS	1,262 LBS
	3x4	NO. 2	3,544 LBS	3,544 LBS	3,544 LBS	3,034 LBS	2,506 LBS	2,103 LBS
	4x4	NO. 1	4,961 LBS	4,961 LBS	4,961 LBS	4,880 LBS	4,035 LBS	3,388 LBS
	4x6	NO. 1	7,796 LBS	7,796 LBS	7,796 LBS	7,654 LBS	6,330 LBS	5,318 LBS
	4x8	NO. 1	10,277 LBS	10,277 LBS	10,277 LBS	10,068 LBS	8,331 LBS	7,001 LBS
	4x10	NO. 1	13,112 LBS	13,112 LBS	13,112 LBS	12,816 LBS	10,609 LBS	8,919 LBS
	4x12	NO. 1	15,947 LBS	15,947 LBS	15,947 LBS	15,587 LBS	12,903 LBS	10,847 LBS
6-inch Wall	2x6	NO. 2	3,341 LBS	3,341 LBS	3,341 LBS	3,341 LBS	3,341 LBS	3,341 LBS
	6x4	NO. 1	7,796 LBS	7,796 LBS	7,796 LBS	7,796 LBS	7,796 LBS	7,796 LBS
	6x6	NO. 1	12,251 LBS	12,251 LBS	12,251 LBS	12,251 LBS	12,251 LBS	12,251 LBS
	6x8	NO. 1	16,149 LBS	16,149 LBS	16,149 LBS	16,149 LBS	16,149 LBS	16,149 LBS
	6x10	NO. 1	20,604 LBS	20,604 LBS	20,604 LBS	20,604 LBS	20,604 LBS	20,604 LBS
	6x12	NO. 1	25,059 LBS	25,059 LBS	25,059 LBS	25,059 LBS	25,059 LBS	25,059 LBS

1. TABLES ARE BASED ON NDS 2018.
2. DOUGLAS FIR LARCH PROPERTIES:
   - PERPENDICULAR TO GRAIN - 625 psi.
   - No. 1 GRADE PARALLEL TO GRAIN: 1500 psi, MOE = 1700 psi.
   - No. 2 GRADE PARALLEL TO GRAIN: 1350 psi, MOE = 1600 psi.

HEM FIR PROPERTIES:
   - PERPENDICULAR TO GRAIN - 405 psi.
   - No. 1 GRADE PARALLEL TO GRAIN: 1350 psi, MOE = 1500 psi.
   - No. 2 GRADE PARALLEL TO GRAIN: 1300 psi, MOE = 1300 psi.

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HOW TO SPECIFY THE EARTHBOUND SYSTEM®

1) After the overturning loads are calculated per level, the Engineer may choose to round or "consolidate" holdown loads in a vertical, tabular format as indicated in the holdown table below.　　Holdown Run Type naming is shown as 1A, 2A, etc.

Table 1: Sample Holdown Run Type Table

RUN TYPE	1A	2A	2B	3A	4A	4B	5A	5B	5C	5G
LEVEL 5							4,420	4,420	4,420	9,940
LEVEL 4					4,420	4,420	4,420	4,420	4,420	13,530
LEVEL 3				4,420	4,420	4,420	4,420	6,900	6,900	13,530
LEVEL 2		4,420	4,420	4,420	6,900	6,900	6,900	9,940	9,940	20,710
LEVEL 1	4,420	4,420	6,900	6,900	6,900	9,940	6,900	9,940	13,530	28,190
ANCHOR BOLT DIA.	5/8"	5/8"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	7/8"	*7/8" HS
CHUBBYSMACK™ SIZE	CNSCR5	CNSCR5	CNSCR6	CNSCR6	CNSCR6	CNSCR6	CNSCR6	CNSCR6	CNSCR7	HSSCR7

2) All anchoring components (bolt diameter and grade, ChubbySmack™ and embedment depth) are designed by the Engr of Record.

3) "HS" shown in this example indicates "high strength" or Grade ASTM A193B7. "CNSCRx" and "HSSCRx" are ChubbySmack™. anchor model numbers. "CN" = ChubbyNut™, "HS" = HeavySet™, SC = SmackChair™, R = Rod Size x.

4) ChubbySmack™ anchor products shown above for example. Anchoring design per Engineer of Record.

5) Figure 1 below indicates how the holdown run may be specified in plan views. This view may be shown on every floor, or just on the first level floor plan if the floor plans are stacking.

Figure 1: Sample Holdown Plan View Callout
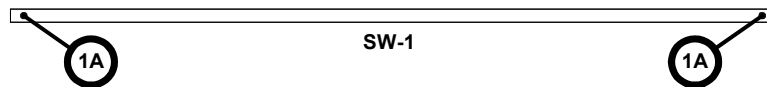
6) Sample Paragraph to include on the drawings:

Earthbound Seismic Holdown System with ChubbySmack™ Anchor Products
The seismic holdown system shall be fully self-compensating or self-tightening for wood shrinkage. The seismic holdown system shall not include holdown straps unless shown by the Engineering plans. The seismic holdown system shall have an IAPMO ES evaluation on the shrinkage compensating devices and tested and evaluated in accordance to the ES report. The seismic holdown system and ChubbySmack™ Anchor Products (IAPMO ES ER-734) shall be the Earthbound System (IAPMO ES ER-429) and shall be supplied by Earthbound Corporation, Monroe, Washington (Phone: 800-944-5669). Substitutions for the Earthbound System must be pre-approved in writing by the Engineer.

7) Additional required information to provide an accurate and fully value-engineered holdown system solution:
   - Design Code Requirements (e.g. IBC 2018 / CBC 2019 / 2019 LABC etc)
   - Wall Heights (exterior elevations, etc)
   - Foundation Type (Post-Tensioned, Slab on Grade, Mild Steel Slab, etc.)
   - Anchoring details.
   - Holdown Locations.
   - Wall stud and plate lumber type.
   - Shear wall schedules.

8) Given the above information, Earthbound will provide complete installation shop drawings that conform to the plan requirements.

9) Our helpful Engineering staff is available by toll free number at 800-944-5669 or by email at techsupport@holdown.com.
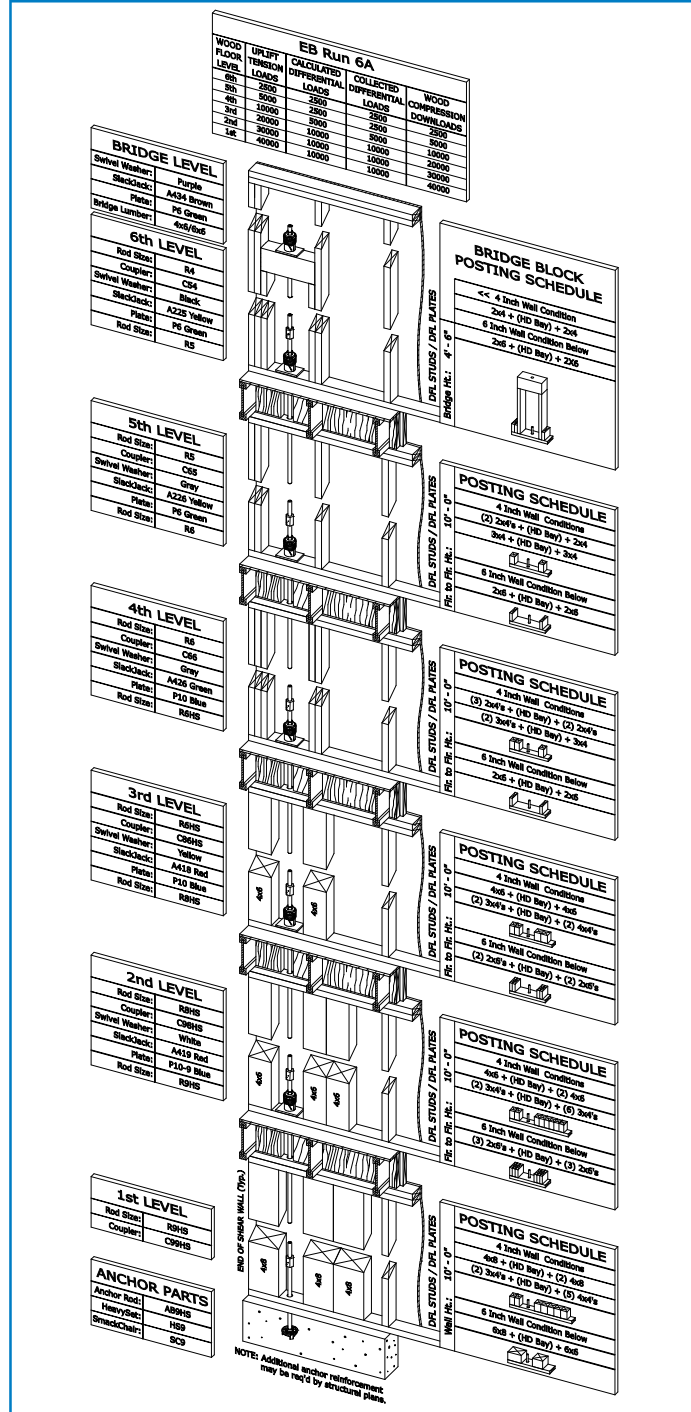
10) For latest engineering information and design criteria, please visit us on the web at http://www.holdown.com.

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RUNBUILDER.COM - AN ONLINE RUN SYSTEM DESIGN TOOL (US Pat. 8751206,8380470)

- Free online tool to design Earthbound System Runs up to six stories!
- Supports IBC 2018 & Canada NBCC 2015 and Threaded Rod Elongation Limits.
- Custom design wood compression members & print calc reports instantly!
- Register at runbuilder.com and start building runs today!

1) Setup Run Parameters

2) Input Design Loads

3) Actual Run Output

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EARTHBOUND

Earthbound Compression Bridge:
• Eliminates roof joist interference
• No top plate mounting.
• No ladder work necessary.
• Can be installed during flat framing.
• Patented Connection

Slackjack® Shrinkage Device
• Available in 1, 1.5, 2 and 3 inch travel.
• Proven corrosion resistance.
• Available up to 1 1/2" rod diameter.
• Each compensator works independent of each other.
• Color coded for easy inspection.
• IAPMO UES ER-0429 (UPDATED!)

SlackJack.com

Continuous Rod System:
• Rod forms a steel post connection.
• Minimizes rod cutting requirements.
• Simplified rod and coupler assembly.

Upper Floor Bottom Plate:
• Slackjack® Device and Bearing Plate mounted on bottom plate effectively contains uplift of differential load between 1st and 2nd wood levels in this example.

Bearing Plates:
• Color coded for easy inspection.
• Sized for differential loading.
• Capacities to 39,000 lbs+ differential.
• Larger and custom sizes available.

Threaded Rod:
• ASTM A36 to 44,270 lbs (1 1/2" dia). (per IBC 2015 / CBC 2015)
• A193B7 to 92,220 lbs (1 1/2" dia HS). (per IBC 2015 / CBC 2015)
• Higher capacities are achieved through double rod holdown runs.

Rod Alignment:
• Allowable rod centerline offset up to 2 inches for an 8 foot story.

Rod Couplers:
• Couplers meet or exceed the strength of the connecting rods.
• All non-reducing couplers include an inspection hole to verify correct installation.

Anchor Rod:
• Standardized anchor placement.
• Same rod diameter size as first level threaded rod.
• Cast-in-place anchor shown
• Epoxy anchors may be used.
• All anchoring designed by Engineer of Record.

16" o.c. Framing Design:
• Earthbound System is based on 16" on center stud wall framing design.
• Utilizes and maximizes use of common framing members as part of compression lumber requirements.
• Lumber savings

ChubbySmack™ Anchor Products:
• Provides higher anchoring loads by maximizing embedment depth.
• ChubbyNut™ anchor plate and SnapChair™ stand now available!
• IAPMO ES ER-0734 Updated 2022!

ChubbySmack.com

U.S. Patents 6,161,350, 6,494,654, 6,688,058, 6,951,078, 7,159,366, 7,340,867, 7,617,642, 7,665,258
7,762,030, 8,186,924, 8,136,318, 8,112,955 and other U.S. and Foreign Patents Pending.