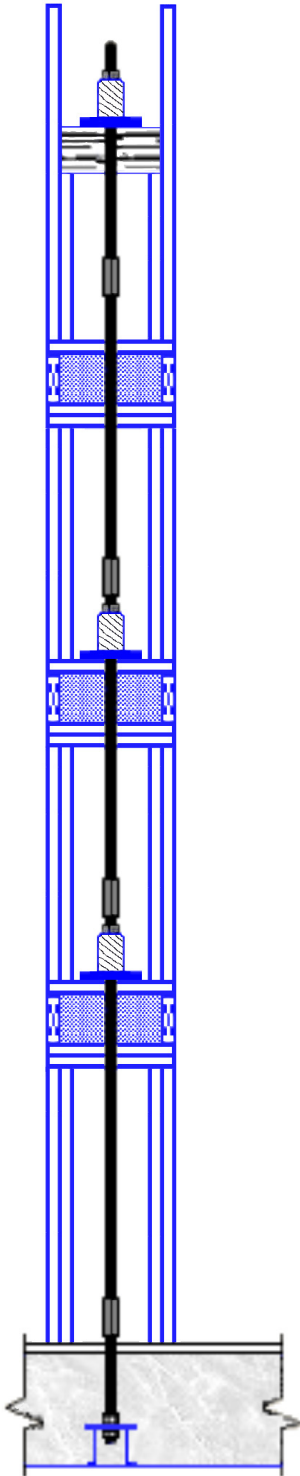




Distributor Bid Package Training

AutoTight Continuous Rod Tie-Down Systems



For more information look at our
website or email us.
www.comminsmfg.com

Automatic Tie-Down System Design

When we are supplied a set of drawings we usually supply the following:

Part I Project Bid includes a detailed package that specifies all required materials.

Page 1. Project Information Sheet includes defined items such as Code, Elongation limits, and Shrinkage. Linked items drive the engineering on subsequent pages. Input comes directly from plans and specifications as supplied by the EOR and/or directly off the most current plans.

Page 2. Load Justification Table (LJT) lists each run and allowable loads per plans. Input includes: Run Name, # of runs and Tension loads per floor. Optional input is wood compression load,

If elongation limits (Indicated by a color change on the offending item) the designer may manually change rod diameter, material, plate size and shrinkage compensator. Everything else is automatic.

Page 3. Detail LJT Explanation defines materials, capacities and elongation limits for each run.

Page 4. Holdown System Materials lists required materials by run.

Page 5. System Material is the complete list for all materials for the job.

Page 5a. System Turn-Key Pricing. Distributor Use only

Page 6 Run drawing typical. (Sometimes not supplied.)

Part II Engineering is stamped submittal package ready for EOR, and city review.

The Engineering package supplies a single page of calculations for each run. The first page provides an example. Each subsequent page is for a single run. Depending on the job these are supplied stamped by our engineer ready for a review and acceptance by the EOR or may be generated by the EOR and stamped. This project supplies four pages of calculations.

Holdown Run Details AT 10 are supplied on a C or D size drawing. Supplied drawings are stamped, ready for submittal. This is available ready to modify if the EOR desires.

Holdown Run Elevations AT 11 lists all required runs with each specified item.

Embedment Details AT12 details concrete embedment starts. These are commonly called “Shop Drawings”



Project Information

1. Bid Date: *	2/2/11	2. Project ID#	75-19846	3. Revision #:	0	4. Takeoff By:	ME	5. Runs:	81
6. Project: *	The Sample Project			7. Distributor:					
Address:	960B Guard Street			Contact:					
City, ST, ZIP:	Friday Harbor, WA 98250			Address:					
9. Est. Start Date		11. # of Bldgs	1	City, ST, ZIP:					
10. Plan Set *	Bid Set	12. Plan Date	11/29/10	Phone:		Cell:			
Building / Site Plan Notes:				Fax:					
				e-mail:					
				13. Ship to City, ST, ZIP:					
15. Engineer Firm:	AutoTight Designer			16. Contractor:					
EOR/Contact:				Contact:					
Address:	P.O. Box 3338			Address:					
Suite/Unit:	Suite 2			Suite/Unit:					
City, ST, ZIP:	Friday Harbor, Wa 98250			City, ST, ZIP:					
Phone:	360-378-9484	Cell:		Phone:		Cell:			
Fax:				Fax:					
e-mail:				e-mail:					
Structural Holdown System Information				18. Complete CAT System	Yes	21. Detail OK	22. DWG #	23. Detail/Note	
19. Design Code: *	IBC_2009	State of WA Building Code				✓	S.1	Include Drawing Date	
25. Req'd Loads per:	Schedule	11/29/2010 <- Include Drawing Date				✓	S5.6	Include Drawing Date	
30. Take-Up Device at Each Level	Yes	Add'l							
31. Est. Wood Shrinkage*, in/floor	1/4	Run							
32. Elongation Between Connection (in.)	0.200	Notes							
33. Run Termination Type *	Top Plate Termination		34. Wood Beam Starts	Yes	35. Steel Beam Starts		Yes		
Threaded Rod / Couplers		Wood Specifications	We assume			44. Detail OK	45. DWG #	46. Detail/Note	
36. Standard Rod Type	A307	40. Shearwall Plates*	DFL			✓	S.2		
37. High Strength Rod Type	C1045	41. Studs per Plans	DFL			✓	S.2		
38. Higher Strength Rod Type	A193-B7	42. Post per Plans	DFL #1			✓	S.2		
39. Extra High Strength Rod	A354-BD	43. Floor Joist*	11 7/8" TJI			✓	S2.3		
Story Heights (Carpet to Carpet):		Wall Plates	Joist+Floor Plywood	Comp Post Height	48. Elev.	✓	A1.2		
51. Floor/Level*	52. ft. *	53. in. *	Sill (in.)	Top (in.)	Between	in.	ft.	in.	49. Additional Wood Notes:
6th	10	0	1 1/2	3			9	7 1/2	
5th	10	0	1 1/2	3	4 & 5	12 5/8	8	6 7/8	
4th	10	0	1 1/2	3	3 & 4	12 5/8	8	6 7/8	
3rd	10	0	1 1/2	3	2 & 3	12 5/8	8	6 7/8	
2nd	10	0	2 1/2	3	1 & 2	12 5/8	8	5 7/8	
Anchor Rod Embedments			55. CAT Embeds	No	56. Original Plan Embed Details		✓	S5.6	
Embed Type	57. PT Deck		58. Footing		59. Wall				
Depth/Width in	60. Thickness		61. Depth		62. Width				
63. Concrete PSI							Anchor Bolt Above Slab		
64. Hot Dipped Galvanized (HDG) Rod Required			No	65. Embedment Chairs Supplied		+ 6 inches			
Non-CAT System Embedment Rod Size, Thread Pitch and Material Type must be Verified Before Ordering									
66. Additional Embed Notes:									



The Sample Project
Friday Harbor, WA 98250

PROJECT ID #:
75-19846

201.Elongation Components
System Stretch

Run count:
81

Structural Engineer:
AutoTight Designer

P.O. Box 3338
Suite 2
Friday Harbor, Wa 98250
360-378-9484

Date:
2/2/11

Rev #
0

By:
ME

Run Count	5A				5B				3A				1ASBS				Story Heights (Carpet to Carpet)	Cumulative Est. Wood Shrinkage Total (in.)	
	64				8				5				4						
	CAT-5 (T54321)				CAT-5 (T54321)				CAT-3 (T31)				CAT-1 (T1)						
Tension = Compression =	Required Loads per level (kips)	Allowable Load (k) Rod Ø - Type	Differential Load (k) AT Plate	Stretch Load (k) System (in) Limit (in)	Required Loads per level (kips)	Allowable Load (k) Rod Ø - Type	Differential Load (k) AT Plate	Stretch Load (k) System (in) Limit (in)	Required Loads per level (kips)	Allowable Load (k) Rod Ø - Type	Differential Load (k) AT Plate	Stretch Load (k) System (in) Limit (in)	Required Loads per level (kips)	Allowable Load (k) Rod Ø - Type	Differential Load (k) AT Plate	Stretch Load (k) System (in) Limit (in)	ft	in	
6th	5.10	6.90 R5A307 5/8"-A307	5.10 AT6A-1.5 S5	5.10 0.133 0.200	6.50	6.90 R5A307 5/8"-A307	6.50 AT6A-1.5 S5G6	6.50 0.163 0.200									10	0	1 1/4
5th	5.90	6.90 R5A307 5/8"-A307	0.80 AT6A-1.5 S4	5.90 0.117 0.200	10.75	13.53 R7A307 7/8"-A307	4.25 AT 100 S5G8	10.75 0.134 0.200									10	0	1
4th	6.80	6.90 R5A307 5/8"-A307	0.90 AT6A-1.5 S4	6.80 0.134 0.200	10.90	13.53 R7A307 7/8"-A307	0.15 AT 100 S5G8	10.90 0.101 0.200	4.50	9.94 R6A307 3/4"-A307	8.50 AT6A-1.5 S10	8.50 0.241 0.200					10	0	3/4
3rd	7.50	9.94 R6A307 3/4"-A307	0.70 AT6A-1.5 S4	7.50 0.100 0.200	16.00	17.67 R8A307 1 "-A307	5.10 AT 100 S5G8	16.00 0.154 0.200	8.50 *	9.94 R6A307 3/4"-A307			8.20	9.94 R6A307 3/4"-A307	8.20 AT6A-1.5 S8	8.20 0.139 0.200	10	0	1/2
2nd	9.20	9.94 R6A307 3/4"-A307	1.70 AT6A-1.5 S4	9.20 0.132 0.200	27.80	46.59 R9B7 1 1/8"-B7	11.80 AT 125 S12L	27.80 0.197 0.200	16.00	17.67 R8A307	7.50 AT 100 S7	16.00 0.159 0.200			Stl Beam		10	0	1/4
Anchor Rod		3/4"-A307			1 1/8"-B7			1 "-A307			Reset Run			Reset Run					

Design Code(s): IBC_2009 State of WA B 0
 DWG: S.1 Date: Include Drawing Date
 Required Loads: Schedule
 DWG: S5.6 Date: Include Drawing Date

Take-Up Devices AT75, AT100 and AT125 provide for 1.1" shrinkage, AT75-2.5 provides for 2.5" of shrinkage.
 See Commins ICC-ESR-1344 and COLA RR 25480 for additional information.

S8 Bearing Plate shown by color and size (Plates Marked)
 Plates with "S" Prefix fit 3-1/2" wall number signifies allowable load in kips and have 3/4" or 1" clearance holes.
 Plates with "L" Prefix fit 5-1/2" wall and have a 1-1/4" Clearance hole for use with the AT125.
 Plates with "L" Suffix have a 1-1/4" Clearance hole for use with the AT125.
 Tension Load reflects the maximum capacity of the specified rod.
 Differential Load is the load transferred into the building at that load transfer point.

Runs modified by combining runs and skipping floors. Subject to EOR acceptance.
 Rod Elogation (Stretch) Calculations;

{Required Load (lbs.) per level for Rod x Stretch Length (in.)} / {Tensile Diameter (in.) of Rod x 29,000,000 (Young's Modulus)}
 Stretch Length is the distance between a Termination Point, Anchor / Beam Start / Top Floor Termination and/or Differential Point.
 System stretch includes Delta R. (the contribution due to reversal of direction of force applied to system)
 Tie down systems now have an elongation limit of 0.180 for rod only and 0.200 for the tie down system and 0.250 for the tie down system plus the top plate.
 The note "Call Commins" in a cell means the load or another parameter exceeds standard capabilities.
 Please call the factory at 360-378-9484 for solutions to extreme conditions.

Load Justification Table Explained

- The Load Justification Table is the heart of the Transparent Tie-Down Designer. There is an abundance of information per floor and per run. (see sample below)
- Rod, Plates, Compensators, and Stretch Limits may be changed to suit your needs.
- It instantly recalculates and changes affected loads and components if you customize the run.
- This is just one run, it can handle up to 25 runs!

Run		Run Name				Differential Load per floor		Story Heights		Cumulative Est. Wood Shrinkage Total (in.)
Count	5A				64		CAT-5 (T54321)			
CAT Run Type		CAT-5 (T54321)				Story Heights (Carpet to Carpet)		ft		in
Tension = T	Required Loads per level (kips)	Allowable Load (k)	Differential Load (k)	Stretch Load (k)	Story Heights (ft)	Story Heights (in)	Cumulative Est. Wood Shrinkage Total (in.)			
Compression = C	Floor / Level	Rod Ø - Type	AT Plate	System (in)	Limit (in)					
T	6th	5.10	6.90	5.10	5.10	10	0	1 1/4		
C			R5A307	AT6A-1.5	0.133					
			5/8"-A307	S5	0.200					
T	5th	5.90	6.90	0.80	5.90	10	0	1		
C			R5A307	AT6A-1.5	0.117					
			5/8"-A307	S4	0.200					
T	4th	6.80	6.90	0.90	6.80	10	0	3/4		
C			R5A307	AT6A-1.5	0.134					
			5/8"-A307	S4	0.200					
T	3rd	7.50	9.94	0.70	7.50	10	0	1/2		
C			R6A307	AT6A-1.5	0.100					
			3/4"-A307	S4	0.200					
T	2nd	9.20	9.94	1.70	9.20	10	0	1/4		
C			R6A307	AT6A-1.5	0.132					
			3/4"-A307	S4	0.200					
Anchor Rod		3/4"-A307		Reset Run		Actual Elongation		Est. Wood Shrinkage Total		

Contact Commins Manufacturing to learn more about the Transparent Tie-Down Designer Program



CAT Holdown System Materials - All Levels

Project: The Sample Project				Run #	5A	5B	3A	1ASBS	Run Totals
Project ID #: 75-19846				Stories	5	5	3	1	
Buyer:				Runs	64	8	5	4	81
Contact:				6					
Phone:				5	R5A307	R5A307			1 standard AT
Fax:				4	R5A307	R7A307			2.5" expansion AT
Distributor:				3	R5A307	R7A307	R6A307		2 Stacked AT's
Salesmen:				2	R6A307	R8A307	R6A307	R6A307	
Phone:				1	R6A307	R9B7	R8A307		Quantities
Items				Run #	5A	5B	3A	1ASBS	Item
Part #	Description			Items per run				Total	
Auto Take-Up Devices									
AT 100	25.3k	(Pallet = 576)	1.1"			3	1		29
AT 125	34.5k	(Pallet = 320)	1.1"			1			8
AT6A-1.5	13.579k	(Pallet = 320)	1.5"		5	1	1	1	337
Bearing Plates									
S4	4.1k	3/16 x 2½ x 2½	3/4"		4				256
S5	5.9k	0.229" (1/4") x 3" x 3"	3/4"		1				64
S5G6	5.9k	0.229" (1/4") x 3" x 3"	3/4"			1			8
S5G8	5.7k	0.229" (1/4") x 3" x 3"	1"			3			24
S7	7.8k	3/8 x 3½ x 3½	1"				1		5
S8	8.2k	3/8 x 3¼ x 4	1"					1	4
S10	10.3k	1/2 x 3¼ x 5	1"				1		5
S12L	12.0k	5/8 x 3¼ x 6	1¼"			1			8
Steel Beam Weld Plates									
EP-7A		5/8" x 3" x 3"						1	4
Threaded Rods									
R5A307 x 10'		5/8" - 11 NC - A307			3	1			200
R6A307 x 1'		3/4" - 10 NC - A307						1	4
R6A307 x 10'		3/4" - 10 NC - A307			2		2	1	142
R7A307 x 10'		7/8" - 9 NC - A307				2			16
R8A307 x 10'		1" - 8 NC - A307				1			8
R8A307 x 12'		1" - 8 NC - A307					1		5
R9B7 x 12'		1 1/8" - 7 NC - B7				1			8
Sighted Coupling Nuts									
CN-5		5/8" - 11 NC			2				128
CN-6		3/4" - 10 NC			2		1	1	137
CN-7		7/8" - 9 NC				1			8
CN-8		1" - 8 NC					1		5
CNHS-9		1 1/8" - 7 NC				1			8
Coupling Nut Reducers									
CNR-56		5/8" - 3/4"			1				64
CNR-57		5/8" - 7/8"				1			8
CNR-68		3/4" - 1"					1		5
CNR-78		7/8" - 1"				1			8
CNR-89		1" - 1 1/8"				1			8
Nuts									
N-5		5/8" - 11 NC			3	1			200
N-6		3/4" - 10 NC			2		1	1	137
N-7		7/8" - 9 NC				2			16
N-8		1" - 8 NC				1	1		13
NHS-9		1 1/8" - 7 NC				1			8
Washers									
W-5		5/8" SAE Flat			3	1			200
W-6		3/4" SAE Flat			2		1	1	137
W-7		7/8" SAE Flat				2			16
W-8		1" SAE Flat				1	1		13
W-9		1 1/8" SAE Flat				1			8
Engineering									
ENG RB-		Runs Built							1
CAT Holdown System Materials Total:									

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CAT Holdown System Material		
Complete CAT Holdown System (Embedments Not Included)		
Date	2/2/11	
By	ME	
Rev #	0	
Building Project:		Distributor:
The Sample Project Friday Harbor, WA 98250		
CAT ID # 75-19846		
Auto Take-Up Devices		
29	AT 100	Auto Take-Up Device, 1 in., 1.1" shrinkage
8	AT 125	Auto Take-Up Device, 1 in., 1.1" shrinkage
337	AT6A-1.5	Aluminum Auto Take-Up Device, 3/4 in., 1.5" shrinkage
Bearing Plates		
256	S4	Bearing Plate, 3/16 x 2½ x 2½, 3/4" hole
64	S5	Bearing Plate, 0.229" (1/4") x 3" x 3", 3/4" hole
8	S5G6	Bearing Plate, 0.229" (1/4") x 3" x 3", 3/4" hole
24	S5G8	Bearing Plate, 0.229" (1/4") x 3" x 3", 1" hole
5	S7	Bearing Plate, 3/8 x 3½ x 3½, 1" hole
4	S8	Bearing Plate, 3/8 x 3¼ x 4, 1" hole
5	S10	Bearing Plate, 1/2 x 3¼ x 5, 1" hole
8	S12L	Bearing Plate, 5/8 x 3¼ x 6, 1¼" hole
Steel Beam Weld Plates		
4	EP-7A	Steel Beam Start Plate, 5/8" x 3" x 3"
Threaded Rods		
		Standard Rod Finish Black
200	R5A307 x 10'	Threaded Rod, 5/8" - 11 NC - A307 x 10', Black
4	R6A307 x 1'	Threaded Rod, 3/4" - 10 NC - A307 x 1', Black
142	R6A307 x 10'	Threaded Rod, 3/4" - 10 NC - A307 x 10', Black
16	R7A307 x 10'	Threaded Rod, 7/8" - 9 NC - A307 x 10', Black
8	R8A307 x 10'	Threaded Rod, 1" - 8 NC - A307 x 10', Black
5	R8A307 x 12'	Threaded Rod, 1" - 8 NC - A307 x 12', Black
8	R9B7 x 12'	Threaded Rod, 1 1/8" - 7 NC - B7 x 12', Black
Sighted Coupling Nuts		
128	CN-5	Sighted Coupler Nut, 5/8" - 11 NC , Grade 2
137	CN-6	Sighted Coupler Nut, 3/4" - 10 NC , Grade 2
8	CN-7	Sighted Coupler Nut, 7/8" - 9 NC , Grade 2
5	CN-8	Sighted Coupler Nut, 1" - 8 NC , Grade 2
8	CNHS-9	Sighted Coupler Nut, 1 1/8" - 7 NC , Grade 8
Coupling Nut Reducers		
64	CNR-56	Coupler Nut Reducers, 5/8" - 3/4" , Grade 2
8	CNR-57	Coupler Nut Reducers, 5/8" - 7/8" , Grade 2
5	CNR-68	Coupler Nut Reducers, 3/4" - 1" , Grade 2
8	CNR-78	Coupler Nut Reducers, 7/8" - 1" , Grade 2
8	CNR-89	Coupler Nut Reducers, 1" - 1 1/8" , Grade 2
Nuts		
200	N-5	Nut, 5/8" - 11 NC , Grade 2
137	N-6	Nut, 3/4" - 10 NC , Grade 2
16	N-7	Nut, 7/8" - 9 NC , Grade 2
13	N-8	Nut, 1" - 8 NC , Grade 2
8	NHS-9	Nut, 1 1/8" - 7 NC , Grade 8
Washers		
200	W-5	Washer, 5/8" SAE Flat
137	W-6	Washer, 3/4" SAE Flat
16	W-7	Washer, 7/8" SAE Flat
13	W-8	Washer, 1" SAE Flat
8	W-9	Washer, 1 1/8" SAE Flat
Engineering		
ENG RB- Runs Built		
CAT Holdown System Materials Total:		



Run 5A 64 Runs

Wood Floor/Level	Tension Load Spec	Differential Load Spec	Compression Load Spec
5th Floor	5.1	5.1	per Plan
4th Floor	5.9	.8	per Plan
3rd Floor	6.8	.9	per Plan
2nd Floor	7.5	.7	per Plan
1st Floor	9.2	1.7	per Plan

Loads shown in kips

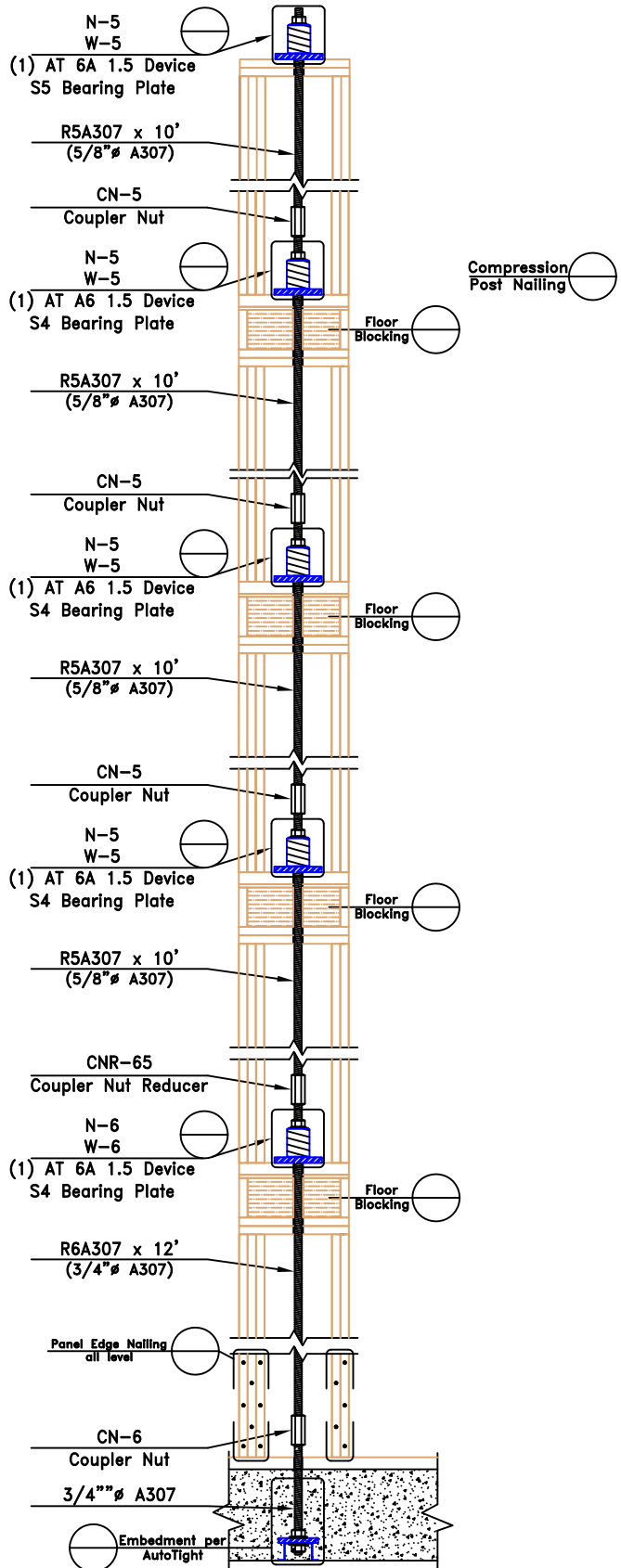
Notes.

1. Drawing is not-to-scale.
2. Run specifications including holdown hardware and compression wood, are per building codes and specifications of the project plans.
3. Compression Post/Studs are in addition to framing studs (U.N.O.) Common Post/Stud sizes are shown. Other sizes may be appropriate. Consult factory

Rev#	By	Date
0	MC	12.10.10

DRAFT

Holdown Hardware





AutoTight® Rod Holdown System

System Design for
The Sample Project

Prepared for
AutoTight Designer

Input by
Tom Boydston

Commins Project ID # 75-19846

**Includes ICC ES 1344 Code Report,
applicable catalog pages and COLA Report RR25480
as a separate PDF file: "AutoTight Materials and Reference.pdf".**



(1) Key to Calculation Table

AutoTight® System Run Design Calc Sheet: Example Project					Rev 0	Date 06/21/2010			
Project Number:	(6)				CAT ID #	10-0001			
Run Name:	1	Run Qty:	4		Tensile Strength	Calc'd			
Run Specifications		Component		Description	Capacity (kips)	Demand (kips)	D/C Ratio	Elong. (in.)	
Required Loads:		Commins AutoTight							
Level = 2									
Differential Load:	4.00 (kips)	AT 125	Shrinkage at Level, Shrinkage Device travel & D/C Ratio (in.)			1.10	0.50	45.5%	-
Tension Load:	20.00 (kips)	AT 125	Shrinkage Device (1-1/4" I.D.) - Allowable Load			34.50	4.00	11.6%	-
Compression:	20.00 (kips)	-	Shrinkage Device - Deflection at Load			-	-	-	0.002
Story Height:	12.50 (ft.)	-	Shrinkage Device - Travel and Seating Increment ΔR			-	-	-	0.002
Plate Height:	11.33 (ft.)	S8L	Bearing Plate at Reaction Point			7.96	4.00	50.2%	0.020
Floor Depth:	14.00 (in.)	R9	1-1/8"-A307 Tension Rod			22.37	20.00	89.4%	0.125
		-	No Stretch Rod			#N/A	20.00	0.0%	n/a
		-	Wood Beam Start Bearing Plate			n/a	n/a	0.00	n/a
		-	Steel Beam Start in Tension			n/a	n/a	0.00	n/a
Limiting Component Tension Load Capacity, Load and D/C Ratio					22.37	20.00	89.4%	-	
Maximum Allowed Level Elongation, D/C Ratio and Total Level Elongation					0.200	-	74.5%	0.149	
Compression Wood	Outer Posts	(1) 4x8 (3) 2x6	Inner Posts	(1) 4x8 (3) 2x6	4x Wall Post per Side of Rod-Enter by Hand as Needed	32.08	20.00	62.3%	-
					6x Wall Post per Side of Rod-Enter by Hand as Needed	30.93	20.00	64.7%	-
Level = Footing									
Tension Load:	20.00 (kips)	R9	1-1/8"-A307 Anchor Rod			22.37	20.00	89.4%	n/a

Notes:

- (1) All these cells are filled with data from the AutoTight Run Designer spreadsheet's Project Info page and Load Justification Table page.
- (2) The Builder's Name of the project.
- (3) The revision level of the plan set.
- (4) The Bid Date.
- (5) The Commins Mfg. project number.
- (6) The Builder's number for the project.
- (7) The name of this run.
- (8) Commins AutoTight part number.
- (9) The quantity of this type of run.
- (10) This column is the description of the component shown on each row
- (11) This column of the table is the Load Capacities of the various components.
- (12) This column of the table is the Load placed on the various components.
- (13) This column of the table is the Demand / Capacity ratio for each component.
- (14) This column is the contribution of each component to the total elongation for this level, and the total elongation for the level. **Elongation numbers are in blue text.**
- (15) The name of this level.
- (16) Differential Load applied by this level.
- (17) Total tension in rod at this level.
- (18) Compression load on the compression posts at this level.
- (19) Story Height carpet to carpet.
- (20) Plate to plate height of this level.
- (21) Depth of floor beams.
- (22) This row compares the total shrinkage at this level with the capacity of the AT's to take up this shrinkage.
- (23) This row compares the load capacity of the AT device to the load applied to it. Per AC316 Sec. 1.4.5
- (24) This row shows the deflection of the AT device(s) under the applied load. Per AC316 Sec. 1.4.8
- (25) This row shows the ΔR=Travel and Seating increment of the AT Device(s). Per AC316 Sec. 1.4.7
- (26) This row shows Bearing Plate Load Capacity and compares to its Load also its deflection's contribution to the total Elongation. (unless the calcs call for rod stretch only.) (It sees only the differential load.) Per AF&PA NDS Tbl 4A, 4B incl Cf factor.
- (27) This row shows Tension Rod Load Capacity and compares to its Load, also its deflection's contribution to the total Elongation. Per AISC 360-05
- (28) This row shows Stretch Rod Load Capacity and compares to its Load, also its deflection's contribution to the total Elongation. Only if Stretch Rod is used.
- (29) This row shows the Wood Beam Start's Bearing Plate Load Capacity and compares to its Load, also its deflection's contribution to the total Elongation. (Only if a Wood Beam Start is used.) (It sees the tension load.) Per AF&PA-NDS Tbl 4A, 4B incl Cf factor.
- (30) This row shows the Steel Beam Start's Load Capacity and compares to its Load, also its deflection's contribution to the total Elongation. (Only if a Steel Beam Start is used.) (It sees the tension load.) The rod seats on the steel beam and the weld cross section is greater than the rod cross section so the Steel Beam Start elongation is included in rod elongation. Per ICC ES-1344 & 5889
- (31) This row shows worst case component's Load and compares to its Load Capacity.
- (32) This row shows the maximum allowed Elongation and the total Elongation calculated for this level.
- (33) This row shows the inner and outer compression post required, their load capacities and loads if the wall is 4x. It is used only if Commins Mfg specifies the Compression Posts and is filled in manually. If line is not shown posting is per structural drawing.
- (34) This row shows the inner and outer compression post required, their load capacities and loads if the wall is 6x. It is used only if Commins Mfg specifies the Compression Posts and is filled in manually. If line is not shown posting is per structural drawing.
- (35) This row shows the load capacity of the Anchor Rod embedded in the concrete and compares to its load, if used. (Not the concrete strength)
- (36) Anchor bolt elongation is included in the length of the tension rods.
- (37) Nuts, Coupler Nuts and Reducing Coupler Nuts are not listed individually because they are grade compatible with the Tension Rod.
- (38) Nuts, Coupler Nuts and Reducing Coupler Nuts calculated contribution to elongation is 0.0005 inch or less.

AutoTight® Holdown System

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AutoTight® System Run Design Calc. Sheet for: **The Sample Project**

Rev 0 Date 12/10/2010

Project Number:				CAT ID # 75-19846			
Run Name: 5A		Run Qty: 64	Tensile Strength				Calc'd
Run Specifications		Component	Description	Capacity (kips)	Demand (kips)	D/C Ratio	Elong. (in.)
Required Loads:		Commins AutoTight					
Level = 6th		Component	Description	Capacity	Demand	D/C	Elong.
Differential Load:	5.10 (kips)	AT6A-1.5	Shrinkage at Level, Shrinkage Device travel & D/C Ratio (in.)	1.50"	1.25"	83.3%	-
Tension Load:	5.10 (kips)	AT6A-1.5	Shrinkage Device - 1.5" (3/4" I.D.) - Allowable Load	13.58	5.10	37.6%	-
Compression:	5.10 (kips)	-	Shrinkage Device - Deflection at Load	-	-	-	0.005
Story Height:	10.00 (ft.)	-	Shrinkage Device - Travel and Seating Increment ΔR	-	-	-	0.002
Plate Height:	10.00 (ft.)	S5	Bearing Plate at Reaction Point	5.96	5.10	85.5%	0.034
		R5A307	5/8"-A307 Tension Rod	6.90	5.10	73.9%	0.093
Limiting Component Tension Load Capacity, Load and D/C Ratio				5.96	5.10	85.5%	-
Maximum Allowed Level Elongation, D/C Ratio and Total Level Elongation				0.200	-	67.4%	0.135
Level = 5th		Component	Description	Capacity	Demand	D/C	Elong.
Differential Load:	0.80 (kips)	AT6A-1.5	Shrinkage at Level, Shrinkage Device travel & D/C Ratio (in.)	1.50"	1.00"	66.7%	-
Tension Load:	5.90 (kips)	AT6A-1.5	Shrinkage Device - 1.5" (3/4" I.D.) - Allowable Load	13.58	0.80	5.9%	-
Compression:	5.90 (kips)	-	Shrinkage Device - Deflection at Load	-	-	-	0.001
Story Height:	10.00 (ft.)	-	Shrinkage Device - Travel and Seating Increment ΔR	-	-	-	0.002
Plate Height:	8.95 (ft.)	S4	Bearing Plate at Reaction Point	4.12	0.80	19.4%	0.008
Floor Depth:	12.63 (in.)	R5A307	5/8"-A307 Tension Rod	6.90	5.90	85.5%	0.108
Limiting Component Tension Load Capacity, Load and D/C Ratio				6.90	5.90	85.5%	-
Maximum Allowed Level Elongation, D/C Ratio and Total Level Elongation				0.200	-	59.3%	0.119
Level = 4th		Component	Description	Capacity	Demand	D/C	Elong.
Differential Load:	0.90 (kips)	AT6A-1.5	Shrinkage at Level, Shrinkage Device travel & D/C Ratio (in.)	1.50"	0.75"	50.0%	-
Tension Load:	6.80 (kips)	AT6A-1.5	Shrinkage Device - 1.5" (3/4" I.D.) - Allowable Load	13.58	0.90	6.6%	-
Compression:	6.80 (kips)	-	Shrinkage Device - Deflection at Load	-	-	-	0.001
Story Height:	10.00 (ft.)	-	Shrinkage Device - Travel and Seating Increment ΔR	-	-	-	0.002
Plate Height:	8.95 (ft.)	S4	Bearing Plate at Reaction Point	4.12	0.90	21.8%	0.009
Floor Depth:	12.63 (in.)	R5A307	5/8"-A307 Tension Rod	6.90	6.80	98.6%	0.125
Limiting Component Tension Load Capacity, Load and D/C Ratio				6.90	6.80	98.6%	-
Maximum Allowed Level Elongation, D/C Ratio and Total Level Elongation				0.200	-	68.1%	0.136
Level = 3rd		Component	Description	Capacity	Demand	D/C	Elong.
Differential Load:	0.70 (kips)	AT6A-1.5	Shrinkage at Level, Shrinkage Device travel & D/C Ratio (in.)	1.50"	0.50"	33.3%	-
Tension Load:	7.50 (kips)	AT6A-1.5	Shrinkage Device - 1.5" (3/4" I.D.) - Allowable Load	13.58	0.70	5.2%	-
Compression:	7.50 (kips)	-	Shrinkage Device - Deflection at Load	-	-	-	0.001
Story Height:	10.00 (ft.)	-	Shrinkage Device - Travel and Seating Increment ΔR	-	-	-	0.002
Plate Height:	8.95 (ft.)	S4	Bearing Plate at Reaction Point	4.12	0.70	17.0%	0.002
Floor Depth:	12.63 (in.)	R6A307	3/4"-A307 Tension Rod	9.94	7.50	75.5%	0.093
Limiting Component Tension Load Capacity, Load and D/C Ratio				9.94	7.50	75.5%	-
Maximum Allowed Level Elongation, D/C Ratio and Total Level Elongation				0.200	-	48.8%	0.098
Level = 2nd		Component	Description	Capacity	Demand	D/C	Elong.
Differential Load:	1.70 (kips)	AT6A-1.5	Shrinkage at Level, Shrinkage Device travel & D/C Ratio (in.)	1.50"	0.25"	16.7%	-
Tension Load:	9.20 (kips)	AT6A-1.5	Shrinkage Device - 1.5" (3/4" I.D.) - Allowable Load	13.58	1.70	12.5%	-
Compression:	9.20 (kips)	-	Shrinkage Device - Deflection at Load	-	-	-	0.002
Story Height:	10.00 (ft.)	-	Shrinkage Device - Travel and Seating Increment ΔR	-	-	-	0.002
Plate Height:	8.95 (ft.)	S4	Bearing Plate at Reaction Point	4.12	1.70	41.3%	0.017
Floor Depth:	12.63 (in.)	R6A307	3/4"-A307 Tension Rod	9.94	9.20	92.6%	0.114
Limiting Component Tension Load Capacity, Load and D/C Ratio				9.94	9.20	92.6%	-
Maximum Allowed Level Elongation, D/C Ratio and Total Level Elongation				0.200	-	67.0%	0.134
Level = Footing		Component	Description	Capacity	Demand	D/C	Elong.
Tension Load:	9.20 (kips)	R6A307	3/4"-A307 Anchor Rod	9.94	9.20	92.6%	n/a

Base Design Code: IBC_2009/2009 per the State and Local jurisdiction
 Steel Stress Increase: No
 Takeup Device at Each Level: Yes
 Elongation Limit Required: Yes
 Elongation Limit per Connection: 0.200 (inch) between load reaction points (Typical Range 0.125 to 0.200)
 Elongation Components: System Stretch
 Shrinkage: 0.250 inch per floor (Typical Range 0.250 to 0.500)
 Shearwall Plates Wood Species: DFL Douglas Fir-Larch Shearwall Plates Wood Strength: 625 psi

AutoTight® Holdown System

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AutoTight® System Run Design Calc. Sheet for: **The Sample Project**

Rev 0 Date 12/10/2010

Project Number:				CAT ID # 75-19846				
Run Name: 5B		Run Qty: 8	Tensile Strength				Calc'd	
Run Specifications		Component	Description		Capacity	Demand	D/C Ratio	Elong. (in.)
Required Loads:		Commins AutoTight			(kips)	(kips)		
Level = 6th		Component	Description		Capacity	Demand	D/C	Elong.
Differential Load:	6.50 (kips)	AT6A-1.5	Shrinkage at Level, Shrinkage Device travel & D/C Ratio (in.)		1.50"	1.25"	83.3%	-
Tension Load:	6.50 (kips)	AT6A-1.5	Shrinkage Device - 1.5" (3/4" I.D.) - Allowable Load		13.58	6.50	47.9%	-
Compression:	6.50 (kips)	-	Shrinkage Device - Deflection at Load		-	-	-	0.007
Story Height:	10.00 (ft.)	-	Shrinkage Device - Travel and Seating Increment ΔR		-	-	-	0.002
Plate Height:	10.00 (ft.)	S6	Bearing Plate at Reaction Point		7.00	6.50	92.8%	0.037
		R5A307	5/8"-A307 Tension Rod		6.90	6.50	94.2%	0.119
Limiting Component Tension Load Capacity, Load and D/C Ratio					6.90	6.50	94.2%	-
Maximum Allowed Level Elongation, D/C Ratio and Total Level Elongation					0.200	-	82.4%	0.165

Level = 5th		Component	Description		Capacity	Demand	D/C	Elong.
Differential Load:	4.25 (kips)	AT 100	Shrinkage at Level, Shrinkage Device travel & D/C Ratio (in.)		1.10"	1.00"	90.9%	-
Tension Load:	10.75 (kips)	AT 100	Shrinkage Device (1" I.D.) - Allowable Load		25.30	4.25	16.8%	-
Compression:	10.75 (kips)	-	Shrinkage Device - Deflection at Load		-	-	-	0.005
Story Height:	10.00 (ft.)	-	Shrinkage Device - Travel and Seating Increment ΔR		-	-	-	0.002
Plate Height:	8.95 (ft.)	S8	Bearing Plate at Reaction Point		8.28	4.25	51.3%	0.021
Floor Depth:	12.63 (in.)	R7A307	7/8"-A307 Tension Rod		13.53	10.75	79.5%	0.096
Limiting Component Tension Load Capacity, Load and D/C Ratio					13.53	10.75	79.5%	-
Maximum Allowed Level Elongation, D/C Ratio and Total Level Elongation					0.200	-	62.1%	0.124

Level = 4th		Component	Description		Capacity	Demand	D/C	Elong.
Differential Load:	0.15 (kips)	AT 100	Shrinkage at Level, Shrinkage Device travel & D/C Ratio (in.)		1.10"	0.75"	68.2%	-
Tension Load:	10.90 (kips)	AT 100	Shrinkage Device (1" I.D.) - Allowable Load		25.30	0.15	0.6%	-
Compression:	10.90 (kips)	-	Shrinkage Device - Deflection at Load		-	-	-	0.000
Story Height:	10.00 (ft.)	-	Shrinkage Device - Travel and Seating Increment ΔR		-	-	-	0.002
Plate Height:	8.95 (ft.)	S8	Bearing Plate at Reaction Point		8.28	0.15	1.8%	0.001
Floor Depth:	12.63 (in.)	R7A307	7/8"-A307 Tension Rod		13.53	10.90	80.6%	0.098
Limiting Component Tension Load Capacity, Load and D/C Ratio					13.53	10.90	80.6%	-
Maximum Allowed Level Elongation, D/C Ratio and Total Level Elongation					0.200	-	50.3%	0.101

Level = 3rd		Component	Description		Capacity	Demand	D/C	Elong.
Differential Load:	5.10 (kips)	AT 100	Shrinkage at Level, Shrinkage Device travel & D/C Ratio (in.)		1.10"	0.50"	45.5%	-
Tension Load:	16.00 (kips)	AT 100	Shrinkage Device (1" I.D.) - Allowable Load		25.30	5.10	20.2%	-
Compression:	16.00 (kips)	-	Shrinkage Device - Deflection at Load		-	-	-	0.006
Story Height:	10.00 (ft.)	-	Shrinkage Device - Travel and Seating Increment ΔR		-	-	-	0.002
Plate Height:	8.95 (ft.)	S8	Bearing Plate at Reaction Point		8.28	5.10	61.6%	0.002
Floor Depth:	12.63 (in.)	R7B7	7/8"-B7 Tension Rod		28.19	16.00	56.8%	0.143
Limiting Component Tension Load Capacity, Load and D/C Ratio					8.28	5.10	61.6%	-
Maximum Allowed Level Elongation, D/C Ratio and Total Level Elongation					0.200	-	76.9%	0.154

Level = 2nd		Component	Description		Capacity	Demand	D/C	Elong.
Differential Load:	11.80 (kips)	AT 125	Shrinkage at Level, Shrinkage Device travel & D/C Ratio (in.)		1.10"	0.25"	22.7%	-
Tension Load:	27.80 (kips)	AT 125	Shrinkage Device (1-1/4" I.D.) - Allowable Load		34.50	11.80	34.2%	-
Compression:	27.80 (kips)	-	Shrinkage Device - Deflection at Load		-	-	-	0.005
Story Height:	10.00 (ft.)	-	Shrinkage Device - Travel and Seating Increment ΔR		-	-	-	0.002
Plate Height:	8.95 (ft.)	S12L	Bearing Plate at Reaction Point		12.05	11.80	97.9%	0.039
Floor Depth:	12.63 (in.)	R9B7	1 1/8"-B7 Tension Rod		46.59	27.80	59.7%	0.151
Limiting Component Tension Load Capacity, Load and D/C Ratio					12.05	11.80	97.9%	-
Maximum Allowed Level Elongation, D/C Ratio and Total Level Elongation					0.200	-	98.7%	0.197

Level = Footing		Component	Description		Capacity	Demand	D/C	Elong.
Tension Load:	27.80 (kips)	R9B7	1 1/8"-B7 Anchor Rod		46.59	27.80	59.7%	n/a

Base Design Code: IBC_2009/2009 per the State and Local jurisdiction
 Steel Stress Increase: No
 Takeup Device at Each Level: Yes
 Elongation Limit Required: Yes
 Elongation Limit per Connection: 0.200 (inch) between load reaction points (Typical Range 0.125 to 0.200)
 Elongation Components: System Stretch
 Shrinkage: 0.250 inch per floor (Typical Range 0.250 to 0.500)
 Shearwall Plates Wood Species: DFL Douglas Fir-Larch Shearwall Plates Wood Strength: 625 psi

AutoTight® Holdown System

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AutoTight® System Run Design Calc. Sheet for:

The Sample Project

Rev 0 Date 12/10/2010

Project Number:				CAT ID # 75-19846			
Run Name: 3A		Run Qty: 5	Tensile Strength				Calc'd
Run Specifications		Component	Description	Capacity (kips)	Demand (kips)	D/C Ratio	Elong. (in.)
Required Loads:		Commins AutoTight					
Level = 4th		Component	Description	Capacity	Demand	D/C	Elong.
Differential Load:	8.50 (kips)	AT6A-1.5	Shrinkage at Level, Shrinkage Device travel & D/C Ratio (in.)	1.50"	0.75"	50.0%	-
Tension Load:	4.50 (kips)	AT6A-1.5	Shrinkage Device - 1.5" (3/4" I.D.) - Allowable Load	13.58	8.50	62.6%	-
Compression:	4.50 (kips)	-	Shrinkage Device - Deflection at Load	-	-	-	0.009
Story Height:	10.00 (ft.)	-	Shrinkage Device - Travel and Seating Increment ΔR	-	-	-	0.002
Plate Height:	8.95 (ft.)	S10	Bearing Plate at Reaction Point	10.32	8.50	82.3%	0.033
Floor Depth:	12.63 (in.)	R6A307	3/4"-A307 Tension Rod	9.94	4.50	45.3%	0.199
Limiting Component Tension Load Capacity, Load and D/C Ratio				10.32	8.50	82.3%	-
Maximum Allowed Level Elongation, D/C Ratio and Total Level Elongation				0.200	-	121.5%	0.243
Level = 3rd		Component	Description	Capacity	Demand	D/C	Elong.
Differential Load:	0.00 (kips)	0	Shrinkage at Level, Shrinkage Device travel & D/C Ratio (in.)	#N/A	0.50"	#N/A	-
Tension Load:	8.50 (kips)	0	No Shrinkage Device - Reaction & Elongation on floor above	#N/A	0.00	0.0%	-
Compression:	8.50 (kips)	-	Shrinkage Device - Deflection at Load	-	-	-	n/a
Story Height:	10.00 (ft.)	-	Shrinkage Device - Travel and Seating Increment ΔR	-	-	-	n/a
Plate Height:	8.95 (ft.)	-	Bearing Plate at Reaction Point	#N/A	0.00	0.0%	0.002
Floor Depth:	12.63 (in.)	R6A307	3/4"-A307 Tension Rod	9.94	8.50	85.5%	0.000
Limiting Component Tension Load Capacity, Load and D/C Ratio				9.94	8.50	85.5%	-
Maximum Allowed Level Elongation, D/C Ratio and Total Level Elongation				0.200	-	1.0%	0.002
Level = 2nd		Component	Description	Capacity	Demand	D/C	Elong.
Differential Load:	7.50 (kips)	AT 100	Shrinkage at Level, Shrinkage Device travel & D/C Ratio (in.)	1.10"	0.25"	22.7%	-
Tension Load:	16.00 (kips)	AT 100	Shrinkage Device (1" I.D.) - Allowable Load	25.30	7.50	29.6%	-
Compression:	16.00 (kips)	-	Shrinkage Device - Deflection at Load	-	-	-	0.009
Story Height:	10.00 (ft.)	-	Shrinkage Device - Travel and Seating Increment ΔR	-	-	-	0.002
Plate Height:	8.95 (ft.)	S8	Bearing Plate at Reaction Point	8.28	7.50	90.6%	0.036
Floor Depth:	12.63 (in.)	R8A307	1 "-A307 Tension Rod	17.67	16.00	90.5%	0.109
Limiting Component Tension Load Capacity, Load and D/C Ratio				8.28	7.50	90.6%	-
Maximum Allowed Level Elongation, D/C Ratio and Total Level Elongation				0.200	-	78.5%	0.157
Level = Footing		Component	Description	Capacity	Demand	D/C	Elong.
Tension Load:	16.00 (kips)	R8A307	1 "-A307 Anchor Rod	17.67	16.00	90.5%	n/a

Base Design Code: IBC_2009/2009 per the State and Local jurisdiction
 Steel Stress Increase: No
 Takeup Device at Each Level: Yes
 Elongation Limit Required: Yes
 Elongation Limit per Connection: 0.200 (inch) between load reaction points (Typical Range 0.125 to 0.200)
 Elongation Components: System Stretch
 Shrinkage: 0.250 inch per floor (Typical Range 0.250 to 0.500)
 Shearwall Plates Wood Species: DFL Douglas Fir-Larch Shearwall Plates Wood Strength: 625 psi

AutoTight® Holdown System

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AutoTight® System Run Design Calc. Sheet for:

The Sample Project

Rev 0

Date 12/10/2010

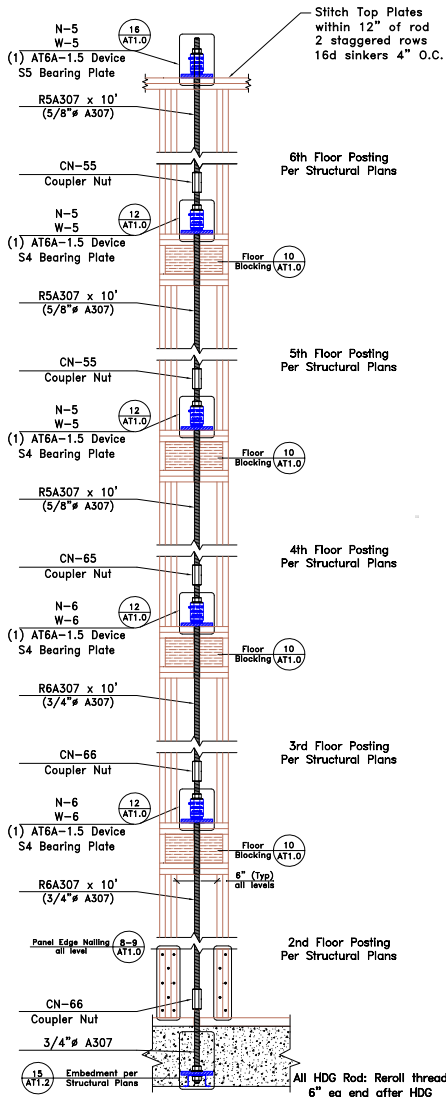
Project Number:				CAT ID #		75-19846			
Run Name: 1ASBS		Run Qty:	4	Tensile Strength			Calc'd		
Run Specifications		Component		Description		Capacity	Demand	D/C Ratio	Elong. (in.)
Required Loads:		Commins AutoTight				(kips)	(kips)		
Level = 3rd		Component		Description		Capacity	Demand	D/C	Elong.
Differential Load:	8.20 (kips)	AT6A-1.5	Shrinkage at Level, Shrinkage Device travel & D/C Ratio (in.)		1.50"	0.50"	33.3%	-	
Tension Load:	8.20 (kips)	AT6A-1.5	Shrinkage Device - 1.5" (3/4" I.D.) - Allowable Load		13.58	8.20	60.4%	-	
Compression:	8.20 (kips)	-	Shrinkage Device - Deflection at Load		-	-	-	0.008	
Story Height:	10.00 (ft.)	-	Shrinkage Device - Travel and Seating Increment ΔR		-	-	-	0.002	
Plate Height:	8.95 (ft.)	S8	Bearing Plate at Reaction Point		8.28	8.20	99.0%	0.002	
Floor Depth:	12.63 (in.)	R6A307	3/4"-A307 Tension Rod		9.94	8.20	82.5%	0.091	
		Stl Beam	Steel Beam Start in Tension		9.94	8.20	82.5%	0.000 (3)	
Limiting Component Tension Load Capacity, Load and D/C Ratio					8.28	8.20	99.0%	-	
Maximum Allowed Level Elongation, D/C Ratio and Total Level Elongation					0.200	-	51.6%	0.103	

Base Design Code: IBC_2009/2009 per the State and Local jurisdiction
 Steel Stess Increase: No
 Takeup Device at Each Level: Yes
 Elongation Limit Required: Yes
 Elongation Limit per Connection: 0.200 (inch) between load reaction points (Typical Range 0.125 to 0.200)
 Elongation Components: System Stretch
 Shrinkage: 0.250 inch per floor (Typical Range 0.250 to 0.500)
 Shearwall Plates Wood Species: DFL Douglas Fir-Larch Shearwall Plates Wood Strength: 625 psi

Run 5A

Wood Floor/Level	Tension Load Spec	Differential Load Spec	Compression Load Spec
6th Floor	5.10	5.10	per Plan
5th Floor	5.90	0.80	per Plan
4th Floor	6.80	0.90	per Plan
3rd Floor	7.50	0.70	per Plan
2nd Floor	9.20	1.70	per Plan

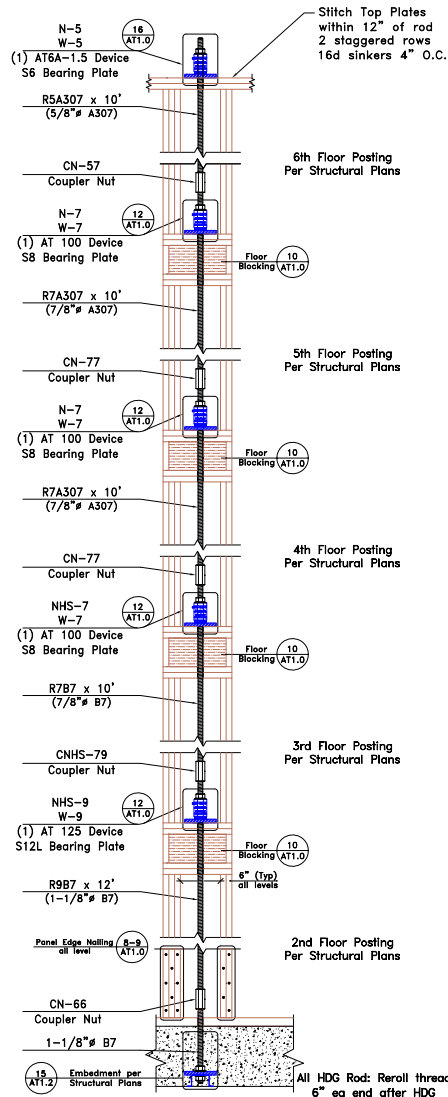
Loads shown in kips



Run 5B

Wood Floor/Level	Tension Load Spec	Differential Load Spec	Compression Load Spec
6th Floor	6.50	6.50	per Plan
5th Floor	10.75	4.25	per Plan
4th Floor	10.90	0.15	per Plan
3rd Floor	16.00	5.10	per Plan
2nd Floor	27.80	11.80	per Plan

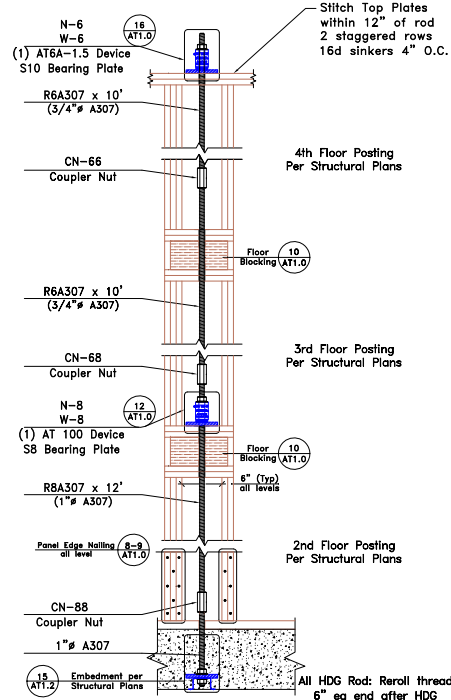
Loads shown in kips



3A

Wood Floor/Level	Tension Load Spec	Differential Load Spec	Compression Load Spec
4th Floor	4.50	8.50	per Plan
3rd Floor	8.00	0.00	per Plan
2nd Floor	16.00	7.50	per Plan

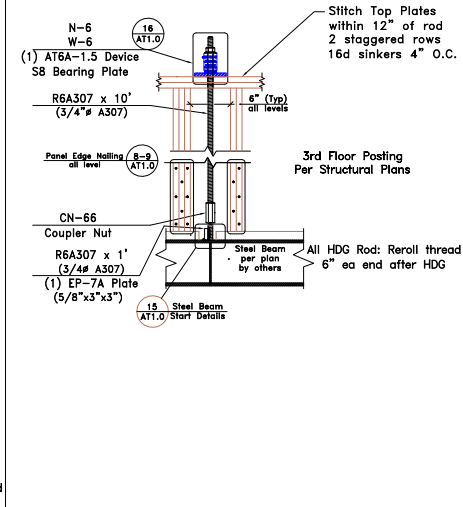
Loads shown in kips



1ASBS

Wood Floor/Level	Tension Load Spec	Differential Load Spec	Compression Load Spec
3rd Floor	8.20	8.20	per Plan

Loads shown in kips



The Sample Project, 1 of 1, 12/09/2010

See calculations prepared by Zbinden-Carter-Souders, Inc. Dated N. A.

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DRAFT

No	Revision	Date

75-19846
The Sample Project
960 Guard Street
Friday Harbor WA 98250

Holdown Run Elevations
AT11

Drawn: TB Check: NA Date: 12/09/10

Anchor Bolt Embedment Notes

- Anchor Bolt Embedment Design:**
- Anchor Bolt Embedment Design conforms to the 2007 California Building Code (CBC) and the 2009 International Building Code (IBC).
 - Required loads and system requirements per Final Shear Wall Layout Structural Plan Set, dated 07/17/2008.
 - Concrete Strength is 4,000 psi min. Drawings are not to scale.
 - Fabrication shall meet the requirements and specifications per structural plan general notes.

- Anchor Bolt Installation:**
- Contractor/installer shall verify anchor bolt size, thread pitch and material for correct location per structural plans and AutoTight holdown run layout sheet(s).
 - Anchor Bolt location relative to the end of the shear wall shall be per AT1.0 Details 4 and 6.
 - Anchor bolt shall be 6" minimum above concrete slab (U.N.O.). (Excess exposure will impact lift-over heights on floors above. Less exposure will not leave enough thread for coupler.)

- Holdown System Design:**
- For system design see Holdown Run Details (AT1.0), Holdown Run Elevations (AT1.1) and Structural Drawing 302.5
 - Fabrication shall meet the requirements and specifications per structural plan general notes.

Shop Drawing Disclaimer

Engineering has been provided by Zbinden-Carter-Souders Engineering and Commins Manufacturing, Inc. for the holdown system described in these shop drawings only. This design uses the construction plans and calculations provided by the Engineer of Record. No attempt has been made on the part of Zbinden-Carter-Souders Engineering and Commins Manufacturing, Inc. to verify the values given in the calculations or design described by the construction drawings.

The Engineer of Record is responsible for the structural design of the building and the ability of the design to transfer loads imparted to the structure by the holdown system.

Abbreviations

A,B	Anchor bolt per plan or schedule
AR	Alternate option
ATXX	AutoTight take-up device (installed with 7/8 & 7/8-2.5 (5/8" or 3/4" rod) 100 (7/8" or 1" rod) 125 (1 1/8" or 1 1/4" rod)
CAT	Commins AutoTight
CN(HS)	Commins Coupler
CN(HS)	Coupler nut (HS are notched)
Dia	Diameter
DPL	Douglas Fir-Larch
HF	Hemlock Fir
HS	High strength
LXX	Bearing plate, 6x wall only
Min	Minimum
Max	Maximum
N(HS)-XX	Nut (HS have stamp grade ID)
O/C	On center
R-XX(HS)	Threaded rod, (HS rod is black)
S/SF	Surface finish
STD	Standard strength (STD rod is zinc plated)
S/SF	Southern Pine
SXX	Bearing plate, 4x or 6x wall
Typ	Typical
U.N.O.	Unless noted otherwise
W-XX	SAE Washer
	Rod, Nut & Washer Size
-5	5/8"
-9	1-1/8"
-6	3/4"
-10	1-1/4"
-7	7/8"
-12	1-1/2"
-8	1"
-14	1-3/4"

Structural Engineer of Record

AutoTight Designer
P.O. Box 3338
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Tel: 360-378-9484

Anchor Bolt Allowable Loads

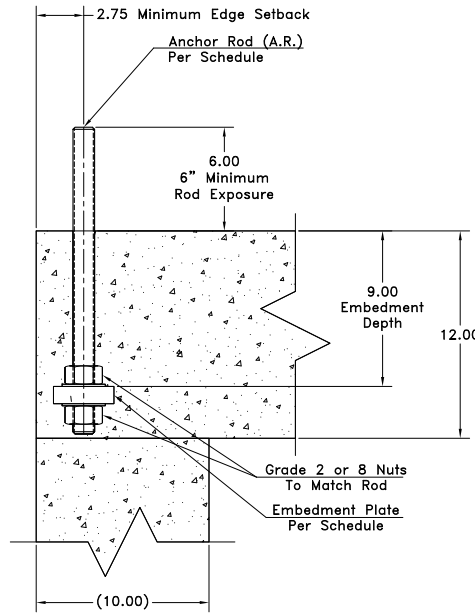
Table 2b
2009 International Building Code (IBC)

Allowable Loads 2009 IBC (lbs.)	Anchor Bolts		
	CAT Rod	Dia.*Thread	Material
6,903	R5A307	5/8"-11 NC	A307
9,940	R6A307	3/4"-10 NC	A307
13,530	R7A307	7/8"-9 NC	A307
17,671	R8A307	1"-8 NC	A307
22,365	R9A307	1-1/8"-7 NC	A307
27,612	R10A307	1-1/4"-7 NC	A307
14,381	R5B7	5/8"-10 NC	A193-B7
20,709	R6B7	3/4"-10 NC	A193-B7
28,187	R7B7	7/8"-9 NC	A193-B7
36,616	R8B7	1"-8 NC	A193-B7
48,595	R9B7	1-1/8"-7 NC	A193-B7
57,524	R10B7	1-1/4"-7 NC	A193-B7
68,029	R10A354	1-1/4"-7 NC	A354-BD

Threaded Rod, Couplers, Nuts and AT Shrinkage Device Notes:

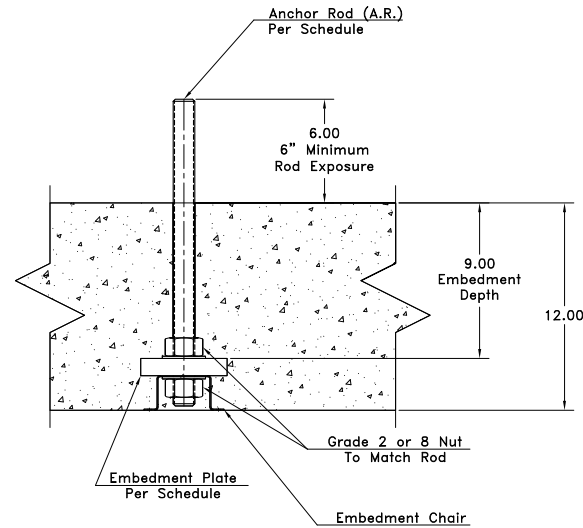
1. Rod Alloy is incorporated in the rod part name. See AT1.0 Holdown Run Details for data on other rod alloys.
2. All threaded rod is Uniform National Coarse (UNC) threaded.
3. High Strength rod is usually marked with Red point. Consult Factory for additional information.
4. Standard couplers conform to ASTM A-563 grade A (SAE Grade 2). High strength (HS) couplers conform to ASTM A563 Grade C (SAE Grade 8) and are notched for identification.
5. Standard nuts conform to ASTM A-563 grade A (SAE Grade 2). High strength (HS) nuts conform to ASTM A563 Grade C (SAE Grade 8) and are stamped for identification.
6. Automatic (AT) Take-Up Device & Rod & Bearing Plates by Commins Manufacturing Inc. per ICC ESR report ESR-1344 issued November 1, 2007.

Slab Edge Anchor



Concrete and Rebar per Structural Plans

Slab Interior Anchor



Concrete and Rebar per Structural Plans

AutoTight Anchor Bolt Embedment Schedule

Run #	Location	Rod	Plate Size Slab Interior	Embedment Depth	Quantity
1-E	Slab Edge	R6A307	3 1/2" x 7 1/2" x 1"	9"	14
2-E	Slab Edge	R9B7	3 1/2" x 7 1/2" x 1"	9"	2
3-E	Slab Edge	R8A307	3 1/2" x 7 1/2" x 1"	9"	0
4-E	Slab Edge	N.A.	Steel Beam Start	N.A.	N.A.

AutoTight Anchor Bolt Embedment Schedule

Run #	Location	Rod	Plate Size Slab Interior	Embedment Depth	Quantity
1-I	Slab Interior	R6A307	5" x 5" x 1"	9"	50
2-I	Slab Interior	R9B7	5" x 5" x 1"	9"	6
3-I	Slab Interior	R8A307	5" x 5" x 1"	9"	5
4-I	Slab Interior	N.A.	5" x 5" x 1"	N.A.	N.A.

Run names are the same as structural drawing with the addition of -E for Slab Edge runs and -I for Slab Interior runs.

The Sample Project 1 of 1, 12/09/2010

See calculations prepared by Zbinden-Carter-Souders, Inc. Dated N.A.

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DRAFT

No	Revision	Date

CAT ID 75-19846
The Sample Project
760 Guard Street
Friday Harbor WA 98250
Drawn: TB Check: [] Date: 10/28/10

Anchor Bolt Details
AT12