



Standard Partition Wall Details Update

Chris Davis, DSE

Inspection Services Unit

ASCE 7-22 Force Level

Light Frame Partitions <= 9 ft

ASCE 7-22				ASCE 7-16
S _{ds}	F _{p,min} /W _p	F _p /W _p	F _{p,max} /W _p	F _p /W _p
0.99	0.45	1.07	2.38	0.71
1.25	0.56	1.35	3.00	0.90
1.45	0.65	1.56	3.48	1.04
1.95	0.88	2.10	4.68	1.40

Light Frame Partitions > 9 ft

ASCE 7-22				ASCE 7-16
S _{ds}	F _{p,min} /W _p	F _p /W _p	F _{p,max} /W _p	F _p /W _p
0.99	0.45	1.49	2.38	0.71
1.25	0.56	1.88	3.00	0.90
1.45	0.65	2.19	3.48	1.04
1.95	0.88	2.94	4.68	1.40

↑ 1.5

↑ 2.1

The horizontal seismic design force shall be calculated as

$$F_p = 0.4 S_{DS} I_p W_p \left[\frac{H_f}{R_\mu} \right] \left[\frac{C_{AR}}{R_{po}} \right] \quad (13.3-1)$$

F_p is not required to be taken as greater than

$$F_p = 1.6 S_{DS} I_p W_p \quad (13.3-2)$$

and shall not be taken as less than

$$F_p = 0.3 S_{DS} I_p W_p \quad (13.3-3)$$

13.3.1.1 Amplification with Height, H_f For nonstructural components supported at or below grade plane, the factor for force amplification with height H_f is 1.0. For components supported above grade plane by a building or nonbuilding structure, H_f is permitted to be determined by Equation (13.3-4) or Equation (13.3-5). Where the approximate fundamental period of the supporting building or nonbuilding structure is unknown, H_f is permitted to be determined by Equation (13.3-5).

$$H_f = 1 + a_1 \left(\frac{z}{h} \right) + a_2 \left(\frac{z}{h} \right)^{10} \quad (13.3-4)$$

$$H_f = 1 + 2.5 \left(\frac{z}{h} \right)^{1.0} = 3.5 \quad (13.3-5)$$

$$R_\mu = [1.1 R / (I_e \Omega_0)]^{1/2} \geq 1.3 \quad (13.3-6)$$

Use = 1.3

Table 13.5-1. Coefficients for Architectural Components.

Architectural Component	C _{AR}		R _{po}	Ω _{op} ^a
	Supported at or below grade plane	Supported above grade plane by a structure		
Interior nonstructural walls and partitions ^b				
Light frame ≤ 9 ft (2.74 m) in height	1	1	1.5	2
Light frame > 9 ft (2.74 m) in height	1.4	1.4	1.5	2

ASCE 7-22 Force Level for Various Structural Systems

Structure		Stories	Height (ft)	R	Ω_o
Steel Special Moment Resisting Frame, 3 Stories	STL SMRF-3	3	48	8	3
Steel Special Moment Resisting Frame, 10 Stories	STL SMRF-10	10	160	8	3
Special Reinforced Concrete Shear Wall (Building Frame), 3 Stories	SRCSW-BF-3	3	48	6	2.5
Special Reinforced Concrete Shear Wall (Building Frame), 10 Stories	SRCSW-BF-10	10	160	6	2.5
Special Reinforced Concrete Shear Wall (Bearing Wall), 3 Stories	SRCSW-BW-3	3	48	5	2.5
Special Reinforced Concrete Shear Wall (Bearing Wall), 10 Stories	SRCSW-BW-10	10	160	5	2.5

Nonstructural Partition Wall: Light Frame <= 9 ft

S_{ds}	F_p/W_p						Default Case
	STL SMRF-3	STL SMRF-10	SRCSW-BF-3	SRCSW-BF-10	SRCSW-BW-3	SRCSW-BW-10	
0.25	0.23	0.18	0.25	0.19	0.27	0.22	0.27
1	0.91	0.73	1.00	0.78	1.08	0.90	1.08
1.25	1.14	0.91	1.25	0.97	1.35	1.12	1.35
1.45	1.33	1.06	1.46	1.13	1.56	1.30	1.56
1.95	1.78	1.43	1.96	1.52	2.10	1.75	2.10

Nonstructural Partition Wall: Light Frame > 9 ft

S_{ds}	F_p/W_p						Default Case
	STL SMRF-3	STL SMRF-10	SRCSW-BF-3	SRCSW-BF-10	SRCSW-BW-3	SRCSW-BW-10	
0.25	0.32	0.26	0.35	0.27	0.38	0.31	0.38
1	1.28	1.02	1.41	1.09	1.51	1.26	1.51
1.25	1.60	1.28	1.76	1.36	1.88	1.57	1.88
1.45	1.86	1.48	2.04	1.58	2.19	1.82	2.19
1.95	2.50	2.00	2.74	2.12	2.94	2.45	2.94

Note:

- 1) All cases use $z/h = 1.0$
- 2) Default case uses $R_\mu = 1.3$ and $H_f = 3.5$.
- 3) Assuming default parameters has a large impact on the design forces and trickles through the entire wall design.

The horizontal seismic design force shall be calculated as

$$F_p = 0.4 S_{DS} I_p W_p \left[\frac{H_f}{R_\mu} \right] \left[\frac{C_{AR}}{R_{po}} \right] \quad (13.3-1)$$

F_p is not required to be taken as greater than

$$F_p = 1.6 S_{DS} I_p W_p \quad (13.3-2)$$

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$$F_p = 0.3 S_{DS} I_p W_p \quad (13.3-3)$$

13.3.1.1 Amplification with Height, H_f For nonstructural components supported at or below grade plane, the factor for force amplification with height H_f is 1.0. For components supported above grade plane by a building or nonbuilding structure, H_f is permitted to be determined by Equation (13.3-4) or Equation (13.3-5). Where the approximate fundamental period of the supporting building or nonbuilding structure is unknown, H_f is permitted to be determined by Equation (13.3-5).

$$H_f = 1 + a_1 \left(\frac{z}{h} \right) + a_2 \left(\frac{z}{h} \right)^{10} \quad (13.3-4)$$

$$R_\mu = [1.1R / (I_e \Omega_o)]^{1/2} \geq 1.3 \quad (13.3-6)$$

Table 13.5-1. Coefficients for Architectural Components.

Architectural Component	C_{AR}		R_{po}	Ω_{op}^a
	Supported at or below grade plane	Supported above grade plane by a structure		
Interior nonstructural walls and partitions ^b				
Light frame ≤ 9 ft (2.74 m) in height	1	1	1.5	2
Light frame > 9 ft (2.74 m) in height	1.4	1.4	1.5	2

Partition Wall Stud Size Updates

PARTITION WALL SCHEDULES

SCHEDULE 1: MINIMUM PARTITION WALL STUD SIZE (PARTITION CONDITION 'A')

S _{ds}	WALL HEIGHT				
	9 FT	12 FT	16 FT	16 FT	16 FT
0.25-0.99	362S137-33	362S137-33	362S137-43	400S137-43	600S137-33
1.00-1.25	362S137-33	362S137-33	362S137-43	400S137-43	600S137-33
1.26-1.45	362S137-33	362S137-33	362S137-43	400S137-43	600S137-33
1.46-1.95	362S137-33	362S137-33	362S137-54	400S137-54	600S137-43

SCHEDULE 2: MINIMUM PARTITION WALL STUD SIZE (PARTITION CONDITION 'B')

S _{ds}	WALL HEIGHT				
	9 FT	12 FT	16 FT	16 FT	16 FT
0.25-0.99	362S137-33	362S137-43	400S137-43	362S137-54	400S137-43
1.00-1.25	362S137-33	362S137-43	400S137-43	NA	400S137-54
1.26-1.45	362S137-33	362S137-43	400S137-43	NA	400S137-54
1.46-1.95	362S137-33	362S137-54	400S137-43	NA	400S137-54

SCHEDULE 3: MINIMUM PARTITION WALL STUD SIZE (PARTITION CONDITION 'C')

S _{ds}	WALL HEIGHT				
	9 FT	12 FT	16 FT	16 FT	16 FT
0.25-0.99	362S137-43	400S137-54	362S137-54	400S137-43	600S137-43
1.00-1.25	362S137-43	400S137-54	362S137-54	400S137-54	600S137-43
1.26-1.45	362S137-43	400S137-54	NA	400S137-54	600S137-54
1.46-1.95	362S137-54	400S137-54	NA	NA	600S137-54

SCHEDULE 4: MINIMUM PARTITION WALL STUD SIZE (PARTITION CONDITION 'D')

S _{ds}	WALL HEIGHT				
	9 FT	12 FT	16 FT	16 FT	16 FT
0.25-0.99	362S137-33	400S137-43	600S137-43	362S137-43	400S137-43
1.00-1.25	362S137-43	400S137-43	600S137-43	NA	400S137-54
1.26-1.45	362S137-43	400S137-43	600S137-43	NA	400S137-54
1.46-1.95	NA	400S137-54	600S137-54	NA	600S137-54

PARTITION WALL SCHEDULES

SCHEDULE 1: MINIMUM PARTITION WALL STUD SIZE (PARTITION CONDITION 'A')

F _p /W _p Range	9 FT	12 FT	16 FT	16 FT	16 FT
	9 FT	12 FT	16 FT	16 FT	16 FT
0.00 - > 0.75	362S137-33	362S137-33	362S137-33	400S137-33	600S137-33
0.76 - > 1.50	362S137-33	362S137-33	362S137-33	400S137-33	600S137-33
1.51 - > 2.25	362S137-33	362S137-33	362S137-43	400S137-43	600S137-33
2.26 - > 3.00	362S137-33	362S137-33	362S137-54	400S137-54	600S137-33

SCHEDULE 2: MINIMUM PARTITION WALL STUD SIZE (PARTITION CONDITION 'B')

F _p /W _p Range	9 FT	12 FT	16 FT	16 FT	16 FT
	9 FT	12 FT	16 FT	16 FT	16 FT
0.00 - > 0.75	362S137-33	362S137-33	400S137-33	362S137-54	400S137-33
0.76 - > 1.50	362S137-33	362S137-33	400S137-33	362S137-54	400S137-43
1.51 - > 2.25	362S137-33	362S137-54	400S137-43	362S137-54	400S137-54
2.26 - > 3.00	362S137-43	362S137-54	400S137-54	362S137-97	400S137-68

SCHEDULE 3: MINIMUM PARTITION WALL STUD SIZE (PARTITION CONDITION 'C')

F _p /W _p Range	9 FT	12 FT	16 FT	16 FT	16 FT
	9 FT	12 FT	16 FT	16 FT	16 FT
0.00 - > 0.75	362S137-43	400S137-43	362S137-43	400S137-43	600S137-33
0.76 - > 1.50	362S137-54	400S137-54	362S137-68	400S137-54	600S137-54
1.51 - > 2.25	362S137-97	400S137-68	362S137-97	400S137-97	600S137-68
2.26 - > 3.00	362S137-118	400S137-97	NA	400S137-118	600S137-97

SCHEDULE 4: MINIMUM PARTITION WALL STUD SIZE (PARTITION CONDITION 'D')

F _p /W _p Range	9 FT	12 FT	16 FT	16 FT	16 FT
	9 FT	12 FT	16 FT	16 FT	16 FT
0.00 - > 0.75	362S137-33	400S137-33	600S137-33	362S137-43	400S137-43
0.76 - > 1.50	362S137-54	400S137-54	600S137-33	362S137-68	400S137-54
1.51 - > 2.25	362S137-68	400S137-68	600S137-54	362S137-97	400S137-97
2.26 - > 3.00	362S137-97	400S137-97	600S137-54	NA	600S137-68

For Reference

S _{ds}	ASCE 7-22 F _p /W _p Range	
	<= 9 ft	> 9 ft
0.25-0.99	0.27-1.07	0.38-1.49
1.00-1.25	1.08-1.35	1.51-1.88
1.26-1.45	1.36-1.56	1.90-2.19
1.46-1.95	1.57-2.1	2.20-2.94

Nonstructural Partition Wall: Light Frame <= 9 ft

S _{ds}	F _p /W _p					
	STL SMRF-3	STL SMRF-10	SRCBW-BF-3	SRCBW-BF-10	SRCBW-BW-3	SRCBW-BW-10
0.25	0.23	0.18	0.25	0.19	0.27	0.22
1	0.91	0.73	1.00	0.78	1.08	0.90
1.25	1.14	0.91	1.25	0.97	1.35	1.12
1.45	1.33	1.06	1.46	1.13	1.56	1.30
1.95	1.78	1.43	1.96	1.52	2.10	1.75

Nonstructural Partition Wall: Light Frame > 9 ft

S _{ds}	F _p /W _p					
	STL SMRF-3	STL SMRF-10	SRCBW-BF-3	SRCBW-BF-10	SRCBW-BW-3	SRCBW-BW-10
0.25	0.32	0.26	0.35	0.27	0.38	0.31
1	1.28	1.02	1.41	1.09	1.51	1.26
1.25	1.60	1.28	1.76	1.36	1.88	1.57
1.45	1.86	1.48	2.04	1.58	2.19	1.82
1.95	2.50	2.00	2.74	2.12	2.94	2.45

Note: It is not a direct comparison between the rows from the 2013 OPD (left side) and the updated tables (right side).

Expansion Anchor Updates

- **2013 OPD**
 - Based on least allowable strengths of the following ICC ESR reports:
 - 1917 (Hilti KB-TZ)
 - 2427 (ITW Red Head)
 - 2502 (Dewalt Power-Stud)
 - 3037 (Simpson Strong Bolt 2)
- **2015 OPD**
 - Includes strength design capacities of the following ICC ESR reports:
 - 4266 (Hilti KB-TZ2)
 - ~~2427 (ITW Red Head)~~ No current ICC-ESR for cracked concrete in all Seismic Design Categories
 - 2502 (Dewalt Power-Stud)
 - 3037 (Simpson Strong Bolt 2)
- **Rational**
 - Too many variations of anchor diameter and embedment lengths amongst the manufactures. No common diameter-embedment combination amongst all manufacturers.
 - Not all anchors are permitted for all conditions (e.g. ICC ESR 3037 does not permit the use of anchors into the soffit of B-deck).

Note: Manufacturer names are not included in the general notes/details. Only the ICC ESR number.

Anchor Updates

TABLE 9—HILTI KB-TZ2 CARBON STEEL ANCHORS SETTING INFORMATION FOR INSTALLATION ON THE TOP OF CONCRETE-FILLED PROFILE STEEL DECK ASSEMBLIES ACCORDING TO FIGURE 5D^{1,2,3}

Design Information	Symbol	Units	Nominal anchor diameter (in.)					
			1/4	1-1/2	3/8	2	1-1/2	1/2
Effective Embedment Depth	h_{ef}	in. (mm)	1-1/2 (38)	1-1/2 (38)	2 (51)	2 (51)	1-1/2 (38)	2 (51)
Nominal Embedment Depth	h_{nom}	in. (mm)	1-3/4 (44)	1-7/8 (48)	2-1/2 (64)	2 (51)	2 (51)	2-1/2 (64)
Minimum Hole Depth	h_o	in. (mm)	2 (51)	2 (51)	2-1/2 (64)	2-3/4 (70)	2-1/4 (57)	2-3/4 (70)
Minimum Concrete Thickness ⁴	$h_{min,deck}$	in. (mm)	2-1/2 (64)	2-1/2 (64)	2-1/2 (64)	3-1/4 (83)	2-1/2 (64)	3-1/4 (83)

TABLE 2—POWER-STUD+ SD2 ANCHORS SETTING INFORMATION FOR INSTALLATION ON THE TOP OF CONCRETE-FILLED STEEL DECK ASSEMBLIES ACCORDING TO FIGURE 5D^{3,4,5}

ANCHOR PROPERTY AND SETTING INFORMATION	NOTATION	UNITS	NOMINAL ANCHOR SIZE (inch)	
			3/8	1/2
Nominal drill bit diameter	d_{bit}	in.	3/8 ANSI	1/2 ANSI
Minimum nominal embedment depth ¹	h_{nom}	in. (mm)	2 3/8 (60)	2 1/2 (64)
Effective embedment	h_{ef}	in. (mm)	2.00 (51)	2.00 (51)
Minimum concrete member thickness ²	$h_{min,deck}$	in. (mm)	2 1/2 (64)	2 1/2 (64)

TABLE 5—CARBON STEEL AND STAINLESS STEEL STRONG-BOLT® 2 ANCHOR INSTALLATION INFORMATION IN THE TOPSIDE OF NORMAL-WEIGHT OR SAND-LIGHTWEIGHT CONCRETE-FILLED PROFILE STEEL DECK FLOOR AND ROOF ASSEMBLIES^{1,4,5}

Design Information	Symbol	Units	Nominal Anchor Diameter (inch)						
			Carbon Steel Strong-Bolt 2 ²				Stainless Steel Strong-Bolt 2 ³		
			3/8		1/2		3/8		1/2
Nominal Embedment Depth	<i>h_{nom}</i>	in.	1 ⁷ / ₈	1 ⁷ / ₈	2 ³ / ₄	3 ⁷ / ₈	1 ⁷ / ₈	1 ⁷ / ₈	2 ³ / ₄
Effective Embedment Depth	<i>h_{ef}</i>	in.	1 ¹ / ₂	1 ¹ / ₂	2 ¹ / ₄	3 ³ / ₈	1 ¹ / ₂	1 ¹ / ₂	2 ¹ / ₄
Minimum Concrete Thickness ⁵	<i>h_{min,deck}</i>	in.	2 ¹ / ₂	3 ¹ / ₄	3 ¹ / ₄	4 ³ / ₁₆	2 ¹ / ₂	3 ¹ / ₄	3 ¹ / ₄

- A comparison of the above tables show that the effective embedment varies between manufactures, and even for the same effective embedment, the minimum concrete thickness over metal deck varies. Due to the variations, the current plan is to use separate tables for each ESR (expansion and screw anchors). However, each anchor will have ~5 pages of installation/capacity tables and connection spacing tables. This will result in 30+ pages of tables if (6) anchors are chosen (3 expansion, 3 screw).

Anchor Updates

EXPANSION ANCHOR GENERAL NOTES

1. CAPACITIES SHALL BE COMPARED TO STRENGTH DESIGN (SD) LEVEL DEMAND IN ACCORDANCE WITH THE 2025 CBC SECTION 1910A.5.

2. CAPACITIES ARE FOR SINGLE ANCHORS WHICH MEET MIN. REQUIREMENTS PER TABLE & SECTION BELOW.

3. MINIMUM CONCRETE STRENGTH (f'c=3000 PSI).

4. EXPANSION ANCHORS INSTALLED THROUGH UPPER OR LOWER FLUTES OF METAL DECK SHALL MEET THE REQUIREMENTS OF THE INSTALLATION CRITERIA AND SECTION BELOW. << REFERENCE ACT FIGURES

5. STEEL DECK TO BE MIN. 20 GA. W-DECK.

6. MINIMUM CONCRETE FILL DEPTH ABOVE THE TOP OF METAL DECK PER SECTION AND INSTALLATION CRITERIA BELOW.

7. EXPANSION ANCHORS SHALL NOT BE USED IN PRE-STRESSED CONCRETE UNLESS NON-DESTRUCTIVE TESTING METHODS ARE USED TO LOCATE STRAND & REINFORCING PRIOR TO ANCHOR INSTALLATION.

8. EXPANSION ANCHOR INSTALLATION SHALL NOT NICK OR DAMAGE EXISTING REINFORCEMENT. SHOULD THIS OCCUR THE ROP IN RESPONSIBLE CHARGE SHALL BE NOTIFIED IMMEDIATELY. EXPANSION ANCHORS SHALL BE INSTALLED 1" CLEAR OF EXISTING REINFORCEMENT.

9. EXPANSION ANCHORS SHALL BE INSTALLED PER CURRENT ICC-ES EVALUATION REPORT OR REPORT FROM OTHER TESTING AGENCY ACCEPTABLE TO OSHPD.

10. TESTING OF EXPANSION ANCHORS SHALL BE PER 2025 CBC SECTION 1910A.5

11. EXPANSION ANCHORS SHALL BE INSTALLED TO COMPLY W/ THE MINIMUM SLAB THICKNESS REQUIREMENTS ESTABLISHED BY THE ICC-ESR FOR THE SPECIFIED ANCHOR.

12. REFER TO NOTE 6C ON ST0.01 FOR ADDITIONAL EXPANSION ANCHOR REQUIREMENTS.

13. ALL VALUES IN TABLES ARE FOR CRACKED CONCRETE & INCLUDE REDUCTION BASED ON ACI 318-11 D3.3.4 REQUIREMENTS. THE ALLOWABLE STRENGTHS ARE BASED UPON THE LEAST OF THE ALLOWABLE STRENGTHS CALCULATED USING THE ICC ESRs 1917, 2427, 2502, & 3037 AND USING AN α FACTOR OF 1.4.

14. ANCHOR DEMANDS SHALL BE BASED ON ACI 318-19 17.10.5.3(D) AND 17.10.6.3(C).

MIN. MEMBER THICKNESS PER INSTALLATION CRITERIA BELOW

MIN. 3000 PSI NORMAL WEIGHT CONCRETE

EXPANSION ANCHOR PER TABLE BELOW TYP

FIG 1: EXPANSION ANCHOR INSTALLATION CRITERIA IN SLAB OR BEAM

TABLE 1 (BASED ON ICC ESR 4266)
EXPANSION ANCHORS INSTALLED IN NORMAL WEIGHT CONCRETE (f'c MIN = 3000 PSI)

ANCHOR DIA (IN)	MIN EFFECTIVE EMBED (IN)	H_MIN (IN) ¹	MIN ANCHOR SPACING (IN) ²	MIN EDGE DISTANCE (IN) ³	TENSION (LB)	SHEAR (LB)
3/8	2	4	6	4.375	1586	2200
1/2	2	4	6	5.5	1586	2277
1/2	3-1/4	5.5	9.75	10	2660	4469
5/8	2-3/4	5	8.25	10	2557	6666
5/8	4	6	12	8.75	3631	6666

1. MINIMUM REQUIRED THICKNESS OF CONCRETE.

2. MIN ANCHOR SPACING IS THE MAX OF 3 X MIN EFFECTIVE EMBED AND MIN SPACING FROM ESR REPORT.

3. MIN EDGE DISTANCE IS THE MAX OF 1.5 X MIN EFFECTIVE EMBED AND CRITICAL EDGE DISTANCE FROM ESR REPORT.

SECTION TITLE:
STANDARD PARTITION WALL DETAILS

SHEET TITLE:
EXPANSION ANCHOR GENERAL NOTES
AND CAPACITIES - ICC ESR 4266

OPD NO.:
ST1.03

FIG 2: EXPANSION ANCHOR INSTALLATION CRITERIA IN W-DECK

TABLE 2 (BASED ON ICC ESR 4266)
EXPANSION ANCHORS INSTALLED IN TO THE UNDERSIDE OF STRUCTURAL SAND-LIGHTWEIGHT CONCRETE (f'c MIN = 3000 PSI) OVER METAL W-DECK SHOWN IN FIGURE 2 ABOVE. CAPACITIES NOT APPLICABLE FOR B-DECK.

ANCHOR DIA (IN)	MIN EFFECTIVE EMBED (IN)	LOWER ANCHOR, H_MIN (IN) ¹	UPPER ANCHOR, H_MIN (IN) ²	MIN ANCHOR SPACING (IN) ³	MIN EDGE DISTANCE (IN) ⁴	TENSION (LB)	SHEAR (LB)
3/8	2	2.5	3.75	6.75	3	1119	1378
1/2	2	2.5	3.75	6.75	3	1041	1469
1/2	3.25	2.5	4.875	9.75	4.875	1628	2824
5/8	2.75	2.5	4.375	8.25	4.125	1916	2480
5/8	4	2.5	5.375	12	6	2143	3998

1. MINIMUM REQUIRED THICKNESS OF CONCRETE ABOVE UPPER FLUTE FOR ANCHOR INSTALLED IN LOW FLUTE.

2. MINIMUM REQUIRED THICKNESS OF CONCRETE ABOVE UPPER FLUTE FOR ANCHOR INSTALLED IN UPPER FLUTE.

3. MIN ANCHOR SPACING IS THE MAX OF 3 X MIN EFFECTIVE EMBED AND 1.5 TIMES THE FLUTE WIDTH (TABLE ASSUMES 4.5" FLUTE WIDTH).

4. MIN EDGE DISTANCE IS THE MAX OF 1.5 X MIN EFFECTIVE EMBED AND CRITICAL EDGE DISTANCE FROM ESR REPORT.

SECTION TITLE:
STANDARD PARTITION WALL DETAILS

SHEET TITLE:
EXPANSION ANCHOR CAPACITIES - ICC ESR 4266

OPD NO.:
ST1.01

FIG 3: EXPANSION ANCHOR INSTALLATION CRITERIA IN B-DECK

TABLE 4 (BASED ON ICC ESR 4266)
EXPANSION ANCHORS INSTALLED IN TO THE UNDERSIDE OF STRUCTURAL SAND-LIGHTWEIGHT CONCRETE (f'c MIN = 3000 PSI) OVER METAL B-DECK SHOWN IN FIGURE 3 ABOVE.

ANCHOR DIA (IN)	MIN EFFECTIVE EMBED (IN)	LOWER ANCHOR, H_MIN (IN) ¹	UPPER ANCHOR, H_MIN (IN) ²	MIN ANCHOR SPACING (IN) ³	MIN EDGE DISTANCE (IN) ⁴	TENSION (LB)	SHEAR (LB)
3/8	2	2.25	3.375	6	3	1038	1628
1/2	2	2.25	3.375	6	3	722	2064
1/2	3.25	3.375	4.875	9.75	4.875	921	2252
5/8	2.75	3.25	4.375	8.25	4.125	1285	2655

1. MINIMUM REQUIRED THICKNESS OF CONCRETE ABOVE UPPER FLUTE FOR ANCHOR INSTALLED IN LOW FLUTE.

2. MINIMUM REQUIRED THICKNESS OF CONCRETE ABOVE UPPER FLUTE FOR ANCHOR INSTALLED IN UPPER FLUTE.

3. MIN ANCHOR SPACING IS THE MAX OF 3 X MIN EFFECTIVE EMBED AND 1.5 TIMES THE FLUTE WIDTH (TABLE ASSUMES 1.75" FLUTE WIDTH).

4. MIN EDGE DISTANCE IS THE MAX OF 1.5 X MIN EFFECTIVE EMBED AND CRITICAL EDGE DISTANCE FROM ESR REPORT.

SECTION TITLE:
STANDARD PARTITION WALL DETAILS

SHEET TITLE:
EXPANSION ANCHOR CAPACITIES - ICC ESR 4266

OPD NO.:
ST1.01

- Each anchor will have 3 sheets covering capacities and installation in concrete flat slab/beam, W-Deck, and B-Deck

Anchor Updates

PLOT DATE: May 09, 2017

BOTTOM TRACK CONNECTION TO LWC ON METAL DECK FASTENER MAX SPACING SCHEDULE

BOTTOM CONNECTION DEMANDS (PARTITION WALL CONDITION 'A')

MAX PARTITION WALL HEIGHT	F_u/W_o RANGE	MAXIMUM FASTENER SPACING IN INCHES AT BOTTOM CONNECTION	
		3/8" Φ EXP. ANCHOR W/ 2" EMBED	1/2" Φ EXP. ANCHOR W/ 2" EMBED
9 FT	0.00 → 0.75	32	32
	0.76 → 1.50	32	32
	1.51 → 2.25	32	32
	2.26 → 3.00	32	32
	0.00 → 0.75	32	32
12 FT	0.76 → 1.50	32	32
	1.51 → 2.25	32	32
	2.26 → 3.00	32	32
	0.00 → 0.75	32	32
	0.76 → 1.50	32	32
16 FT	1.51 → 2.25	32	32
	2.26 → 3.00	32	32

BOTTOM CONNECTION DEMANDS (PARTITION WALL CONDITION 'B')

MAX PARTITION WALL HEIGHT	F_u/W_o RANGE	MAXIMUM FASTENER SPACING IN INCHES AT BOTTOM CONNECTION	
		3/8" Φ EXP. ANCHOR W/ 2" EMBED	1/2" Φ EXP. ANCHOR W/ 2" EMBED
9 FT	0.00 → 0.75	32	32
	0.76 → 1.50	32	32
	1.51 → 2.25	32	32
	2.26 → 3.00	32	32
	0.00 → 0.75	32	32
12 FT	0.76 → 1.50	32	32
	1.51 → 2.25	32	32
	2.26 → 3.00	32	32
	0.00 → 0.75	32	32
	0.76 → 1.50	32	32
16 FT	1.51 → 2.25	32	32
	2.26 → 3.00	32	32

BOTTOM CONNECTION DEMANDS (PARTITION WALL CONDITIONS 'C')

MAX PARTITION WALL HEIGHT	F_u/W_o RANGE	MAXIMUM FASTENER SPACING IN INCHES AT BOTTOM CONNECTION	
		3/8" Φ EXP. ANCHOR W/ 2" EMBED	1/2" Φ EXP. ANCHOR W/ 2" EMBED
9 FT	0.00 → 0.75	32	32
	0.76 → 1.50	24	32
	1.51 → 2.25	16	16
	2.26 → 3.00	8	16
	0.00 → 0.75	32	32
12 FT	0.76 → 1.50	24	24
	1.51 → 2.25	16	16
	2.26 → 3.00	8	8
	0.00 → 0.75	32	32
	0.76 → 1.50	24	24
16 FT	1.51 → 2.25	16	16
	2.26 → 3.00	8	8

BOTTOM CONNECTION DEMANDS (PARTITION WALL CONDITIONS 'D')

MAX PARTITION WALL HEIGHT	F_u/W_o RANGE	MAXIMUM FASTENER SPACING IN INCHES AT BOTTOM CONNECTION	
		3/8" Φ EXP. ANCHOR W/ 2" EMBED	1/2" Φ EXP. ANCHOR W/ 2" EMBED
9 FT	0.00 → 0.75	32	32
	0.76 → 1.50	32	32
	1.51 → 2.25	24	24
	2.26 → 3.00	16	16
	0.00 → 0.75	32	32
12 FT	0.76 → 1.50	32	32
	1.51 → 2.25	24	24
	2.26 → 3.00	16	16
	0.00 → 0.75	32	32
	0.76 → 1.50	24	32
16 FT	1.51 → 2.25	16	16
	2.26 → 3.00	8	16

NOTES:

- SEE STX.XX & STX.XX FOR ICC ESR 4266 EXPANSION ANCHOR REQUIREMENTS

SECTION TITLE: STANDARD PARTITION WALL DETAILS

SHEET TITLE:

BOTTOM TRACK CONNECTION TO
 LWC ON METAL DECK
 PAF AND ESR 4266 MAX SPACING SCHEDULE

OPD NO:

ST8.02

PLAN DATE: MAY 05, 2017

BOTTOM TRACK CONNECTION TO NWC SLAB FASTENER MAX SPACING SCHEDULE

BOTTOM CONNECTION DEMANDS (PARTITION WALL CONDITION 'A' AND 'B')

MAX PARTITION WALL HEIGHT	F_u/W_p RANGE	MAXIMUM FASTENER SPACING IN INCHES AT BOTTOM CONNECTION		
		3/8" Ø EXP. ANCHOR W/ 2" EMBED	1/2" Ø EXP. ANCHOR W/ 3-1/4" EMBED	5/8" Ø EXP. ANCHOR W/ 2-3/4" EMBED
9 FT	0.00 -> 0.75	32	32	32
	0.76 -> 1.50	32	32	32
	1.51 -> 2.25	32	32	32
	2.26 -> 3.00	32	32	32
12 FT	0.00 -> 0.75	32	32	32
	0.76 -> 1.50	32	32	32
	1.51 -> 2.25	32	32	32
	2.26 -> 3.00	32	32	32
16 FT	0.00 -> 0.75	32	32	32
	0.76 -> 1.50	32	32	32
	1.51 -> 2.25	32	32	32
	2.26 -> 3.00	32	32	32

BOTTOM CONNECTION DEMANDS (PARTITION WALL CONDITION 'C')

MAX PARTITION WALL HEIGHT	F_u/W_p RANGE	MAXIMUM FASTENER SPACING IN INCHES AT BOTTOM CONNECTION		
		3/8" Ø EXP. ANCHOR W/ 2" EMBED	1/2" Ø EXP. ANCHOR W/ 3-1/4" EMBED	5/8" Ø EXP. ANCHOR W/ 2-3/4" EMBED
9 FT	0.00 -> 0.75	32	32	32
	0.76 -> 1.50	24	32	32
	1.51 -> 2.25	16	32	32
	2.26 -> 3.00	8	24	32
12 FT	0.00 -> 0.75	32	32	32
	0.76 -> 1.50	24	32	32
	1.51 -> 2.25	16	32	32
	2.26 -> 3.00	8	24	32
16 FT	0.00 -> 0.75	32	32	32
	0.76 -> 1.50	24	32	32
	1.51 -> 2.25	16	32	32
	2.26 -> 3.00	8	24	32

BOTTOM CONNECTION DEMANDS (PARTITION WALL CONDITION 'D')

MAX PARTITION WALL HEIGHT	F_u/W_p RANGE	MAXIMUM FASTENER SPACING IN INCHES AT BOTTOM CONNECTION		
		3/8" Ø EXP. ANCHOR W/ 2" EMBED	1/2" Ø EXP. ANCHOR W/ 3-1/4" EMBED	5/8" Ø EXP. ANCHOR W/ 2-3/4" EMBED
9 FT	0.00 -> 0.75	32	32	32
	0.76 -> 1.50	32	32	32
	1.51 -> 2.25	24	32	32
	2.26 -> 3.00	16	32	32
12 FT	0.00 -> 0.75	32	32	32
	0.76 -> 1.50	32	32	32
	1.51 -> 2.25	24	32	32
	2.26 -> 3.00	16	32	32
16 FT	0.00 -> 0.75	32	32	32
	0.76 -> 1.50	24	32	32
	1.51 -> 2.25	16	32	32
	2.26 -> 3.00	8	24	32

NOTES:

1. SEE STX.XX & STX.XX FOR ICC ESR 4266 EXPANSION ANCHOR REQUIREMENTS

SECTION TITLE:

STANDARD PARTITION WALL DETAILS

SHEET TITLE:

BOTTOM TRACK CONNECTION TO NWC SLAB FASTENER MAX SPACING SCHEDULE

GRID NO.:

ST8.03

- **Each anchor will have 2 sheets for bottom track attachment for various conditions**

PAF Updates

2013 OPD Tables

BOTTOM TRACK CONNECTION TO LWC ON METAL DECK I

BOTTOM CONNECTION DEMANDS (PARTITION WALL CONDITION 'A')

MAX PARTITION WALL HEIGHT	S _{ps}	MAXIMUM FASTENER SF
		PAF
9 FT	0.25-0.99	32
	1.00-1.25	24
	1.26-1.45	16
	1.46-1.95	16
12 FT	0.25-0.99	24
	1.00-1.25	16
	1.26-1.45	16
	1.46-1.95	8
16 FT	0.25-0.99	16
	1.00-1.25	8
	1.26-1.45	8
	1.46-1.95	8

BOTTOM CONNECTION DEMANDS (PARTITION WALL CONDITION 'B')

MAX PARTITION WALL HEIGHT	S _{ps}	MAXIMUM FASTENER SF
		PAF
9 FT	0.25-0.99	16
	1.00-1.25	16
	1.26-1.45	8
	1.46-1.95	8
12 FT	0.25-0.99	16
	1.00-1.25	8
	1.26-1.45	8
	1.46-1.95	8
16 FT	0.25-0.99	8
	1.00-1.25	8
	1.26-1.45	8
	1.46-1.95	-

BOTTOM CONNECTION DEMANDS (PARTITION WALL CONDITIONS 'C' & 'D')

MAX PARTITION WALL HEIGHT	S _{ps}	MAXIMUM FASTENER SF
		PAF
9 FT	0.25-0.99	-
	1.00-1.25	-
	1.26-1.45	-
	1.46-1.95	-
12 FT	0.25-0.99	-
	1.00-1.25	-
	1.26-1.45	-
	1.46-1.95	-
16 FT	0.25-0.99	-
	1.00-1.25	-
	1.26-1.45	-
	1.46-1.95	-

2013 OPD Tables

TOP TRACK CONNECTION TO LWC FILLED METAL DECK & NWC SLAB (MIN 3000 PSI) FASTENER SPACING SCHEDULES

PARTITION WALL CONDITION 'A'

S _{ps} / WALL HEIGHT	PAF SPACING (INCHES O.C.) PER ST7.02 DETAIL A		
	9 FT	12 FT	16 FT
0.25-0.99	30	24	18
1.00-1.25	24	18	12
1.26-1.45	24	18	12
1.46-1.95	18	12	6

FOR DETAIL B THROUGH D (STRAP OR Z-CLIP) DOUBLE THE SPACING INDICATED UP TO 48" OC.

PARTITION WALL CONDITION 'B'

S _{ps} / WALL HEIGHT	PAF SPACING (INCHES O.C.) PER ST7.02 DETAIL A		
	9 FT	12 FT	16 FT
0.25-0.99	18	18	12
1.00-1.25	12	12	12
1.26-1.45	12	12	6
1.46-1.95	6	6	6

FOR DETAIL B THROUGH D (STRAP OR Z-CLIP) DOUBLE THE SPACING INDICATED UP TO 48" OC.

PARTITION WALL CONDITION 'C'

S _{ps} / WALL HEIGHT	PAF SPACING (INCHES O.C.) PER ST7.02 DETAIL A		
	9 FT	12 FT	16 FT
0.25-0.99	6	6	6
1.00-1.25	6	6	6
1.26-1.45	6	6	6
1.46-1.95	6	6	6

FOR DETAIL B THROUGH D (STRAP OR Z-CLIP) DOUBLE THE SPACING INDICATED UP TO 48" OC.

PARTITION WALL CONDITION 'D'

S _{ps} / WALL HEIGHT	PAF SPACING (INCHES O.C.) PER ST7.02 DETAIL A		
	9 FT	12 FT	16 FT
0.25-0.99	6	6	6
1.00-1.25	6	6	6
1.26-1.45	6	6	6
1.46-1.95	6	6	6

FOR DETAIL B THROUGH D (STRAP OR Z-CLIP) DOUBLE THE SPACING INDICATED UP TO 48" OC.

PAF SPACING SCHEDULE FOR TOP AND BOTTOM TRACK CONNECTION TO LWC FILLED METAL DECK & NWC SLAB

PARTITION WALL CONDITION 'A'

MAX PARTITION WALL HEIGHT	F _y /W _y RANGE	MAXIMUM PAF SPACING IN INCHES		
		BOTTOM CONNECTION PER ST8.01	TOP CONNECTION PER ST7.02A	TOP CONNECTION PER ST7.02B, ST7.02C-D
9 FT	0.00-0.75	32	36	48
	0.76-1.50	16	18	36
	1.51-2.25	8	12	24
	2.26-3.00	8	6	18
12 FT	0.00-0.75	24	30	48
	0.76-1.50	8	12	30
	1.51-2.25	8	6	18
	2.26-3.00	NA	6	12
16 FT	0.00-0.75	16	18	42
	0.76-1.50	8	6	18
	1.51-2.25	NA	6	12
	2.26-3.00	NA	NA	6

PARTITION WALL CONDITION 'B'

MAX PARTITION WALL HEIGHT	F _y /W _y RANGE	MAXIMUM PAF SPACING IN INCHES		
		BOTTOM CONNECTION PER ST8.01	TOP CONNECTION PER ST7.02A	TOP CONNECTION PER ST7.02B, ST7.02C-D
9 FT	0.00-0.75	18	18	42
	0.76-1.50	8	6	18
	1.51-2.25	NA	6	12
	2.26-3.00	NA	6	12
12 FT	0.00-0.75	16	18	36
	0.76-1.50	8	6	18
	1.51-2.25	NA	6	12
	2.26-3.00	NA	NA	6
16 FT	0.00-0.75	16	18	36
	0.76-1.50	8	6	18
	1.51-2.25	NA	6	12
	2.26-3.00	NA	NA	6

PARTITION WALL CONDITION 'C' AND 'D'

MAX PARTITION WALL HEIGHT	F _y /W _y RANGE	MAXIMUM PAF SPACING IN INCHES		
		BOTTOM CONNECTION PER ST8.01	TOP CONNECTION PER ST7.02A	TOP CONNECTION PER ST7.02B, ST7.02C-D
9 FT	0.00-0.75	NA	6	12
	0.76-1.50	NA	NA	6
	1.51-2.25	NA	NA	NA
	2.26-3.00	NA	NA	NA
12 FT	0.00-0.75	NA	6	12
	0.76-1.50	NA	NA	6
	1.51-2.25	NA	NA	NA
	2.26-3.00	NA	NA	NA
16 FT	0.00-0.75	NA	6	12
	0.76-1.50	NA	NA	6
	1.51-2.25	NA	NA	NA
	2.26-3.00	NA	NA	NA

NOTES:

- SEE ST7.02 AND ST7.03 FOR DETAILS A, B, C, & D.
- VALUES IN TABLES ABOVE REPRESENT MAXIMUM SPACING. DECREASE SPACING AS REQ'D TO COORDINATE W/ METAL DECK FLUTE SPACING. WHERE PAF SPACING IS LESS THAN 12" OC, OK TO PROVIDE MULTIPLE PAF AT LOW FLUTE AS REQ'D. MAINTAIN EDGE DISTANCE AND SPACING REQUIREMENTS PER ST1.01 & ST1.02.
- SPACING LISTED INCLUDES (OMEGA_{op}) PER ASCE 7-22 TABLE 13.5-1.

SECTION TITLE:

STANDARD PARTITION WALL DETAILS

SHEET TITLE:

PAF SPACING SCHEDULE FOR TOP AND BOTTOM TRACK CONNECTION TO LWC FILLED METAL DECK & NWC SLAB

OPD NO.:

ST7.04

- PAF usage is very limited, especially for Conditions 'C' and 'D'