APPLICATION FOR OSHPD PREAPPROVAL OF MANUFACTURER'S CERTIFICATION (OPM)

OFFICE USE ONLY

APPLICATION #: OPM-0609

OSHPD Preapproval of Manufacturer's Certification (OPM)

Type: [X] New [ ] Renewal/Update

Manufacturer Information

Manufacturer: Steelcase

Manufacturer's Technical Representative: Scott Alberty

Mailing Address: 901 44th Street SE, Grand Rapids, MI 49508

Telephone: (616) 246-4855 Email: salberty@steelcase.com

Product Information

Product Name: Steelcase V.I.A.

Product Type: Interior Partition

Product Model Number: V.I.A.

General Description: Prefabricated, modular, relocatable, non-load-bearing interior wall partition system with a solid metal frame and interchangeable solid skin panels and glass frames.

Applicant Information

Applicant Company Name: Critical Structures, Inc.

Contact Person: Kathy Kovshilovsky

Mailing Address: 1350 Coronado Ave., Long Beach, CA 90804

Telephone: (310) 530-3050 Email: kathyk@critical-structures.com

Title: Senior Project Manager

Registered Design Professonal Preparing Engineering Recommendations

Company Name: CRITICAL STRUCTURES

Name: Eric Stovner California License Number: S4204

Mailing Address: 1350 Coronado Ave., Long Beach, CA 90804

Telephone: (310) 530-3050 Email: estovner@critical-structures.com

OSHPD Special Seismic Certification Preapproval (OSP)

☐ Special Seismic Certification is preapproved under OSP OSP Number:

Certification Method

Testing in accordance with: ☐ ICC-ES AC156 ☐ FM 1950-16

☐ Other(s) (Please Specify):

*Use of criteria other than those adopted by the California Building Standards Code, 2019 (CBSC 2019) for component supports and attachments are not permitted. For distribution system, interior partition wall, and suspended ceiling seismic bracings, test criteria other than those adopted in the CBSC 2019 may be used when approved by OSHPD prior to testing.

☒ Analysis

☐ Experience Data

☐ Combination of Testing, Analysis, and/or Experience Data (Please Specify):

OSHPD Approval

Date: 1/6/2022

Name: Keh-Shin Chi Title: Senior Structural Engineer

Condition of Approval (if applicable):

SUPPORTS & ATTACHMENTS PRE-APPROVAL OPM-0609

THIS PRE-APPROVAL CONFORMS TO THE 2019 CALIFORNIA BUILDING CODE (CBC)

EQUIPMENT MANUFACTURER: STEELCASE, INC.
EQUIPMENT TYPE: V.I.A. PARTITION WALLS

I. GENERAL NOTES:

1. THIS OSHPD PREAPPROVAL OF MANUFACTURER'S CERTIFICATION (OPM) IS BASED ON THE CBC 2019. THE DEMAND (DESIGN FORCES) FOR USE WITH THE OPM MUST BE BASED ON CBC 2019.
2. THE PRE-APPROVAL IS FOR THE SEISMIC SUPPORTS AND ATTACHMENTS FOR THE UNIT TO THE STRUCTURE. IT DOES NOT ADDRESS OTHER LOADS.
3. SEISMIC FORCES ARE DETERMINED PER CHAPTER 13 OF ASCE 7-16.
4. ANCHOR FORCES SHOWN ON THE DRAWINGS ARE A COMBINATION OF ASD AND LRFD LOADS AND ARE NOTED AS SUCH. ANCHOR FORCES ARE BASED ON VARYING S_{DS} AND z/h VALUES PER TABLE 1.
5. THE RANGES OF COMPONENTS SIZES AND MATERIALS INCLUDED IN THE PRE-APPROVAL ARE AS FOLLOW:
   a. THE PARTITION WALL SYSTEM WEIGHT MUST NOT EXCEED 11.9 PSF.
   b. THE PARTITION WALL SYSTEM HEIGHT MUST NOT EXCEED 12FT.
   c. THE PARTITION WALL SYSTEM PANEL WIDTHS MUST NOT EXCEED 4FT PER PANEL.
6. THE SUBSTRATES INCLUDED IN THIS PRE-APPROVAL ARE AS FOLLOWS:
   a. CONCRETE
   b. WOOD
   c. STEEL
7. WHERE DISSIMILAR MATERIALS ARE IN CONTACT, PROTECT SURFACES WITH A COAT OF BITUMINOUS PAINT OR INSTALL TEFLON OR NEOPRENE ISOLATORS.

II. RESPONSIBILITIES OF THE STRUCTURAL ENGINEER OF RECORD:

1. VERIFY ADEQUACY OF THE NEW OR EXISTING STRUCTURE TO SUPPORT THE PARTITION WALL SYSTEM.
2. PROVIDE AND/OR DESIGN ADDITIONAL MEMBERS INCLUDING BUT NOT LIMITED TO SOFFIT/BULKHEAD FRAMING, BACKING STUDS, BACKING BARS, STUDS AND BLOCKING TO RESIST THE REACTIONS OF THE PARTITION WALL SYSTEM AT THE ANCHOR LOCATIONS.
3. PROVIDE DESIGN FOR SUPPORTING STRUCTURE TO RESIST IN-PLANE AND OUT-OF-PLACE ANCHOR FORCES IN ANY DIRECTIONS IN ADDITION TO OTHER CODE REQUIRED LOADS AND FORCES.
4. VERIFY THAT THE COMBINATION OF S_{DS} AND Z/H RESULT IN SEISMIC FORCES (EH, EV) THAT ARE NOT GREATER THAN THE VALUES IN TABLE 1.

III. SEISMIC ANCHORAGE AND BRACING DESIGN PARAMETERS:

1. RISK CATEGORY IV
2. IMPORTANCE FACTOR, I_P = 1.5
3. COMPONENT AMPLIFICATION FORCE, a_P = 1.0
4. COMPONENT RESPONSE FACTOR, R_P = 2.5
5. COMPONENT OVERSTRENGTH FACTOR, Ω_O = 2.0 (CONCRETE DESIGN ONLY)
6. S_{DS} VARIES. NOT TO EXCEED 2.42, SEE TABLE 1.

TABLE 1 - MAXIMUM S_{DS} VALUES FOR V.I.A. WALLS WITHOUT CABINETS

		HEIGHT OF WALL, H (FT.)			
		12	11	10	9
z/h	1.0	.822	1.093	1.431	1.914
	0.9	0.880	1.165	1.529	2.044
	0.8	0.944	1.248	1.643	2.194
	0.7	1.017	1.345	1.775	2.370
	0.6	1.103	1.459	1.929	2.420
	0.5	1.205	1.597	2.103	2.420
	0.4	1.279	1.703	2.228	2.420
	0.3	1.279	1.703	2.228	2.420
	0.2	1.279	1.703	2.228	2.420
	0.1	1.279	1.703	2.228	2.420
	0.0	1.279	1.703	2.228	2.420

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STEELCASE V.I.A. WALLS OSHPD OPM

REGISTERED PROFESSIONAL ENGINEER — ERIC CHRISTIAN STOVNER — No. S 4204 — STRUCTURAL — STATE OF CALIFORNIA

REVISIONS	DATE
DATE: 12-03-2020	
PROJECT: 20-621	
ENGINEER: RO	
DRAFTER: MC	

SUPPORTS & ATTACHMENTS PRE-APPROVAL OPM-0609

THIS PRE-APPROVAL CONFORMS TO THE 2019 CALIFORNIA BUILDING CODE (CBC)

EQUIPMENT MANUFACTURER: STEELCASE, INC.
EQUIPMENT TYPE: V.I.A. PARTITION WALLS

IV. MATERIAL SPECIFICATIONS:

a. CONCRETE

1. CONCRETE SUBSTRATE ASSUMED TO BE A MINIMUM f'c = 3,000 PSI LIGHT-WEIGHT, CRACKED, AND NO SUPPLEMENTARY REINFORCEMENT PRESENT (CONDITION B) FOR ANCHOR DESIGN.

b. METAL STUDS

1. PROVIDE LIGHT GAUGE FRAMING FORMED FROM STANDARD COMMERCIAL STEEL WITH A MINIMUM YIELD AT 33,000 PSI FOR GAUGES 18 AND LIGHTER AND 50,000 PSI FOR GAUGES 16 AND HEAVIER. IN ADDITION, FRAMING MUST COMPLY WITH ASTM A653, SS GRADE 33 AND SS GRADE 50 CLASS I RESPECTIVELY, SECTION 2210A OF THE CBC AND SPECIFICATIONS FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS OF AISI S100-16. LIGHT GAUGE FRAMING AND ITS INSTALLATION MUST COMPLY WITH ICC REPORT No. ESR-3064P.
2. STUD DIMENSIONS:

$1\frac{5}{8}$"x$3\frac{1}{2}$" x18 GA. (350S162-43) $I_{xx} = 0.6544\ in^4$ $S_{xx} = 0.3566\ in^3$ $L_{max} = 10\ ft$

3. CUT FRAMING COMPONENTS, SUCH AS BRACING, SQUARELY OR AT AN ANGLE TO FIT TIGHT AGAINST ABUTTING MEMBERS. HOLD MEMBERS FIRMLY IN POSITION UNTIL PROPERLY FASTENED.

SPLICES IN ANY LIGHT GAUGE MEMBERS IS NOT ALLOWED.

c. GLASS

1. GLASS PANELS MUST BE 1/4" OR 3/8" THICK FULLY TAMPERED WITH MAXIMUM PANEL DIMENSIONS AS SPECIFIED IN THE DRAWINGS.
2. DEFLECTION TO BE A LIMIT OF L/175 OR $\frac{3}{4}$" WHICHEVER IS LESS PER CBC 2403.3. FOR GLASS WALL FRAME MEMBERS AND PANELS.

d. WALL MEMBERS

1. METAL MEMBERS MUST BE:
   - CEILING TRACK: STEEL A1008 Gr. 33 KSI, Fy = 33 KSI
   - POSTS: A1008 STEEL Gr. 50, Fy = 50 KSI
   - STRUCTURAL HORIZONTALS: STEEL A1008 Gr. 50 KSI, Fy = 50 KSI
   - INTERMEDIATE HORIZONTALS: STEEL A1008 Gr. 50 KSI, Fy = 50 KSI
   - FRAME CONNECTOR BRACKETS: ALUMINUM A384.0F/ADC 12 Fy = 24 KSI OR STEEL A1011 Gr. 50 KSI, Fy = 50 KSI
   - LEVELING DEVICE: STEEL A1011 Gr. 50 KSI, Fy = 50 KSI
   - FLOOR TRACK: STEEL A568 Gr. 33 KSI, Fy = 33 KSI
   - SOLID SKINS: STEEL A1008 Gr. 33 KSI, Fy = 33 KSI
   - GLASS FRAMING MEMBERS: ALUMINUM 6063-T5 Ftu = 22 KSI, Fty = 16 KSI
2. SOLID WALL TILES MUST BE $\frac{1}{2}$" THICK MEDIUM DENSITY FIREBOARD (MDF).
3. LIVE LOAD DEFLECTION TO BE A LIMIT OF L/120 FOR SOLID FRAME MEMBERS WITH FLEXIBLE FINISHES PER CBC TABLE 1604A.3.

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EQUIPMENT MANUFACTURER: STEELCASE, INC.
EQUIPMENT TYPE: V.I.A. PARTITION WALLS

V. ANCHORAGE SPECIFICATIONS:

a. APPROVED CONCRETE ANCHORS:

1. EXPANSION ANCHORS SIMPSON STRONG-BOLT 2 - CS (ICC-ES ESR-3037) OR HILTI KWIK BOLT TZ - CS (ICC-ES ESR-1917) AND SCREW ANCHORS SIMPSON TITEN HD (ICC-ES ESR-2713) AND HILTI HUS-EZ (ICC-ES ESR-3027).
2. ANCHORS TO BE INSTALLED IN ACCORDANCE WITH ICC REPORT AND MANUFACTURER'S RECOMMENDATIONS. MAINTAIN FULL THREAD ENGAGEMENT FOR NUT AND WASHER.
3. IF REINFORCEMENT IS ENCOUNTERED DURING DRILLING, ABANDON AND SHIFT THE HOLE LOCATION TO AVOID THE REINFORCEMENT. PROVIDE A MINIMUM OF 2 ANCHOR DIAMETERS OR 1 IN, WHICHEVER IS LARGER, OF SOUND CONCRETE BETWEEN THE DOWEL AND THE ABANDONED HOLE FILL. FILL THE ABANDONED HOLE WITH NON-SHRINK GROUT. NON-SHRINK GROUT MUST HAVE A MINIMUM 28 DAY STRENGTH OF 6,000 PSI. USE "SIKA GROUT 212" OR "MASTERFLOW 928". IF THE ANCHOR OR DOWEL MAY NOT BE SHIFTED AS NOTED ABOVE, THE STRUCTURAL ENGINEER WILL DETERMINE A NEW LOCATION.
4. TESTING AND INSPECTION OF EXPANSION ANCHORS MUST BE PERFORMED BY AN APPROVED INDEPENDENT AGENCY EMPLOYED BY THE FACILITY OWNER PER 2019 CBC 1704A & 1910A.5 AND CAC 7-149. ALL REPORTS MUST BE SENT TO THE INSPECTOR OF RECORD, OWNER, AND ARCHITECT OR ENGINEER IN RESPONSIBLE CHARGE.
5. TEST ANCHORS NO SOONER THAN 24 HOURS AFTER INSTALLATION.
6. REACTION LOADS FROM TEST FIXTURES MAY BE APPLIED CLOSE TO THE ANCHOR BEING TESTED, PROVIDED THE ANCHOR IS NOT RESTRAINED FROM WITHDRAWING BY A BASE PLATE OR OTHER FIXTURE. IF RESTRAINT IS FOUND, LOOSEN AND SHIM OR REMOVE THE FIXTURE PRIOR TO TESTING.
7. CONCRETE ANCHOR TESTING:
   7a. EXPANSION ANCHOR TESTING.
   THE TORQUE WRENCH METHOD MUST BE USED AS CRITERIA FOR TEST ACCEPTANCE. A CALIBRATED TORQUE WRENCH MUST ATTAIN THE SPECIFIED TORQUE PER RESPECTIVE DETAIL WITHIN ONE-QUARTER (1/4) TURN OF THE NUT.
   7b. SCREW ANCHOR TESTING.
   THE HYDRAULIC RAM METHOD MUST BE USED AS CRITERIA FOR TEST ACCEPTANCE. ANCHORS MUST MAINTAIN A TENSION LOAD OF ONE AND A QUARTER (1.25) TIMES THE MAXIMUM DESIGN STRENGTH FOR A MINIMUM OF 15 SECONDS AND MUST EXHIBIT NO DISCERNIBLE MOVEMENT DURING THE TENSION TEST AS EVIDENCED BY THE LOOSENING OF THE WASHER UNDER THE NUT. THE SCREW ANCHORS MUST BE TENSION TESTED PER RESPECTIVE ANCHORAGE DETAIL.
8. IF ANY ANCHOR FAILS TESTING, REPLACE ANCHOR AND TEST ALL ANCHORS OF THE SAME CATEGORY INSTALLED BY THE SAME TRADE NOT PREVIOUSLY TESTED UNTIL TWENTY (20) CONSECUTIVE TESTS PASS, THEN RESUME INITIAL TESTING FREQUENCY.

b. WOOD SCREWS:

1. WOOD SCREWS DESIGNED IN ACCORDANCE WITH NDS-18 (ANSI/ASME STANDARD B18.6.1). WOOD MEMBERS MUST BE MINIMUM SPECIFIC GRAVITY (SG) = 0.5 FOR WOOD DESIGN.

c. METAL SCREWS:

1. SHEET METAL SCREWS MUST BE ITW BUILDEX TEKS SELF-DRILLING TAPPING SCREWS (ICC-ES ESR-1976) AND ARE TO BE INSTALLED IN ACCORDANCE WITH ICC REPORT AND MANUFACTURER'S RECOMMENDATIONS.

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OSHPD OPM

REGISTERED PROFESSIONAL ENGINEER
ERIC CHRISTIAN STOVNER
No. S 4204
STRUCTURAL
STATE OF CALIFORNIA

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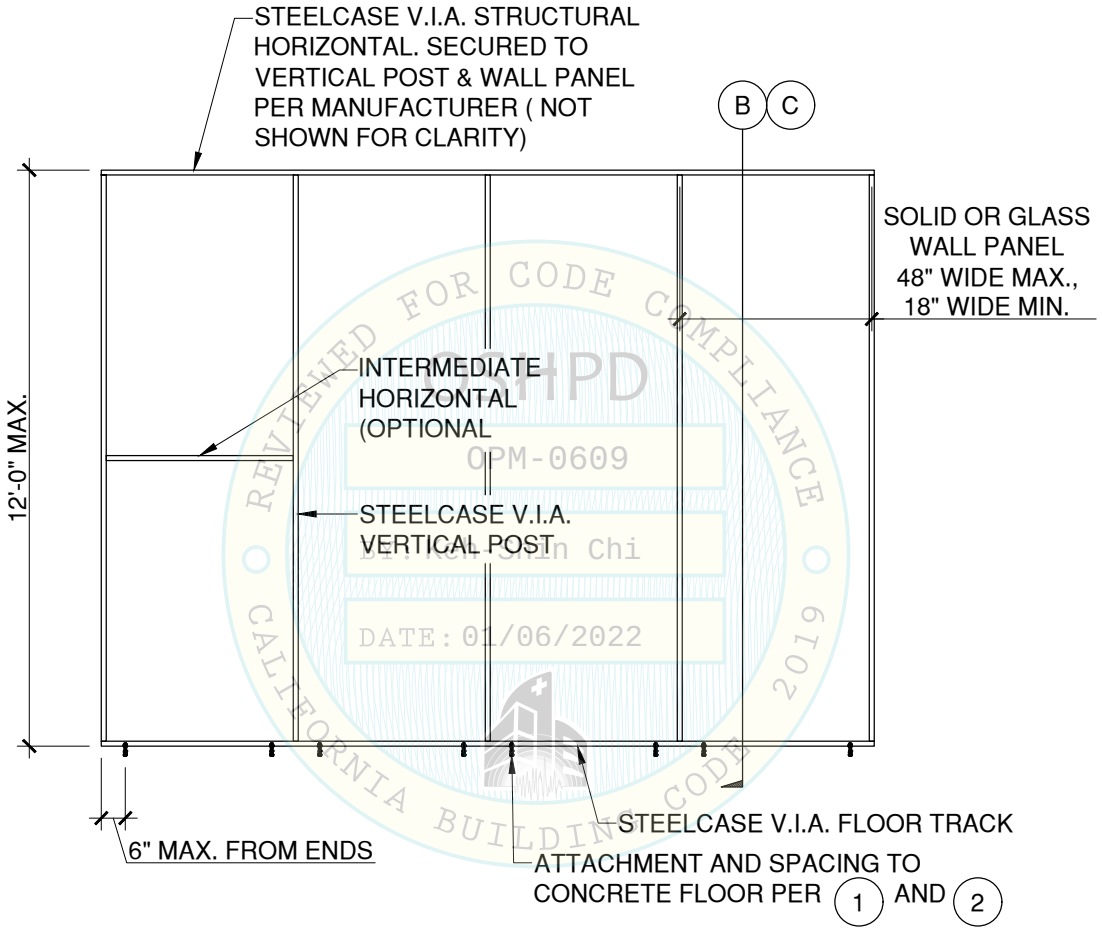
DRAFTER: MC	



V.I.A. PARTITION WALLS
ELEVATION

1/4" = 1'-0"

A

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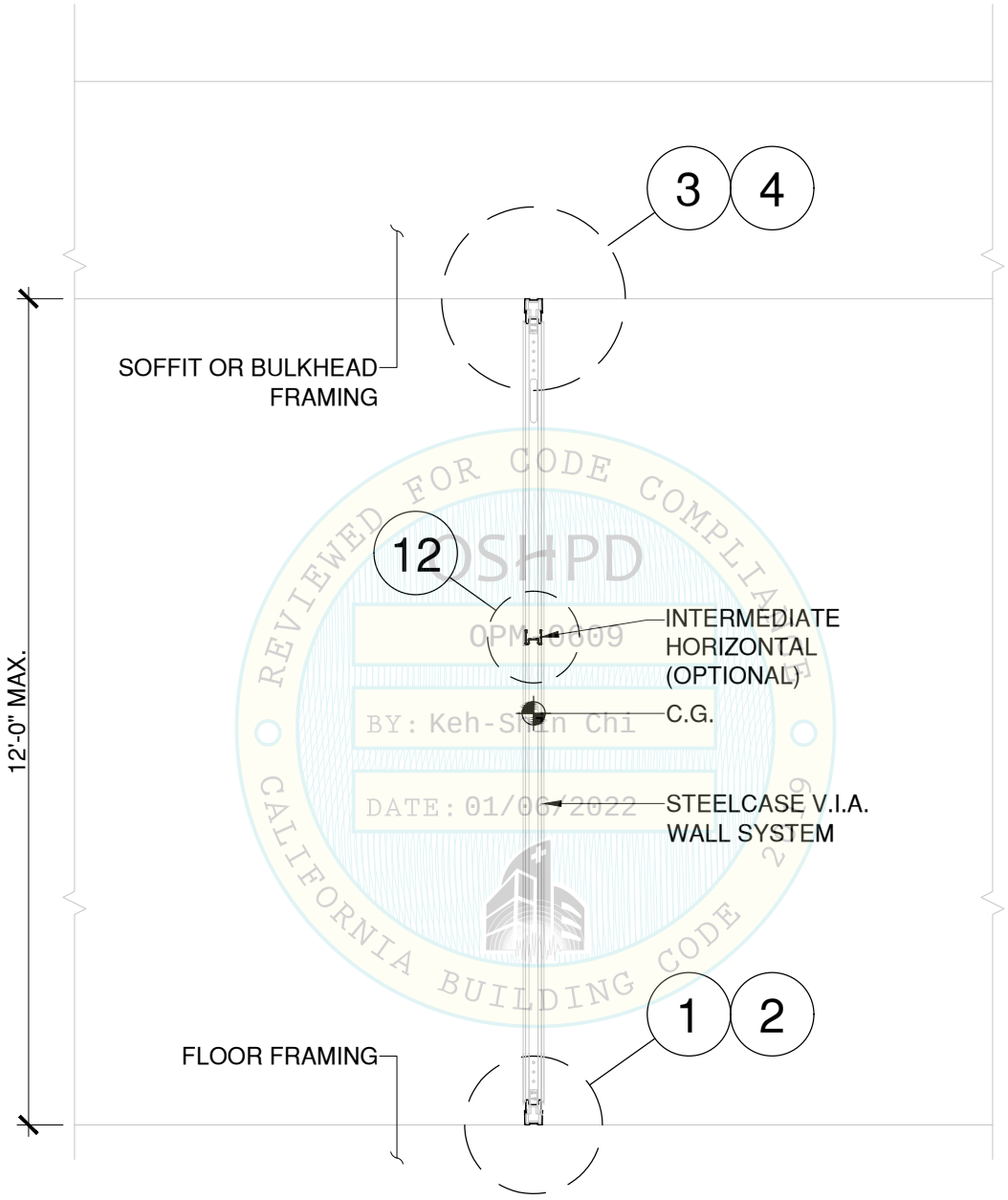

TYP. WALL SECTION BRACED BY SOFFIT/BULKHEAD FRAMING

1/2" = 1'-0"

B

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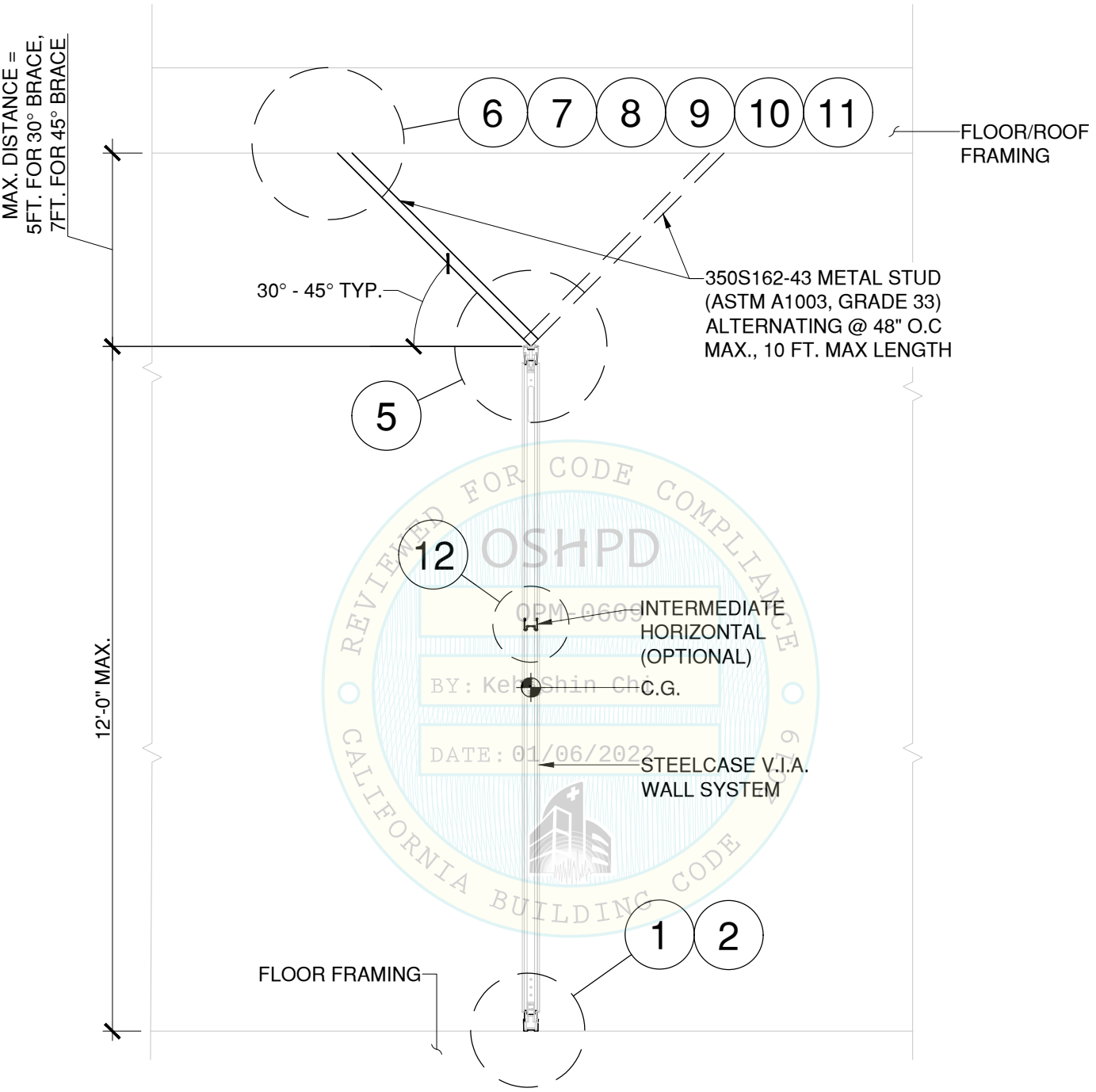

TYP. WALL SECTION W/T.O.W.
HEADER BRACED BY OUT-OF-PLANE TIEBACKS

1/2" = 1'-0"

C

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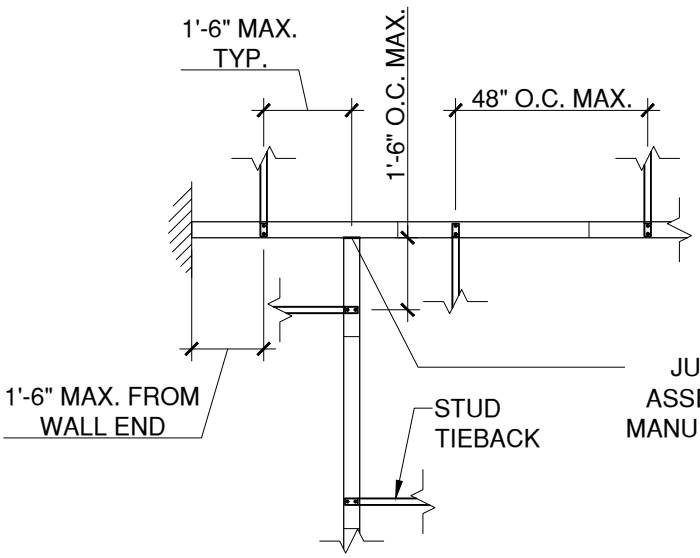
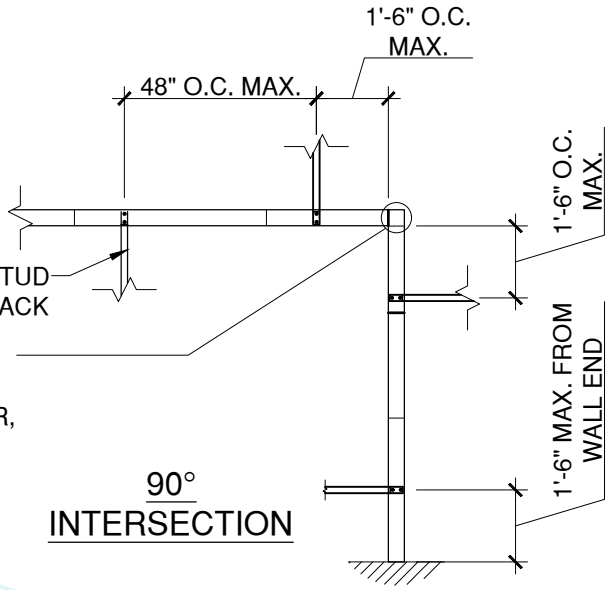
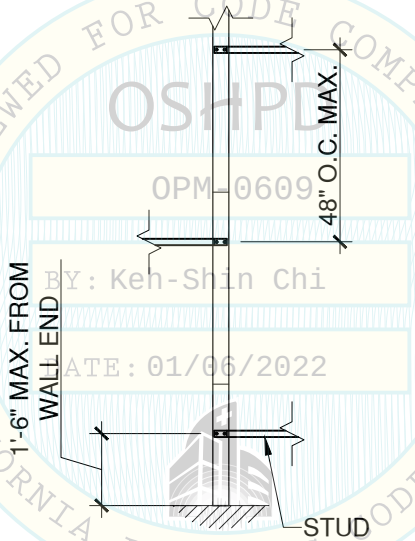


"T" INTERSECTION



90° INTERSECTION



NOTE:
STRAIGHT RUNS NEED AT LEAST ONE BRACE PARALLEL TO PARTITION WALL OR ATTACH WALL END TO ADJACENT STRUCTURAL WALL BY OTHERS. (NOT SHOWN)

STRAIGHT RUNS

TYPICAL TOP OF WALL BRACING

NTS

D

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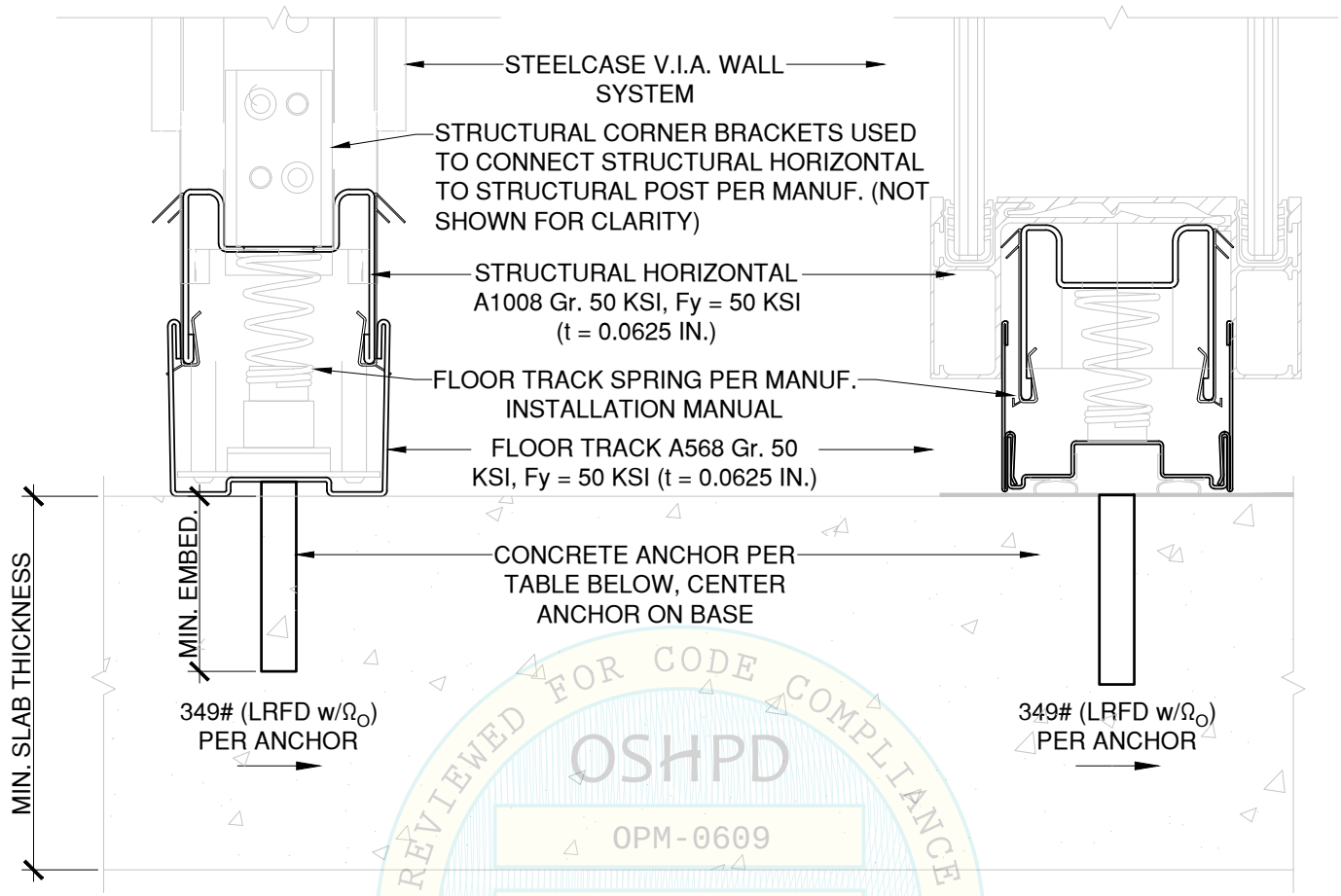

TABLE 2 - BOTTOM TRACK ANCHORAGE TO CONCRETE SLAB [1,2,3,4]					
ANCHOR OPTIONS	NOMINAL EMBED. DEPTH	MIN. SLAB EDGE DISTANCE	MIN. SLAB THICK.	ICC-ES ESR-#	TESTING LOAD
3/8" Ø SIMPSON STRONG-BOLT 2	1 7/8"	6"	4"	3037	30 FT.-LB.[5]
3/8" Ø HILTI KWIK BOLT TZ	1 7/8"	8"	4"	1917	25 FT.-LB.[5]
1/4" Ø SIMPSON TITEN-HD	1 5/8"	2 1/4"	4"	2713	464 LB.[6]
1/4" Ø HILTI HUS-EZ	1 5/8"	2 3/4"	4"	3027	616 LB.[6]

NOTES:

1. HOLES THRU BASE TRACK MAX.1/16" OVERSIZED, TYP.
2. MINIMUM CONCRETE STRENGTH OF f'c = 3,000 PSI.
3. MIN. (2) ANCHORS PER PANEL, 6" MAX. FROM ENDS.
4. MAXIMUM ANCHOR SPACING OF 48" O.C.
5. SEE SECTION V.7a FOR TESTING PROCEDURE.
6. SEE SECTION V.7b FOR TESTING PROCEDURE.

TYP. FLOOR CONCRETE ANCHOR DETAIL - CONCRETE SLAB

NTS

1

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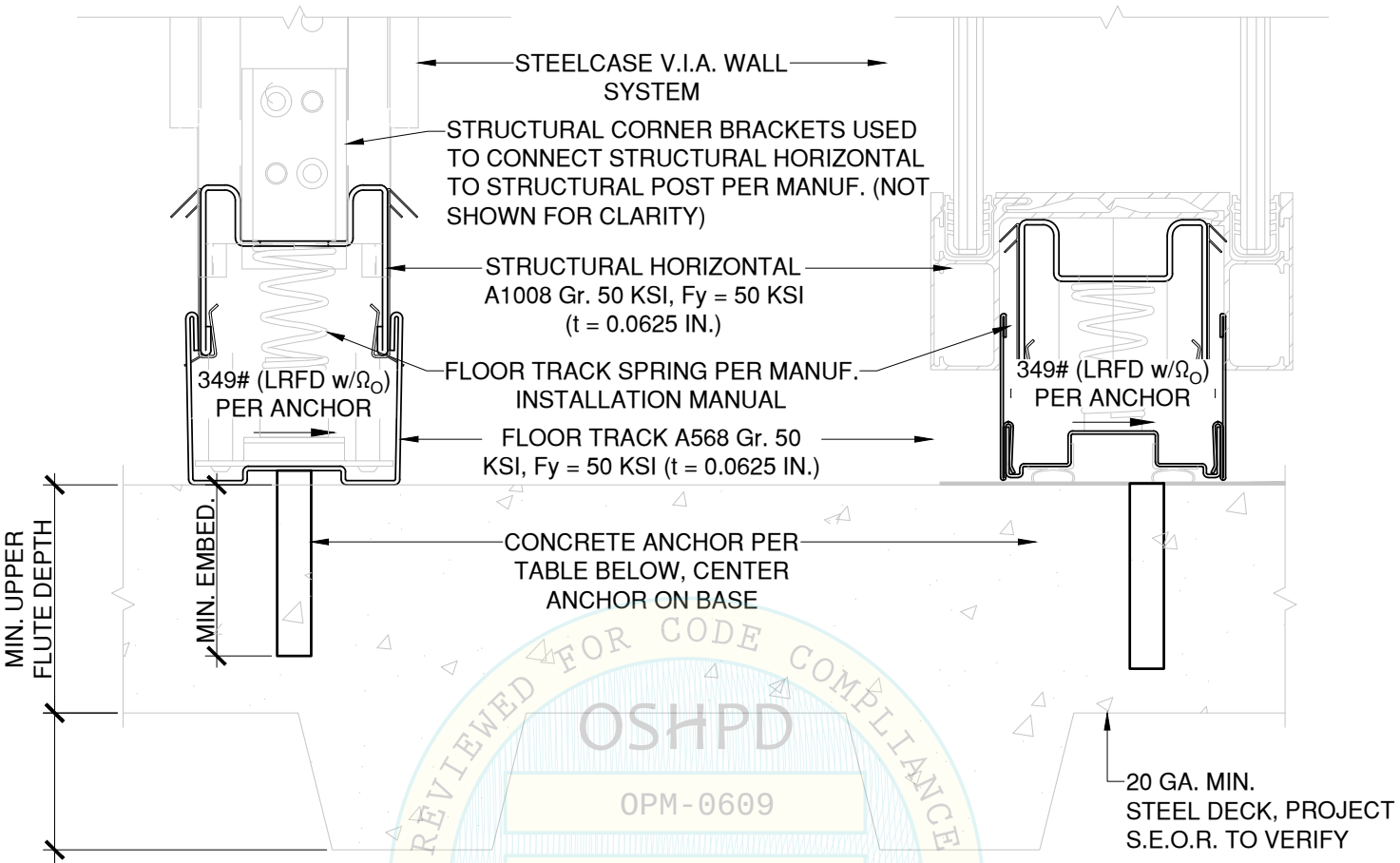

TABLE 3 - BOTTOM TRACK ANCHORAGE TO CONCRETE OVER METAL DECK [1,2,3,4]

ANCHOR OPTIONS	NOMINAL EMBED. DEPTH	MIN. EDGE DISTANCE	MIN. FLUTE DEPTH		ICC-ES ESR-#	TESTING LOAD
			LOWER FLUTE	UPPER FLUTE		
3/8" Ø SIMPSON STRONG-BOLT 2	1 7/8"	4 3/4"	1 1/2"	2 1/2"	3037	30 FT.-LB.[5]
3/8" Ø HILTI KWIK BOLT TZ	1 7/8"	16"	1 1/2"	2 1/4"	1917	25 FT.-LB.[5]
1/4" Ø SIMPSON TITEN-HD	1 5/8"	3 1/2"	1 1/2"	2 1/2"	2713	704 LB.[6]
1/4" Ø HILTI HUS-EZ	1 5/8"	1 3/4"	3"	2 1/2"	3027	620 LB.[6]

NOTES:

1. HOLES THRU BASE TRACK MAX. 1/16" OVERSIZED, TYP.
2. MINIMUM CONCRETE STRENGTH OF f'c = 3,000 PSI.
3. MIN. (2) ANCHORS PER PANEL, 6" MAX. FROM ENDS.
4. MAXIMUM ANCHOR SPACING OF 48" O.C.
5. SEE SECTION V.7a FOR TESTING PROCEDURE.
6. SEE SECTION V.7b FOR TESTING PROCEDURE.

TYP. FLOOR CONCRETE ANCHOR DETAIL CONCRETE OVER METAL DECK

NTS

2

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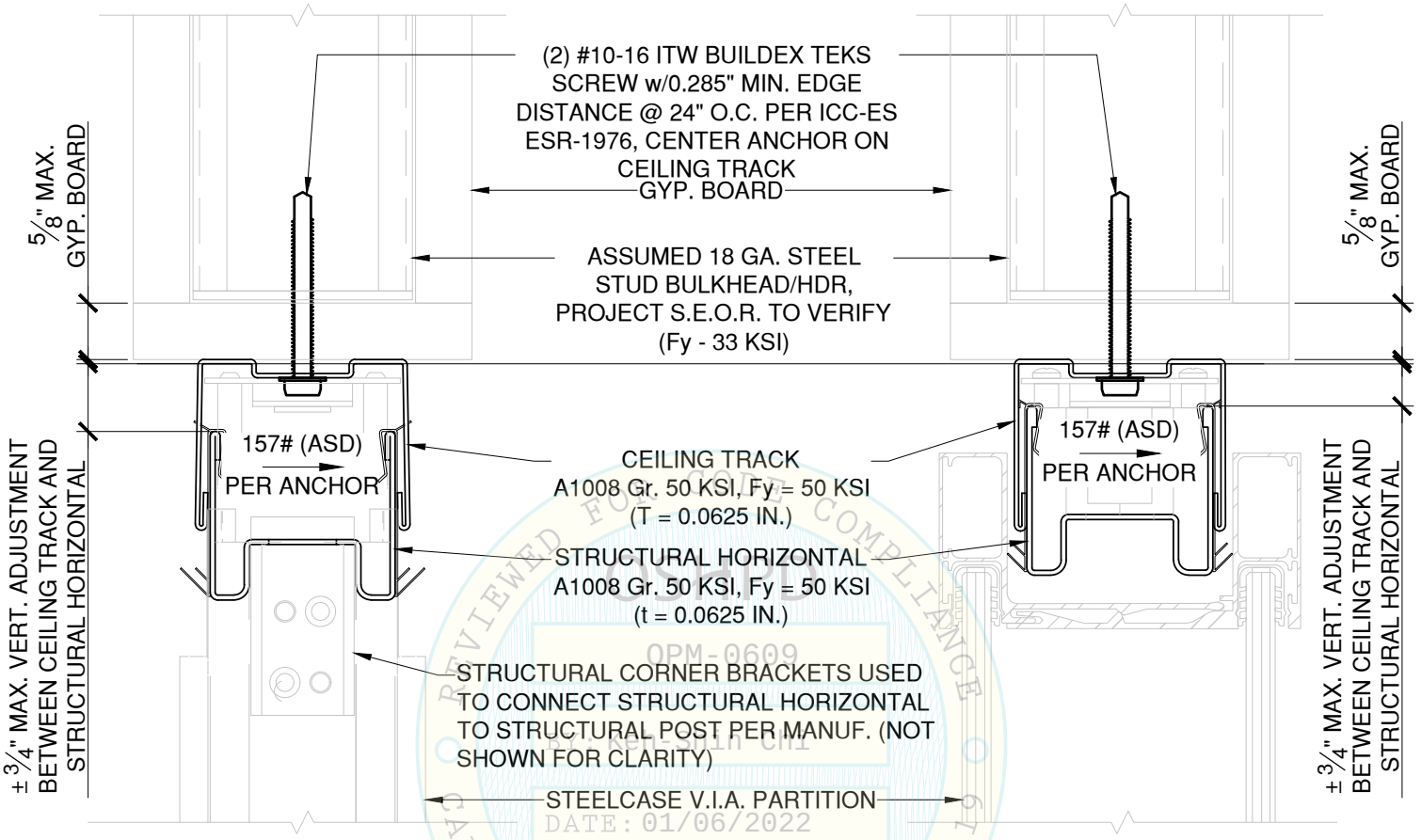

NOTES:
1. MIN. SPACING BETWEEN SCREWS = 3xDIA. AND MIN. EDGE DISTANCE OF SCREWS = 1.5xANCHOR DIA.
2. PENETRATION OF SCREWS THROUGH JOINED MATERIAL SHOULD NOT BE LESS THAN 3 EXPOSED THREADS.
3. MIN. (2) ANCHORS AT GIVEN MAX. O.C. SPACING PER TOP TRACK SECTION.

TOP TRACK TO STEEL SOFFIT/BULKHEAD FRAMING

NTS

3

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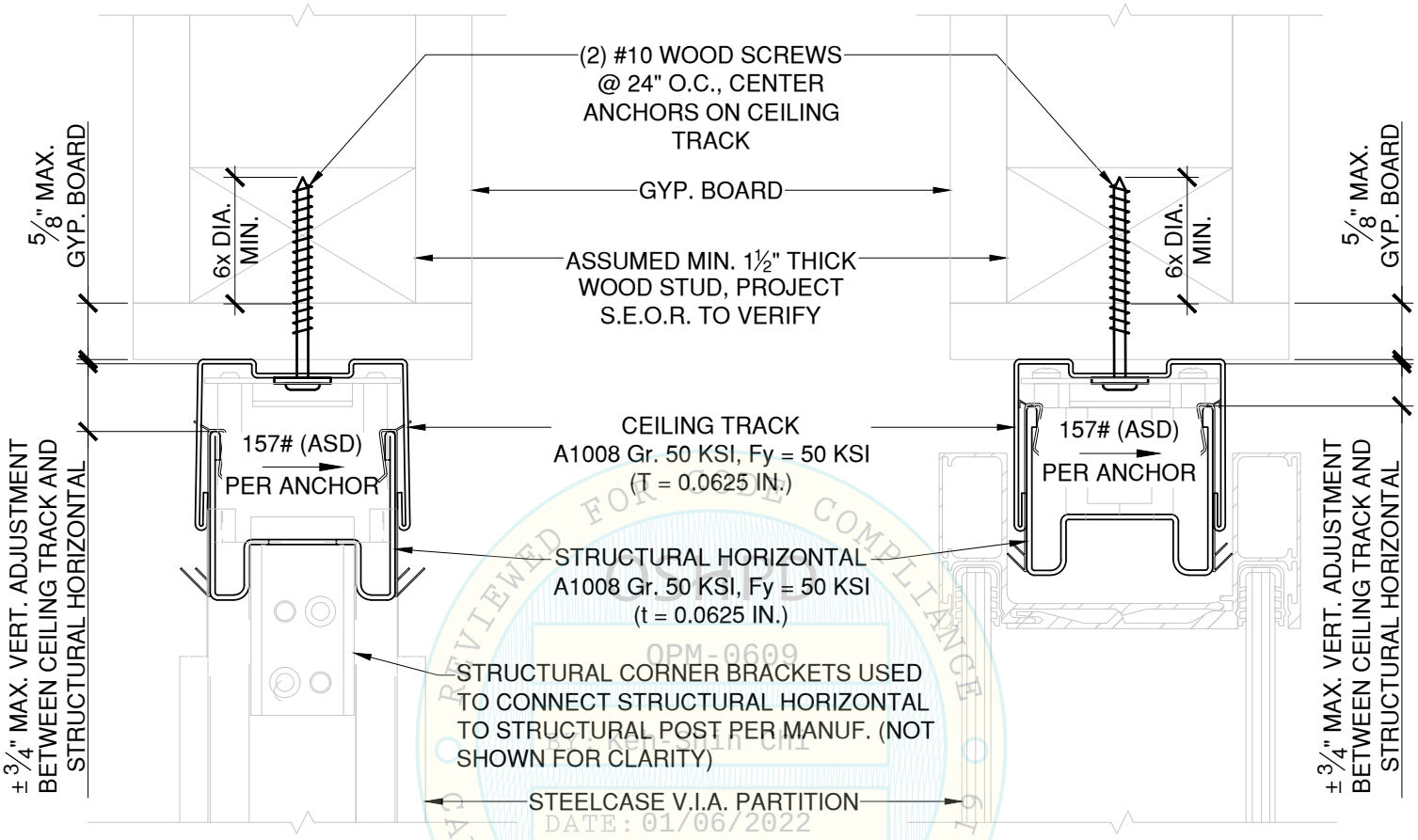

NOTES:
1. MIN. SPACING BETWEEN SCREWS = 4x DIA. AND MIN. EDGE DISTANCE OF SCREWS = 4x ANCHOR DIA.
2. MIN. (4) ANCHORS AT GIVEN MAX. O.C. SPACING PER TOP TRACK SECTION.
3. MIN. EMBED. OF SCREW INTO WOOD MEMBER IS 6x ANCHOR DIA.

TOP TRACK TO WOOD SOFFIT/BULKHEAD FRAMING

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OSHPD OPM

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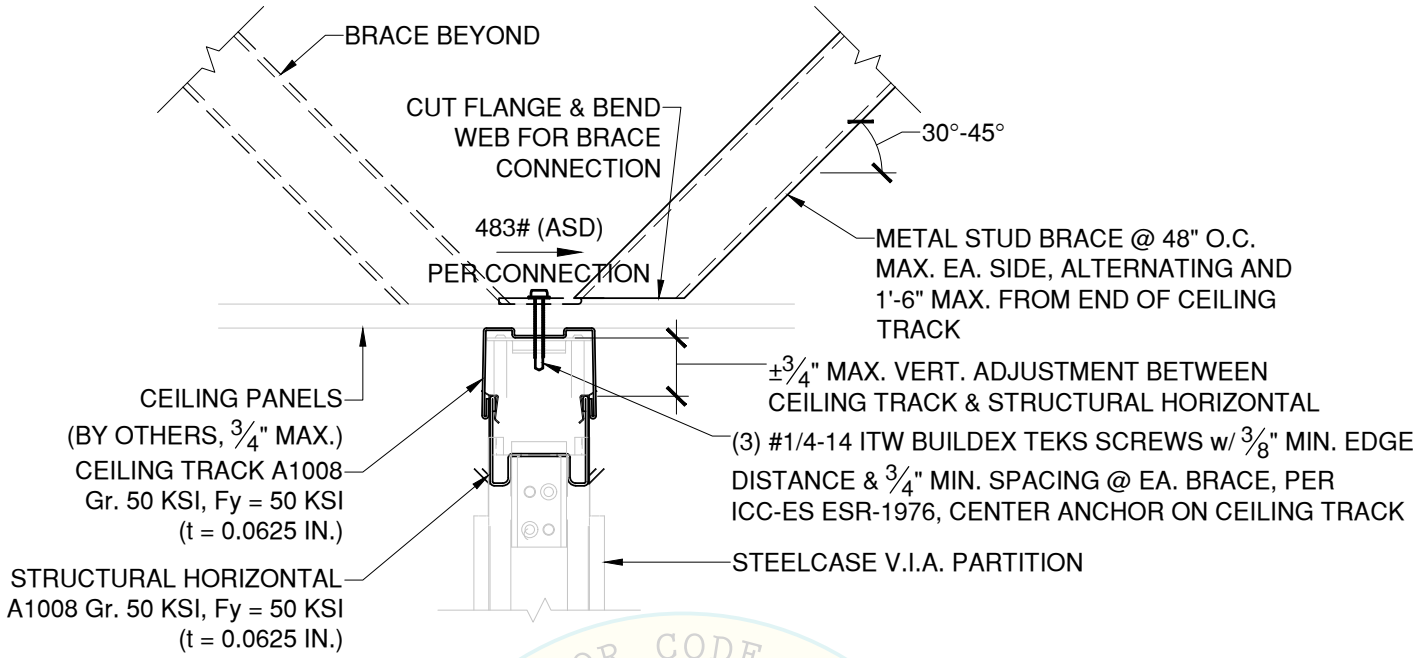
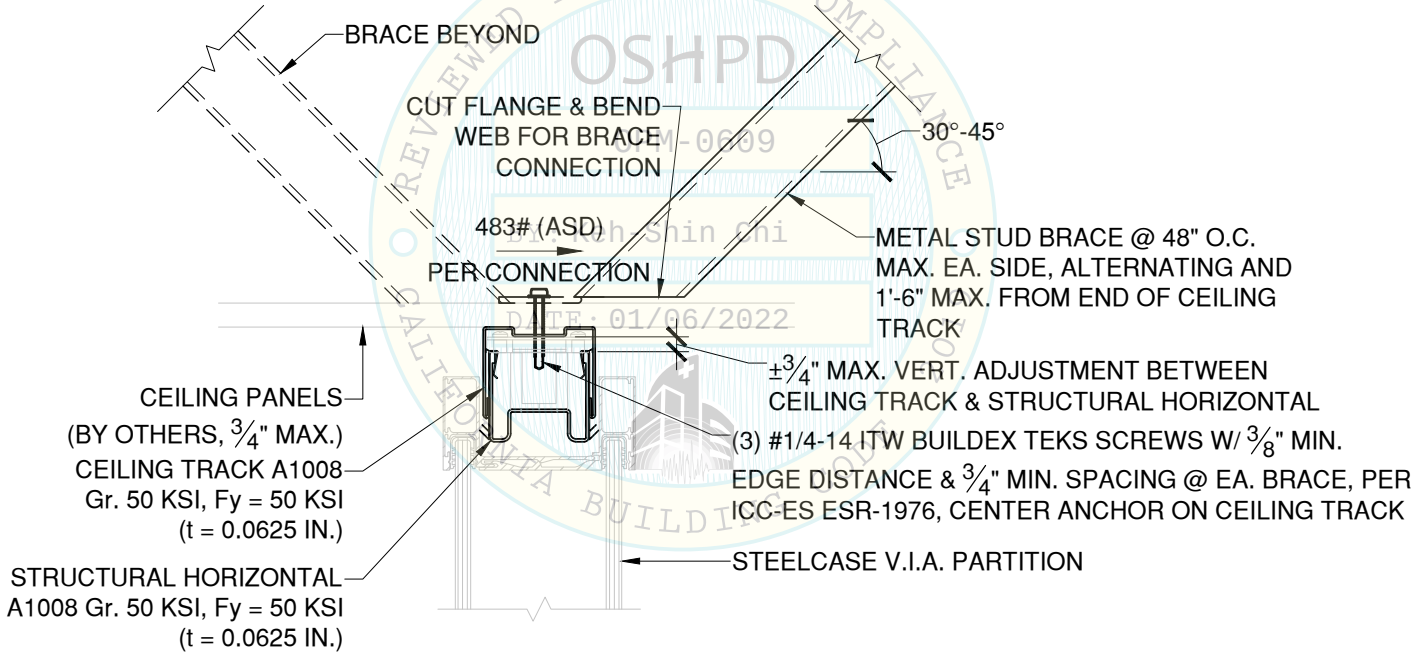
ERIC CHRISTIAN STOVNER
No. S 4204
STRUCTURAL
STATE OF CALIFORNIA

REVISIONS	DATE
DATE: 12-03-2020	
PROJECT: 20-621	
ENGINEER: RO	
DRAFTER: MC	





NOTE:

1. MAX. BRACE SPACING IS 4'-0" O.C. & MAX. BRACE LENGTH OF 10 FT. IS ALLOWED FOR 1⅝"x3½" x18 GA. (350S162-43) STEEL STUD.

TOP TRACK BRACING

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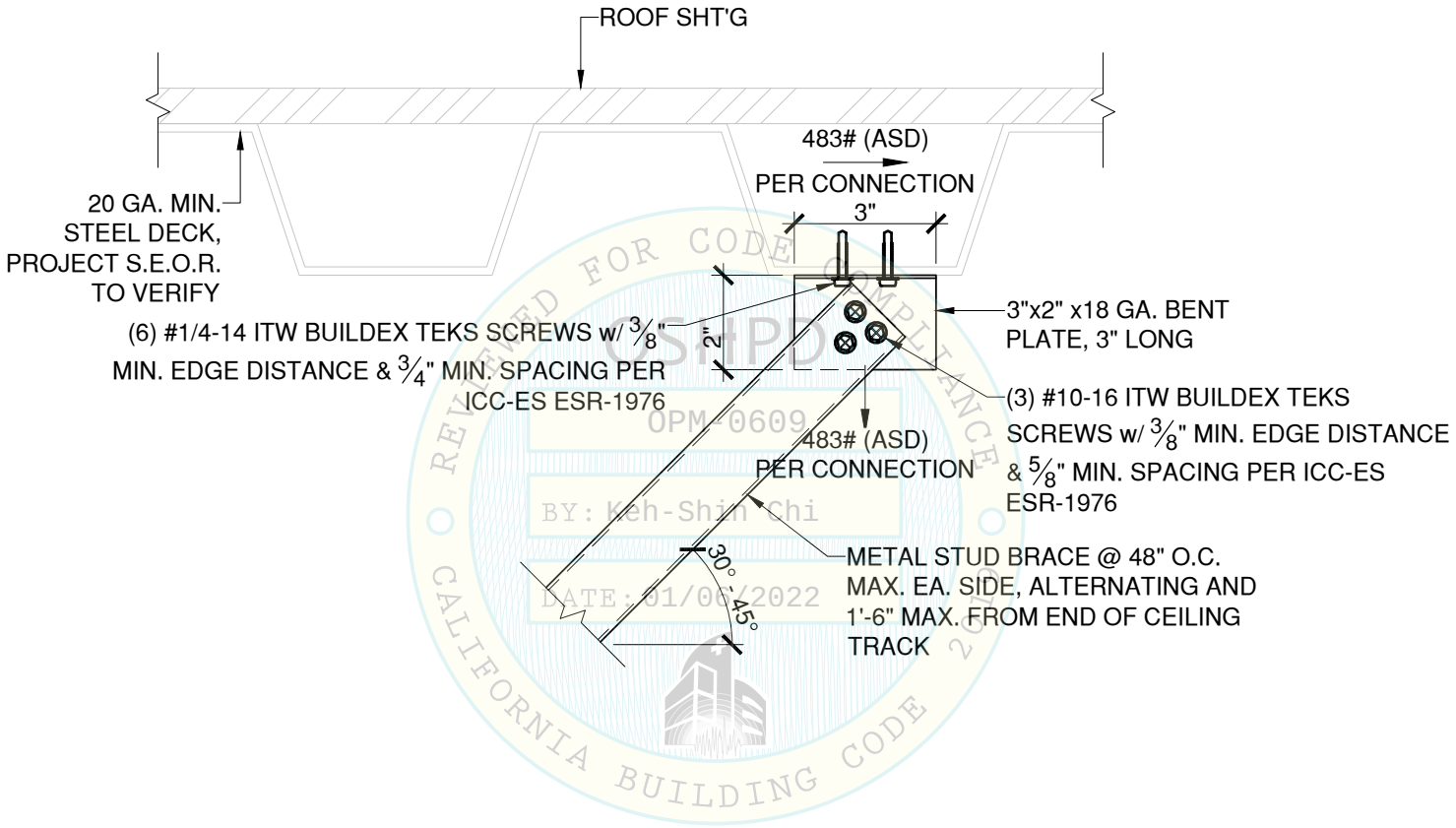

NOTE:
1. MAX. BRACE SPACING IS 4'-0" O.C. & MAX. BRACE LENGTH OF 10 FT. IS ALLOWED FOR 1 5/8"x3 1/2" x18 GA. (350S162-43) STEEL STUD.

STUD BRACE ANCHOR @ METAL DECK

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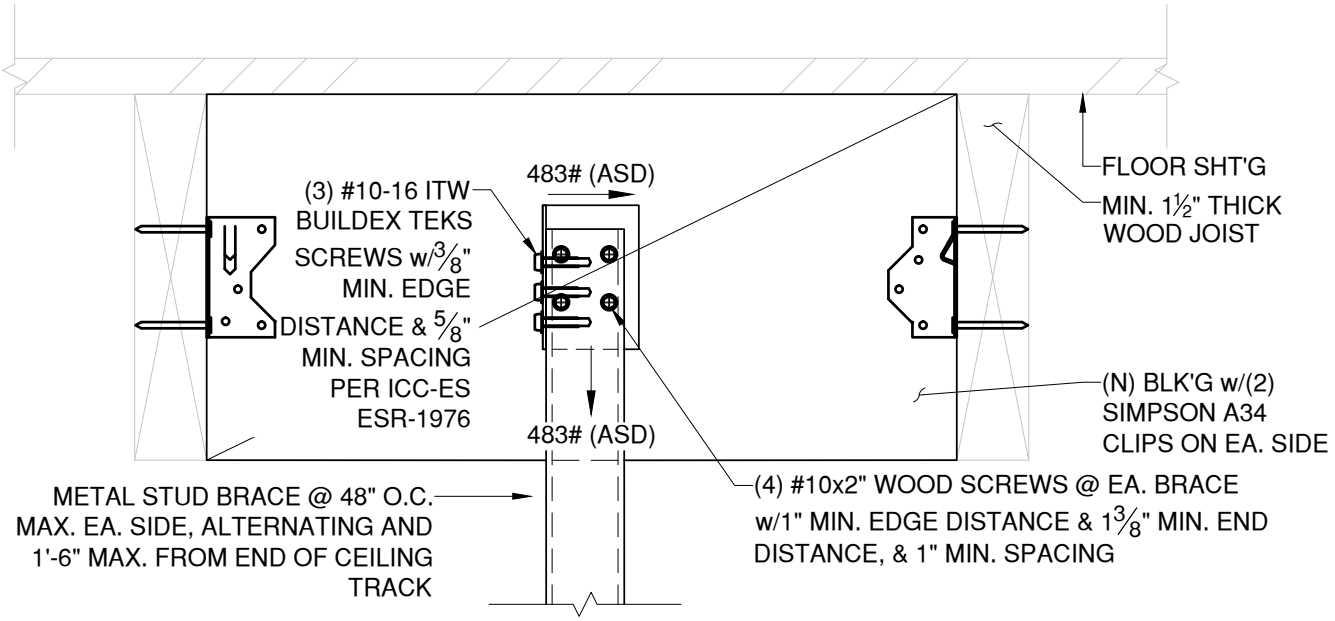
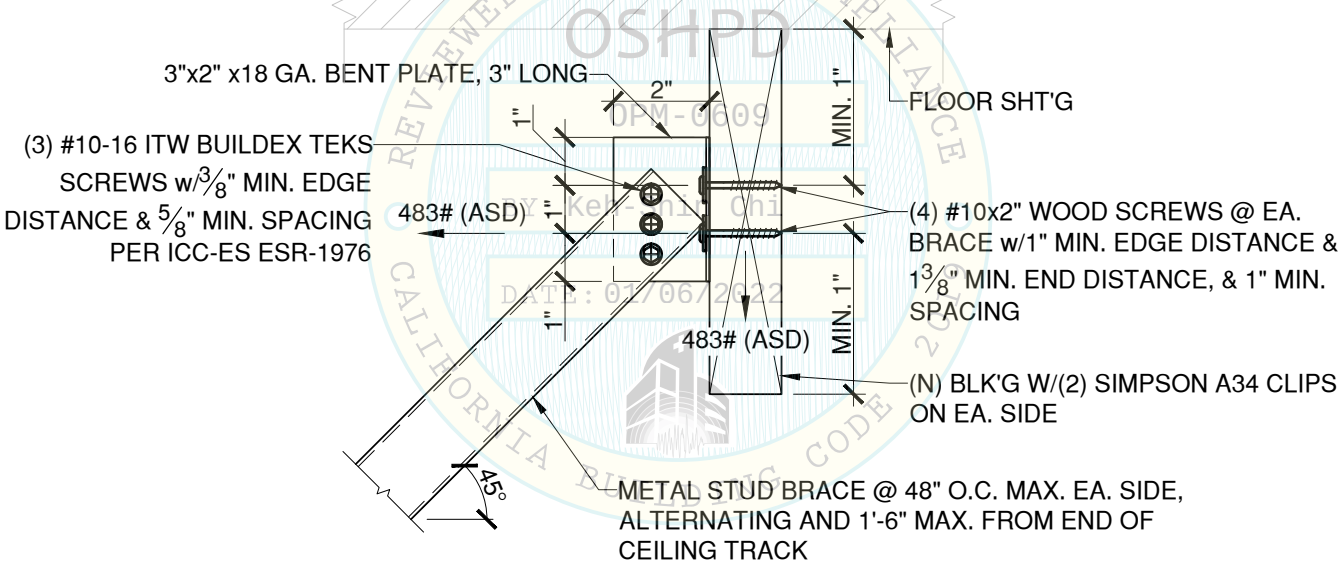


ELEVATION VIEW



NOTE:

1. MAX BRACE SPACING IS 4'-0" O.C. & MAX. BRACE LENGTH OF 10 FT. IS ALLOWED FOR 1 5/8"x3½" x18 GA. (350S162-43) STEEL STUD.

STUD BRACE ANCHOR @ WOOD FRAMING (BRACE PARALLEL TO JOISTS)

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STATE OF CALIFORNIA

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NOTE:
1. MAX BRACE SPACING IS 4'-0" O.C. & MAX. BRACE LENGTH OF 10 FT. IS ALLOWED FOR $1\frac{5}{8}$"x$3\frac{1}{2}$" x18 GA. (350S162-43) STEEL STUD.

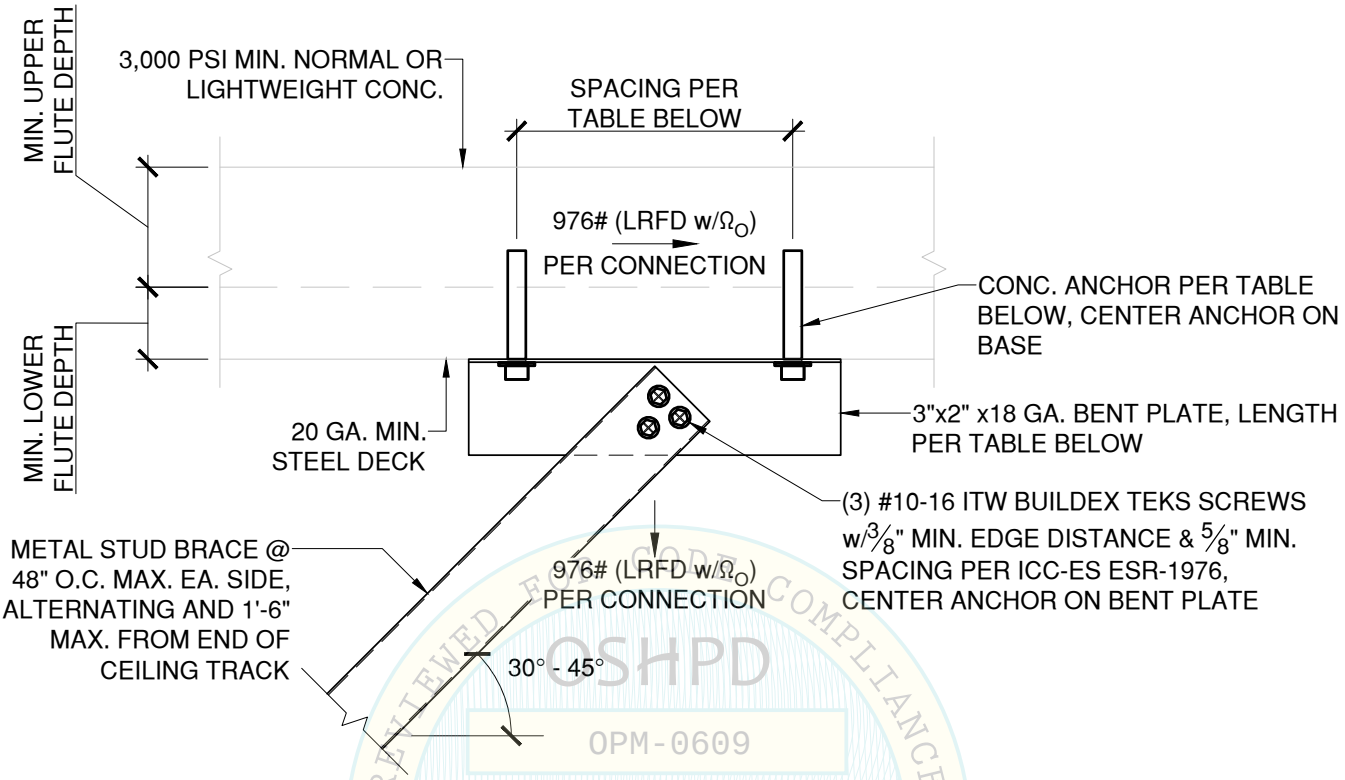

TABLE 4 - ANCHORAGE OF KICKER TO CONCRETE OVER METAL DECK (PARALLEL) [1,2]

ANCHOR OPTIONS	MIN. EMBED	MIN. EDGE DISTANCE	MN. ANCHOR SPACING	MIN. FLUTE DEPTH		ICC-ES ESR-#	TESTING LOAD	PLATE LENGTH
				LOWER	UPPER			
$\frac{3}{8}$" Ø SIMPSON STRONG BOLT 2	$2\frac{1}{4}$"	$3\frac{3}{4}$"	$5\frac{3}{4}$"	3"	$1\frac{1}{2}$"	3037	30 LB.-FT.[3]	$7\frac{3}{4}$"
$\frac{3}{8}$" Ø HILTI KWIK BOLT TZ	$2\frac{3}{8}$"	$4\frac{1}{8}$"	$6\frac{3}{4}$"		$1\frac{1}{2}$"	1917	25 LB.-FT.[3]	$8\frac{3}{4}$"
$\frac{1}{2}$" Ø SIMPSON TITEN HD	$2\frac{1}{2}$"	$3\frac{1}{2}$"	$5\frac{1}{4}$"		$1\frac{1}{2}$"	2713	781 LB.[4]	$7\frac{1}{4}$"
$\frac{3}{8}$" Ø HILTI KWIK HUS-EZ	$3\frac{1}{4}$"	$3\frac{3}{4}$"	$7\frac{1}{2}$"		$3\frac{1}{4}$"	3027	847 LB.[4]	$9\frac{1}{2}$"

NOTE:
1. MAX $\frac{1}{16}$" OVERSIZED, TYP.
2. MINIMUM CONCRETE STRENGTH OF f'c = 3,000 PSI.
3. SEE SECTION V.7a FOR TESTING PROCEDURE.
4. SEE SECTION V.7b FOR TESTING PROCEDURE.

STUD BRACE ANCHOR @ CONC. FILLED METAL DECK (BRACE PARALLEL TO FLUTES)

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REVISIONS	DATE
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ENGINEER: RO	
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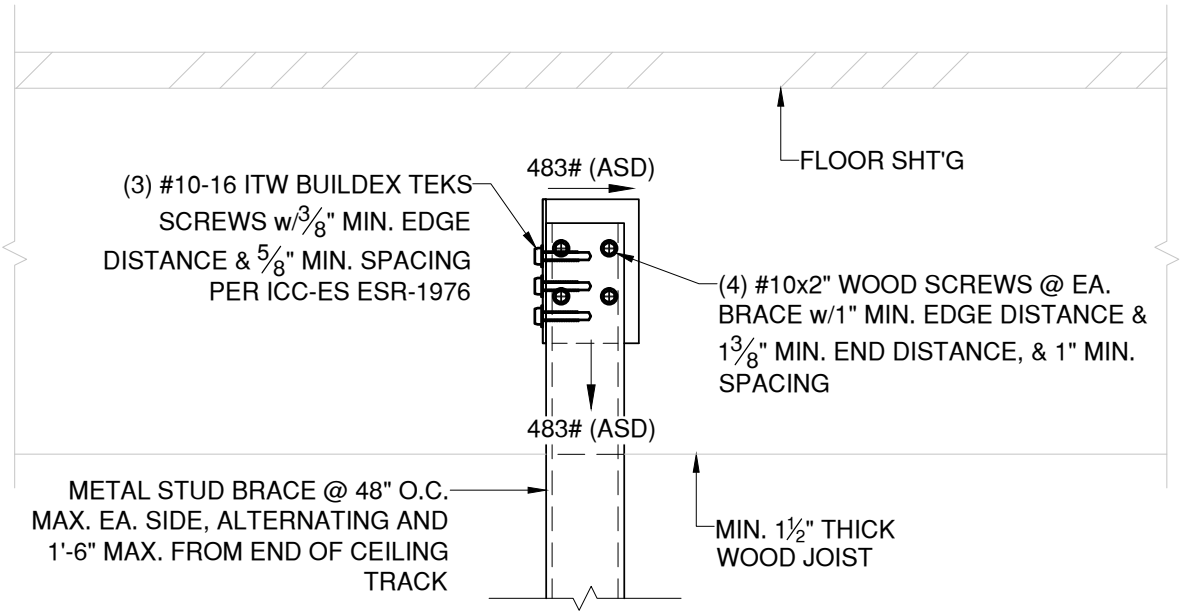
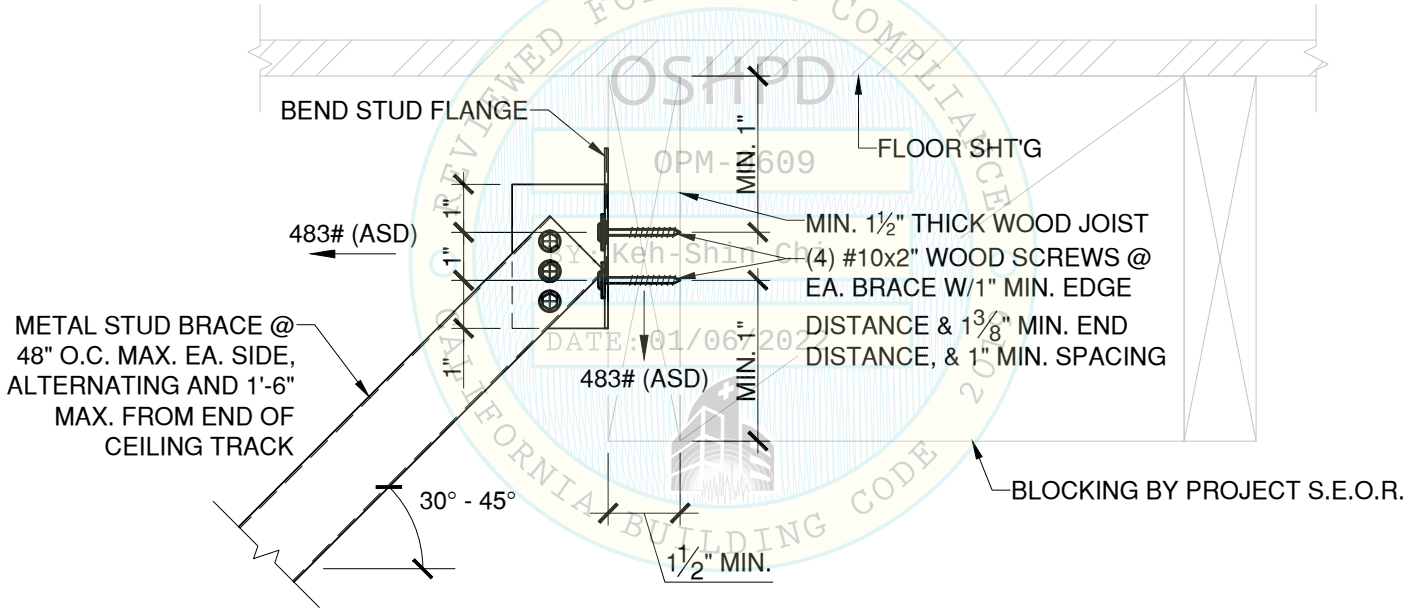


ELEVATION VIEW



NOTE:
1. MAX BRACE SPACING IS 4'-0" O.C. & MAX. BRACE LENGTH OF 10 FT. IS ALLOWED FOR 1 5/8"x3½" x18 GA. (350S162-43) STEEL STUD.

STUD BRACE ANCHOR @ WOOD FRAMING (BRACE PERPENDICULAR TO JOISTS)

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NOTE:
1. MAX BRACE SPACING IS 4'-0" O.C. & MAX. BRACE LENGTH OF 10 FT. IS ALLOWED FOR $1\frac{5}{8}$"x$3\frac{1}{2}$" x18 GA. (350S162-43) STEEL STUD.

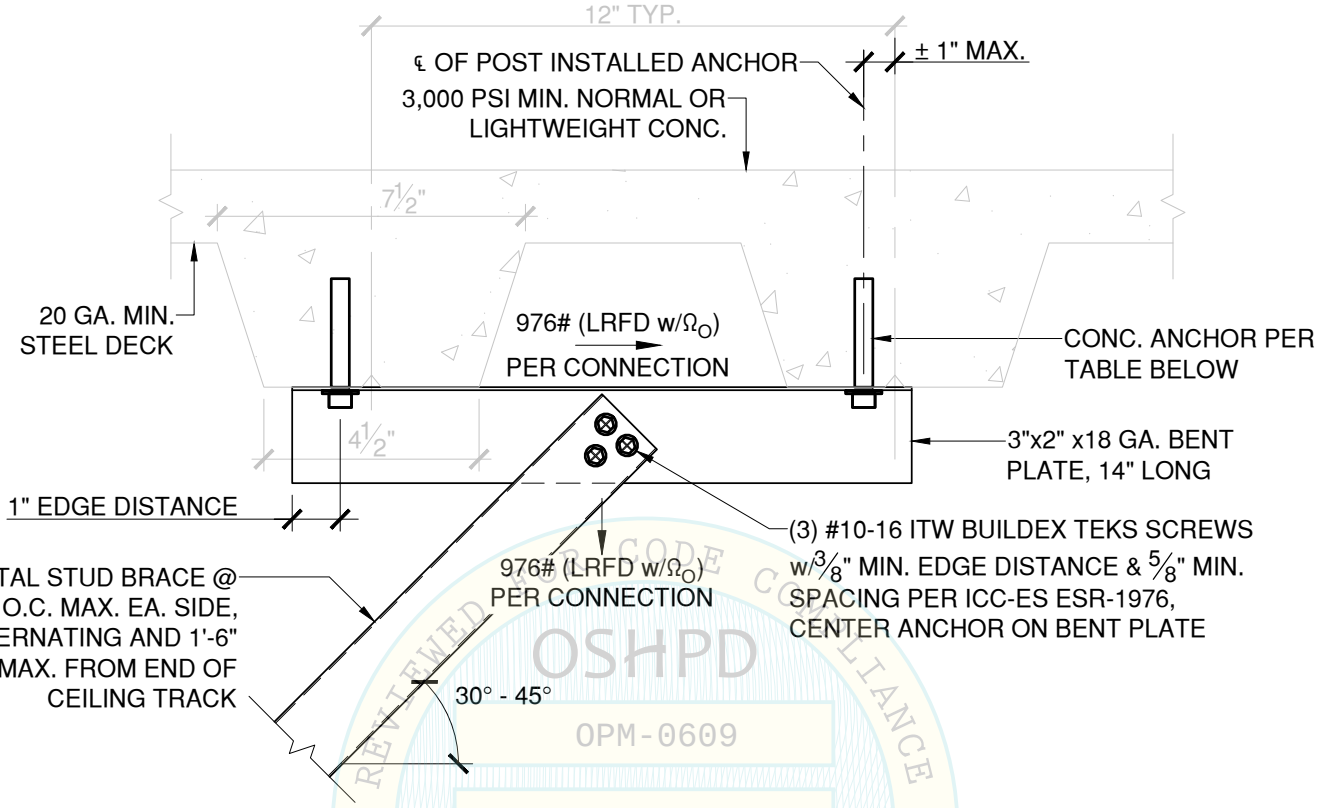

TABLE 4 - ANCHORAGE OF KICKER TO CONC. OVER METAL DECK (PERPENDICULAR) [1,2]

ANCHOR OPTIONS	MIN. EMBED	MIN. EDGE DISTANCE	MN. ANCHOR SPACING	MIN. FLUTE DEPTH		ICC-ES ESR-#	TESTING LOAD
				LOWER	UPPER		
⅜" Ø SIMPSON STRONG BOLT 2	2¼"	3¾"	5¾"	3"	1½"	3037	30 LB.-FT.[3]
⅜" Ø HILTI KWIK BOLT TZ	2⅜"	4⅛"	6¾"		1½"	1917	25 LB.-FT.[3]
½" Ø SIMPSON TITEN HD	2½"	3½"	5¼"		1½"	2713	781 LB.[4]
⅜" Ø HILTI KWIK HUS-EZ	3¼"	3¾"	7½"		3¼"	3027	847 LB.[4]

NOTE:
1. MAX $\frac{1}{16}$" OVERSIZED, TYP.
2. MINIMUM CONCRETE STRENGTH OF f'c = 3,000 PSI.
3. SEE SECTION V.7a FOR TESTING PROCEDURE.
4. SEE SECTION V.7b FOR TESTING PROCEDURE.

STUD BRACE ANCHOR @ CONC. FILLED METAL DECK (BRACE PERPENDICULAR TO FLUTES)

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NOTE:

1. MAX BRACE SPACING IS 4'-0" O.C. & MAX. BRACE LENGTH OF 10 FT. IS ALLOWED FOR $1\frac{5}{8}$"x$3\frac{1}{2}$" x18 GA. (350S162-43) STEEL STUD.

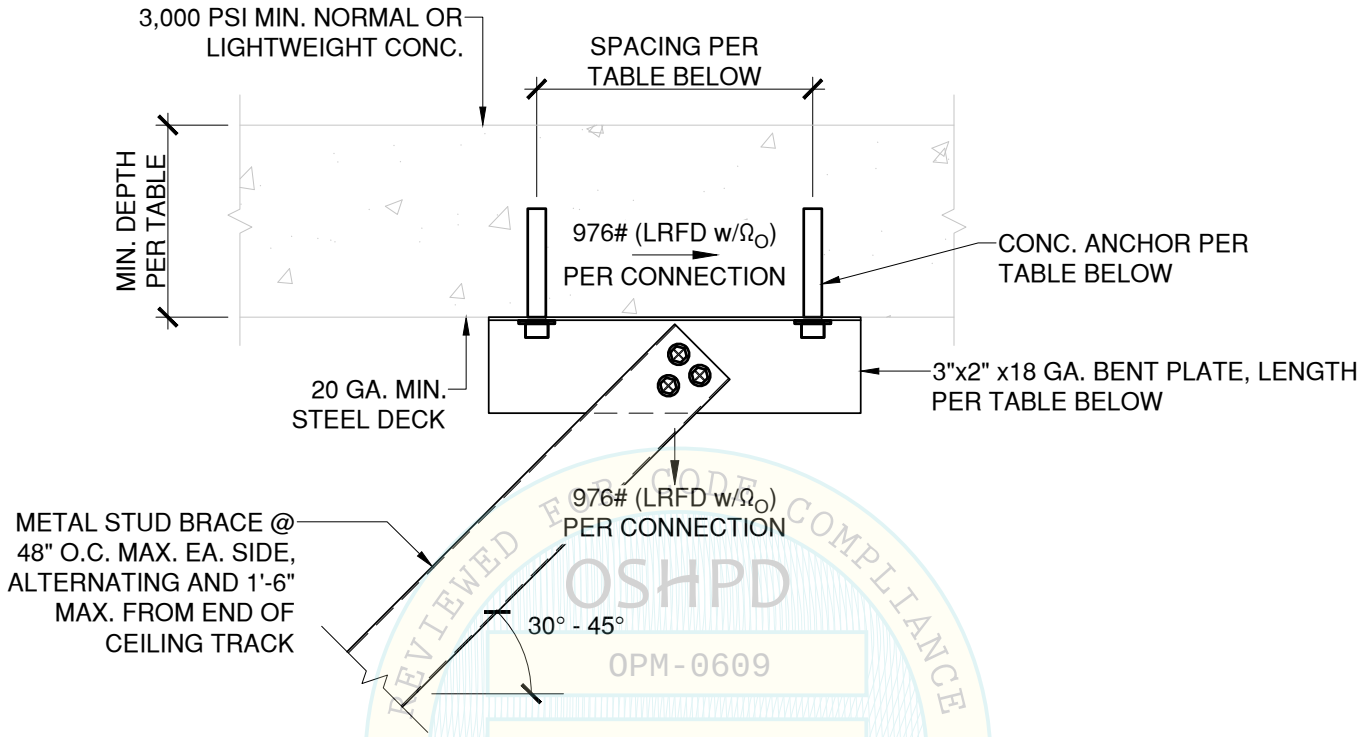

TABLE 5 - ANCHORAGE OF KICKER TO UNDERSIDE OF CONCRETE SLAB [1,2]

ANCHOR OPTIONS	MIN. EMBED	MIN. EDGE DISTANCE	MN. ANCHOR SPACING	MIN. SLAB THICKNESS	ICC-ES ESR-#	TESTING LOAD	PLATE LENGTH
½" Ø SIMPSON STRONG BOLT 2	$2\frac{3}{4}$"	6"	6"	4"	3037	60 LB.-FT.[3]	8"
⅜" Ø HILTI KWIK BOLT TZ	$2\frac{3}{8}$"	8"	4"		1917	25 LB.-FT.[3]	6"
¼" Ø SIMPSON TITEN HD	$2\frac{1}{2}$"	6"	6"		2713	763 LB.[4]	8"
⅜" Ø HILTI KWIK HUS-EZ	$2\frac{1}{2}$"	6"	6"		3027	691 LB.[4]	8"

NOTE:

1. MAX $\frac{1}{16}$" OVERSIZED, TYP.
2. MINIMUM CONCRETE STRENGTH OF f'c = 3,000 PSI.
3. SEE SECTION V.7a FOR TESTING PROCEDURE.
4. SEE SECTION V.7b FOR TESTING PROCEDURE.

STUD BRACE ANCHOR @ CONCRETE SLAB

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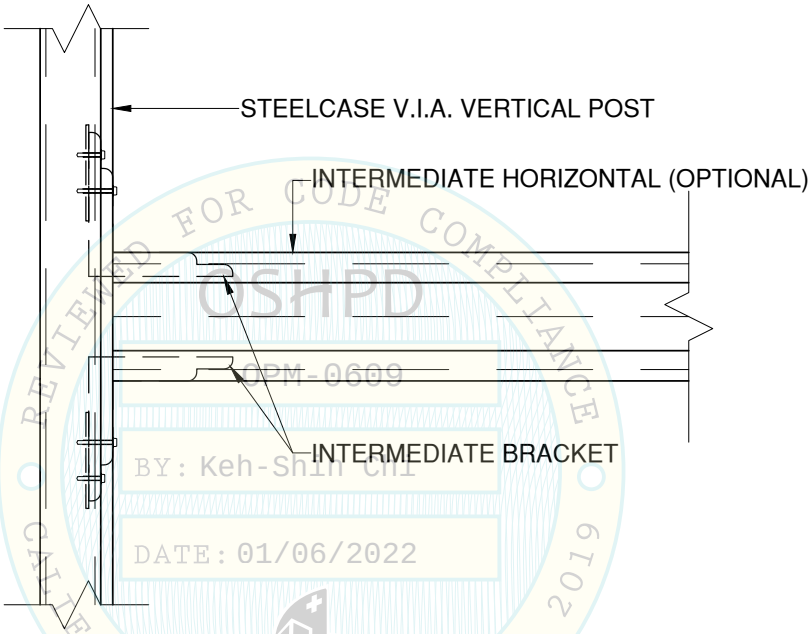

INTERMEDATE HORIZONTAL CONNECTION

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