



**APPLICATION FOR HCAI PREAPPROVAL OF
MANUFACTURER'S CERTIFICATION (OPM)**

OFFICE USE ONLY

APPLICATION #: OPM-0544

HCAI Preapproval of Manufacturer's Certification (OPM)

Type: New Renewal/Update

Manufacturer Information

Manufacturer: BRACELOK.com
 Manufacturer's Technical Representative: Bryce Hodgson
 Mailing Address: 2550 Haas St, Escondido, CA 92025
 Telephone: (619) 917-1688 Email: bryce.hodgson@bracelok.com

Product Information

Product Name: Gridlok
 Product Type: Suspended Ceiling Brace System
 Product Model Number: GRD 10, GRD 10CT, GRD 10P
 General Description: Rigid Brace System Designed to be used with suspended ceiling grid systems

Applicant Information

Applicant Company Name: BRACELOK.com
 Contact Person: Bryce Hodgson
 Mailing Address: 2550 Haas St, Escondido, CA 92025
 Telephone: (619) 917-1688 Email: bryce.hodgson@bracelok.com
 Title: PLENUM



Registered Design Professional Preparing Engineering Recommendations

Company Name: DEGENKOLB ENGINEERS
 Name: Alvaro Celestino California License Number: S5580
 Mailing Address: 225 Broadway Suite 1325, San Diego, CA 92101
 Telephone: (213) 309-2044 Email: acelestino@degenkolb.com

HCAI 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 HCAI prior to testing.

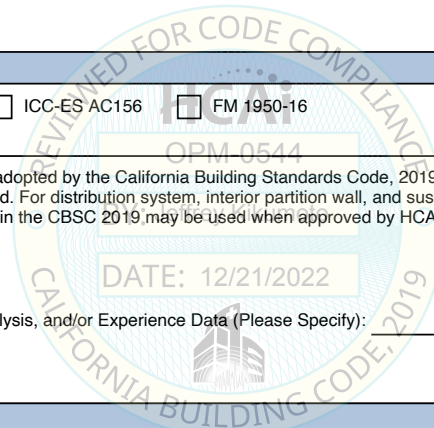
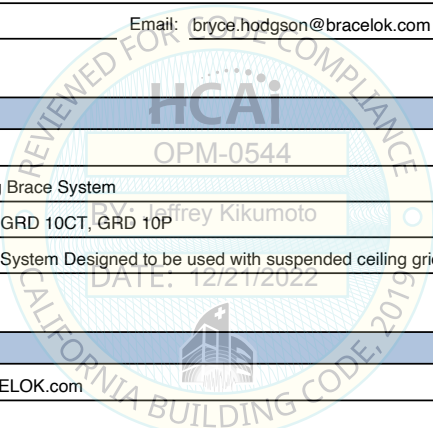
Analysis

Experience Data

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

HCAI Approval

Date: 12/21/2022
 Name: Jeffrey Kikumoto Title: Senior Structural Engineer
 Condition of Approval (if applicable): _____



GENERAL NOTES

- THIS HCAI PRE-APPROVAL OF MANUFACTURER'S CERTIFICATION (OPM) IS BASED ON THE CBC 2019. THE DEMAND (DESIGN FORCES) FOR USE WITH THIS OPM MUST BE BASED ON THE CBC 2019.
 - THIS PRE-APPROVAL IS VALID THROUGHOUT THE STATE OF CALIFORNIA AND IS VALID FOR ACUSTICAL, TILE OR LAY IN PANEL CEILING GRIDS INSTALLED AT THE S₀₅ LIMITATIONS AS SHOWN ON SHEET S3.
 - THIS PRE-APPROVAL IS LIMITED TO CEILING ASSEMBLIES LISTED IN TABLE 1 ON SHEET S3. HAVING MAXIMUM DEAD WEIGHT OF 4 PSF, INCLUDING LIGHTING FIXTURES (LUMINERES) AND MECHANICAL SERVICES, EACH WEIGHING LESS THAN 50 LBS AND ATTACHED TO THE CEILING FRAME SYSTEM. HEAVIER SYSTEMS AND THOSE SUPPORTING LATERAL FORCES FROM PARTITION WALLS ARE OUTSIDE THE SCOPE OF THIS OPM.
 - 45-DEGREE FLY PLATE PIECE ALLOWED TO BE BENT IN FIELD ONCE. A MAXIMUM OF 15 DEGREES IN ANY DIRECTION TO CORRECT ANGLE. VERTICAL STRUT ALLOWED TO BE ROTATED MAXIMUM OF 10 DEGREES PER GRID ELEVATION 205, OR VERTICAL PORTION OF FLY PLATE PIECE ALLOWED TO BE BENT IN FIELD ONCE (MAXIMUM OF 10 DEGREES) PER GRID ELEVATION 155, TO POSITION THE VERTICAL STRUT. IN THE PROCESS OF BENDING, DO NOT DAMAGE OR DEFORM THE MAIN AND/OR CROSS RUNNERS.
- II. RESPONSIBILITIES OF THE STRUCTURAL ENGINEER OF RECORD**
- VERIFY MATERIALS AND WORKMANSHIP TO CONFORM WITH THE 2019 EDITION OF THE CALIFORNIA BUILDING CODE AND THE REQUIREMENTS OF THIS PRE-APPROVAL DOCUMENT.
 - VERIFY THE ADEQUACY OF THE EXISTING FRAMING TO SUPPORT THE LOADS INDICATED ON TABLE 1, SHEET S3, IN ADDITION TO ALL OTHER LOADS.
 - VERIFY ANCHORS ARE AT ADEQUATE DISTANCES FROM OPENINGS AND EDGES OF SLABS AS NOTED IN THE GENERAL NOTES SECTION IV.
 - VERIFY ANCHORS ARE AT ADEQUATE DISTANCES FROM NEW OR EXISTING ANCHORS AS NOTED IN THE GENERAL NOTES SECTION IV.
 - DESIGN ANY SUPPLEMENTARY MEMBERS AND THEIR ATTACHMENTS OTHER THAN THOSE DETAILED WITHIN THIS PRE-APPROVAL.
 - VERIFY THAT THE INSTALLATION IS IN CONFORMANCE WITH THE 2019 CBC AND WITH THE DETAILS SHOWN IN THIS PRE-APPROVAL.
 - VERIFY THAT THE SITE SEISMIC PARAMETERS DO NOT EXCEED WHAT IS PERMITTED UNDER THIS OPM.
 - WHEN USING HLT(K)B EXPANSION ANCHOR INTO CMU WALL, SEOR MUST VERIFY:
 - MASONRY IS NOT CRACKED AS DEFINED IN ICCS AC01 §2.3. CALCULATION NEED TO SHOW MASONRY WALL WOULD NOT CRACK UNDER THE DESIGN EARTHQUAKE LOADS UNDER ALL SERVICE LOAD CONDITIONS, WALL HAS TO REMAIN ELASTIC.
 - MASONRY WALL FULLY GROUTED IN ACCORDANCE WITH ER-677 §4.2.
 - 5 LIMITATIONS IN ACCORDANCE WITH ER-677 §2.0 IS SATISFIED.
- III. COLD-FORMED METAL FRAMING**
- STUDS: ASTM C955 AND ASTM A103, 1" CHAISED WITH LIPPED FLANGES AND PUNCHED WEB. PROVIDE G60 COATING MINIMUM:
 - 45 MIL (16 GA) AND LIGHTER GRADE S3 TYPE #1
 - 54 MIL (16 GA) AND HEAVIER GRADE S3 TYPE #1 STUDS.
 - FRAMING DESIGNATIONS ON PLANS ARE BASED ON THE STEEL STUD MANUFACTURER'S ASSOCIATION (SSMA) PRODUCT TECHNICAL GUIDE (ICC ESR-3064P).

a. ONE-HALF TURN OF THE NUT

WEDGE	TORQUE LOAD (FT-LBS)	
	ANCHOR DIA. (IN)	
KB-T22	3/8	30
	1/2	50
	5/8	40

9. TEST SCREW ANCHORS PER THE FOLLOWING METHOD:

A. DIRECT PULL TENSION TEST. ANCHOR IS ACCEPTABLE IF NO MOVEMENT IS OBSERVED AT THE TEST LOAD GIVEN IN THE TABLE BELOW. MOVEMENT MAY BE DETERMINED WHEN THE WASHER UNDER THE NUT BECOMES LOOSE.

FULLY GROUTED CMU ANCHOR	ANCHOR DIA. (IN)	TENSION LOAD (LBS)
HLT(K)B	1/2	2004
KHEZ	5/8	2776

10. FOR POST-INSTALLED ANCHORS USED FOR NONSTRUCTURAL APPLICATIONS, 50 PERCENT OR ALTERNATE BOLTS IN A GROUP, INCLUDING AT LEAST ONE-HALF THE ANCHORS IN EACH GROUP, MUST BE TESTED.
11. MINIMUM EDGE DISTANCE: SEE SHEET S11.
12. MINIMUM SPACING FROM NEW OR EXISTING ADJACENT ANCHORS: SEE SHEETS S11, S12 AND S13.
- VI. STRUCTURAL TESTS, INSPECTIONS, AND OBSERVATIONS**
- AN INDEPENDENT APPROVED TESTING AGENCY AND SPECIAL INSPECTORS, CONFORMING TO 2019 CBC SECTION 1703A, WILL BE RETAINED BY THE OWNER TO PERFORM THE FOLLOWING TESTS AND INSPECTIONS. PROVIDE ACCESS AND FURNISH SAMPLES TO THE AGENCY AS REQUIRED. THE FOLLOWING ITEMS REQUIRE TESTS AND INSPECTIONS IN ACCORDANCE WITH THE REQUIREMENTS OF THE CHAPTER "STRUCTURAL TESTS AND INSPECTIONS" OF THE CODE.
 - MECHANICAL ANCHORS
 - VERIFY TYPE OF ANCHOR, ANCHOR DIMENSIONS, CONCRETE TYPE AND COMPRESSIVE STRENGTH, PREDRILLED HOLE DIMENSIONS, ANCHOR SPACING, EDGE DISTANCE, SLAB THICKNESS AND ANCHOR EMBEDMENT.
 - PROOF-TEST AS INDICATED IN THE MECHANICAL ANCHORS SECTION OF THESE GENERAL NOTES.

- VI. DESIGN CRITERIA**
- APPLICABLE CODE: 2019 CALIFORNIA BUILDING CODE.
 - SEISMIC DESIGN: $F_r (RFD) = 0.4 \cdot S_{DS} \cdot A \cdot (1 + 2 \cdot z/h) \cdot W_p$ (IN %)
- WHERE:
 S_{DS} = VARIABLES
 h = 11.0 (FOR CEILINGS)
 R_p = 2.0 (FOR CEILINGS)
 h = 11.0 (FOR CEILINGS)
 D = 2.0

GENERAL NOTES, CONT.

- VI. HOW TO USE THIS PRE-APPROVAL**
- REVIEW AND UNDERSTAND ALL GENERAL NOTES AND FIGURES BEFORE PROCEEDING.
 - SELECT A GRIDLOCK CLIP TO MATCH THE CEILING GRID ICC REPORT PER SHEET S2.
 - DETERMINE THE MAXIMUM ALLOWABLE GRIDLOCK SPACING BASED ON THE SITE SEISMICITY (S₀₅) FROM TABLE 1 ON SHEET S3.
 - ADVANCESPAN CEILING SYSTEM WAS SELECTED IN STEP 2, DETERMINE MAXIMUM ALLOWABLE GRIDLOCK BRACE SPACING BASED ON THE SITE SEISMICITY (S₀₅) FROM TABLE 1 ON SHEET S3A.
 - BASED ON THE PLENUM HEIGHT 'Y' AND THE CHOSEN GRIDLOCK SPACING CHOSEN ON STEP 3 ABOVE, SELECT BRACE SIZE PER TABLE 1 ON SHEET S4A. BRACE STRUTS MUST NOT BE REPLACED BY WIRE. IF FLYPLATE CLIP IS BENT TO ACCOMMODATE BRACE ANGLES (Ø) DIFFERENT THAN 45°, SELECT BRACE SIZE PER TABLE 1 ON SHEET S4B. TABLE 1 ON S4B IS APPLICABLE TO ALL BRACE ANGLES FROM 30 TO 40 DEGREES.
 - BASED ON THE PLENUM HEIGHT 'Y' AND THE CHOSEN GRIDLOCK SPACING CHOSEN ON STEP 3 ABOVE, SELECT VERTICAL STRUT SIZE PER TABLE 2 ON SHEET S4A. VERTICAL STRUTS MUST NOT BE REPLACED BY WIRE. IF FLYPLATE CLIP IS BENT TO ACCOMMODATE BRACE ANGLES (Ø) DIFFERENT THAN 45°, SELECT VERTICAL STRUT SIZE PER TABLE 2 ON SHEET S4B. TABLE 1 ON S4B IS APPLICABLE TO ALL BRACE ANGLES FROM 30 TO 40 DEGREES.
 - BASED ON THE DECK TYPE SELECT THE APPROPRIATE CONNECTION TO THE SUPPORTING STRUCTURE ABOVE PER TABLE 1 ON SHEET S4.
 - RDP TO DETERMINE THE IMPACT ON THE EXISTING STRUCTURE FROM THE GRIDLOCK BASED ON THE PROVIDED 'F' ASD FORCE ON TABLE 1 ON SHEET S3 OR S3A.

SHEET LIST

S1	GENERAL NOTES	S108	GRIDLOCK PARTS
S2	GENERAL NOTES AND SCHEDULES	S111	CONNECTION DETAILS
S3	GENERAL PLAN AND SCHEDULES	S112	CONNECTION DETAILS
S3A	GENERAL PLAN AND SCHEDULES FOR ADVANCESPAN CEILING SYSTEM AT CORRIDORS	S113	CONNECTION DETAILS
S4	SECTION AND CONNECTION SCHEDULE	S114	CONNECTION DETAILS
S4A	SCHEDULES FOR 'R' = 45°	S115	CONNECTION DETAILS
S4B	SCHEDULES FOR 'R' DIFFERENT THAN 45°	S116	WALL CONNECTION DETAILS (ALTERNATE CONNECTION ABOVE GRIDLOCK)
S5	SECTIONS	S117	ADVANCESPAN CHANNEL ASSEMBLY
S6	GRIDLOCK-10P ASSEMBLY DETAILS	S118	OPD-002-13 DETAILS (CL.20, CL.25)
S7	GRIDLOCK-10CT ASSEMBLY DETAILS	S119	OPD-002-13 DETAILS (CL.21, CL.22)
S8	GRIDLOCK-10T ASSEMBLY DETAILS	S120	OPD-002-13 DETAILS (CL.23, CL.24)
S9	GRIDLOCK PARTS	S121	OPD-002-13 DETAILS (CL.25)
S10	GRIDLOCK PARTS		
S10A	GRIDLOCK PARTS		

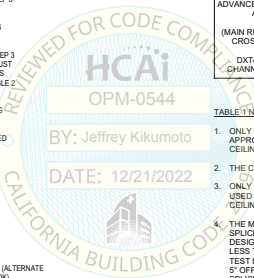


TABLE 1: GRIDLOCK ASSEMBLY SCHEDULE

CEILING GRID ASSEMBLY	GRIDLOCK ASSEMBLY	ASSEMBLY DETAIL
WORTHINGTON ARMSTRONG VENTURE (ICC ESR-1308)	GRIDLOCK-10P	1/56
USG LCC (ICC ESR-1222)	GRIDLOCK-10	1/57
CERTAIN TEE CORP. (ICC ESR-3355)	GRIDLOCK-10CT	1/58
ADVANCESPAN CEILING SYSTEM AT CORRIDORS (MAIN RUNNERS: DXAS, DXTAS CROSS RUNNERS: DXAS, DXTAS) DX424DX22 DX424DX424DX22 CHANNEL ASSEMBLY: US44)	GRIDLOCK-10	1/57

TABLE 1 NOTES

- ONLY CEILING GRIDS THAT MEET THE ICC REPORTS LISTED ABOVE ARE APPROVED FOR USE WITH THIS OPM. MATCH GRIDLOCK ASSEMBLY CLIP WITH CEILING GRID TYPE PER TABLE ABOVE.
- THE CEILING SYSTEMS ARE LIMITED TO INTERIOR APPLICATIONS.
- ONLY HEAVY-DUTY MAIN TEES DEFINED IN ASTM SPECIFICATION C635 SHALL BE USED (DIRECT HUNG, MIN. LOAD CARRYING CAPACITY = 16.0 PLF; CEILING LOAD + 4 PSF).
- THE MAIN RUNNERS AND CROSS RUNNERS OF THE CEILING SYSTEM AND THEIR SPLICES, INTERSECTION CONNECTORS, AND EXPANSION DEVICES SHALL BE DESIGNED AS CONSTRUCTED TO CARRY A MEAN ULTIMATE TEST LOAD OF NOT LESS THAN 180 LBS IN COMPRESSION AND IN TENSION WHEN TESTED FOR TEST METHODS ASTM E830/E830M. THE TENSILE TEST SHALL ALLOW FOR A 2" OFFSET OF THE CONNECTION IN ANY DIRECTION. THE CONNECTORS AT SPLICES AND INTERSECTIONS SHALL BE THE MECHANICAL LOCKING TYPE.

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GRIDLOCK® GRIDLOCK-10P, GRIDLOCK-10CT AND GRIDLOCK-10 CONNECTORS
 GRIDLOCK OPM-0544

GENERAL NOTES

Drawn: JEB Job number: B8769007.01
 Design: PGMLH Rev: S1
 Check: AC Scale: NTS
 Date: 12/20/2022

OP- Sheets

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GENERAL NOTES AND SCHEDULES

Drawn: JEB Job number: B8769007.01
 Design: PGMLH Rev: S2
 Check: AC Scale: NTS
 Date: 12/20/2022

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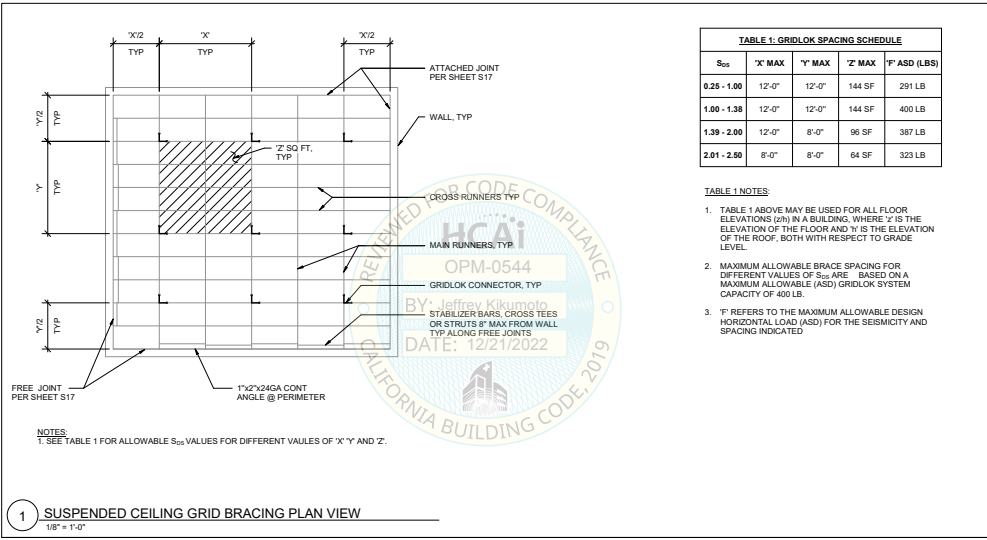


TABLE 1: GRIDLOCK SPACING SCHEDULE

S ₀₅	X' MAX	Y' MAX	Z' MAX	F' ASD (LBS)
0.25 - 1.00	12'-0"	12'-0"	144 SF	291 LB
1.00 - 1.38	12'-0"	12'-0"	144 SF	400 LB
1.39 - 2.00	12'-0"	8'-0"	96 SF	387 LB
2.01 - 2.50	8'-0"	8'-0"	64 SF	323 LB

- TABLE 1 NOTES:**
- TABLE 1 ABOVE MAY BE USED FOR ALL FLOOR ELEVATIONS (z_h) IN A BUILDING, WHERE 'Z' IS THE ELEVATION OF THE FLOOR AND 'Y' IS THE ELEVATION OF THE ROOF, BOTH WITH RESPECT TO GRADE LEVEL.
 - MAXIMUM ALLOWABLE BRACE SPACING FOR DIFFERENT VALUES OF S₀₅ ARE BASED ON A MAXIMUM ALLOWABLE (ASD) GRIDLOCK SYSTEM CAPACITY OF 400 LB.
 - 'F' REFERS TO THE MAXIMUM ALLOWABLE DESIGN HORIZONTAL LOAD (ASD) FOR THE SEISMICITY AND SPACING INDICATED.

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 GRIDLOCK OPM-0544

GENERAL PLAN AND SCHEDULES

Drawn: JEB Job number: B8769007.01
 Design: JEL Rev: S3
 Check: AC Scale: NTS
 Date: 12/20/2022

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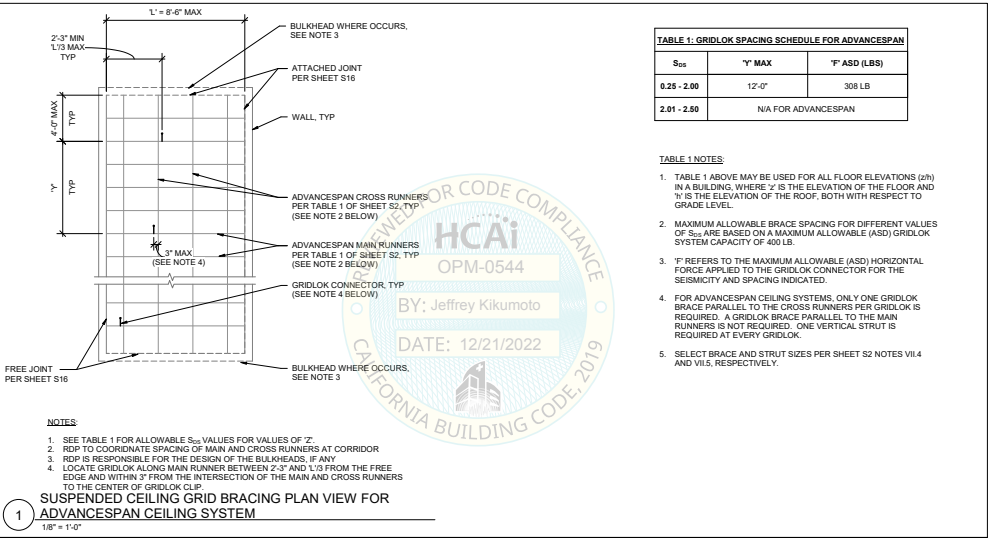


TABLE 1: GRIDLOCK SPACING SCHEDULE FOR ADVANCESPAN

S ₀₅	Y' MAX	F' ASD (LBS)
0.25 - 2.00	12'-0"	308 LB
2.01 - 2.50		N/A FOR ADVANCESPAN

- TABLE 1 NOTES:**
- TABLE 1 ABOVE MAY BE USED FOR ALL FLOOR ELEVATIONS (z_h) IN A BUILDING, WHERE 'Z' IS THE ELEVATION OF THE FLOOR AND 'Y' IS THE ELEVATION OF THE ROOF, BOTH WITH RESPECT TO GRADE LEVEL.
 - MAXIMUM ALLOWABLE BRACE SPACING FOR DIFFERENT VALUES OF S₀₅ ARE BASED ON A MAXIMUM ALLOWABLE (ASD) GRIDLOCK SYSTEM CAPACITY OF 400 LB.
 - 'F' REFERS TO THE MAXIMUM ALLOWABLE (ASD) HORIZONTAL FORCE APPLIED TO THE GRIDLOCK CONNECTOR FOR THE SEISMICITY AND SPACING INDICATED.
 - FOR ADVANCESPAN CEILING SYSTEMS, ONLY ONE GRIDLOCK BRACE PARALLEL TO THE CROSS RUNNERS PER GRIDLOCK IS REQUIRED. A GRIDLOCK BRACE PARALLEL TO THE MAIN RUNNERS IS NOT REQUIRED. ONE VERTICAL STRUT IS REQUIRED AT EVERY GRIDLOCK.
 - SELECT BRACE AND STRUT SIZES PER SHEET S2 NOTES VII.4 AND VII.5, RESPECTIVELY.

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 GRIDLOCK OPM-0544

GENERAL PLAN AND SCHEDULES FOR ADVANCESPAN CEILING SYSTEM AT CORRIDORS

Drawn: JEB Job number: B8769007.01
 Design: JEL Rev: S3A
 Check: AC Scale: NTS
 Date: 12/20/2022

OP- Sheets

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TABLE 1: GRIDLOK CONNECTION SCHEDULE

STRUCTURAL CONDITION OF FLOOR/ROOF ABOVE SUSPENDED CEILING	HANGER WIRE DETAIL	BC45 BRACE AND BC90 STRUT TOP CONNECTION DETAIL
CONCRETE SLAB, BEAM, OR JOIST	2/S18	1/S11
CONCRETE OVER W3 DECK	1/S18	1/S12, 2/S12
CONCRETE OVER B DECK	1/S18	1/S13, 2/S13
STRUCTURAL STEEL	1/S20	1/S14
SAWN TIMBER	2/S20	1/S15

NOTES:

- SEE TABLE 1 FOR SCHEDULE OF CONNECTION DETAIL OF GRIDLOK BC45 AND BC90 CONNECTORS TO THE FLOOR ABOVE FOR DIFFERENT STRUCTURAL SYSTEMS.
- SEE TABLE 1 ON S44 FOR SCHEDULE OF PLENUM HEIGHT 'H' BASED ON BRACE ANGLE 'Θ' + 45 DEGREES BRACE SIZE AND CHOSEN GRIDLOK SPACING. IF ALTERNATIVE BRACE ANGLE 'Θ' USED PER NOTE 7, SEE TABLE 1 ON S45.
- SEE TABLE 2 ON S44 FOR SCHEDULE OF PLENUM HEIGHT 'H' BASED ON BRACE ANGLE 'Θ' + 45 DEGREES VERTICAL STRUT SIZE AND CHOSEN GRIDLOK SPACING. IF ALTERNATIVE BRACE ANGLE 'Θ' USED PER NOTE 7, SEE TABLE 2 ON S45.
- THE GRIDLOK ASSEMBLY CAN BE PLACED ANYWHERE ALONG THE MAIN RUNNER.
- THE GRIDLOK FLY PLATE CAN BE ROTATED AT ANY ANGLE, FROM 0 TO 360 DEGREES, WHEN THE CENTERLINE OF THE GRIDLOK IS WITHIN 3" FROM THE INTERSECTION OF THE MAIN AND CROSS RUNNERS.
- THE GRIDLOK FLY PLATE PIECE CAN BE ROTATED IN 90-DEGREE INTERVALS PROVIDED THE BRACES ARE ALIGNED WITH THE MAIN AND CROSS RUNNERS.
- 45-DEGREE FLY PLATE PIECE ALLOWED TO BE BENT IN FIELD ONCE, A MAXIMUM OF 15 DEGREES IN ANY DIRECTION, TO CORRECT ANGLE. NO REBENDING.
- VERTICAL STRUT ALLOWED TO BE ROTATED A MAXIMUM OF 10 DEGREES PER GRIDLOK ELEVATION 2/S5.
- VERTICAL PORTION OF FLY PLATE PIECE ALLOWED TO BE BENT IN FIELD ONCE PER GRIDLOK ELEVATION 1/S5. TO POSITION THE VERTICAL STRUT, A MAXIMUM OF 10 DEGREES, NO REBENDING.
- FOR ADVANCESPAN CEILINGS (SEE SHEET S3A), LOCATE GRIDLOK ALONG MAIN RUNNER AND WITHIN 3" FROM THE INTERSECTION OF THE MAIN AND CROSS RUNNERS.

NOTE: STUD BRACE ARRANGEMENTS AT CONTRACTORS OPTION. SEE ALSO SHEET S5.

1 GRIDLOK ASSEMBLY (ISOMETRIC)
N.T.S.

2 DIRECTION BRACE LAYOUT ARRANGEMENTS (PLAN VIEW)
N.T.S.

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DR: Jeffrey Kikumoto
JOB NUMBER: B8769007.01
DATE: 12/20/2022
SCALE: NTS
SHEET: 54

OPM-0544: Reviewed for Code Compliance by Jeffrey Kikumoto

TABLE 1: MAXIMUM PLENUM HEIGHT 'H' FOR DIFFERENT BRACE SIZES, BRACE ANGLE 'Θ' + 45 DEGREES, AND S₃₀ VALUES

GRIDLOK SPACING	BRACE SIZE	2505125-33	2505162-33	3625162-33	(2) 2505162-33 BACK-TO-BACK
12'-0"x12'-0"	0.25 - 1.00	4'-6"	6'-0"	7'-6"	9'-6"
12'-0"x12'-0"	1.01 - 1.38	N/A	5'-0"	6'-6"	9'-6"
8'-0"x12'-0"	1.39 - 2.00	N/A	5'-0"	6'-6"	9'-6"
8'-0"x8'-0"	2.01 - 2.50	N/A	5'-0"	7'-6"	9'-6"
5'-8"x12'-0" (ADVANCESPAN)	0.25 - 2.00	N/A	5'-0"	6'-6"	9'-6"

TABLE 2: MAXIMUM PLENUM HEIGHT 'H' FOR DIFFERENT VERTICAL STRUT SIZES, BRACE ANGLE 'Θ' + 45 DEGREES, AND S₃₀ VALUES

GRIDLOK SPACING	VERTICAL STRUT SIZE	2505125-33	2505162-33	3625162-33
12'-0"x12'-0"	0.25 - 1.00	7'-0"	9'-6"	9'-6"
12'-0"x12'-0"	1.01 - 1.38	6'-6"	8'-0"	9'-6"
8'-0"x12'-0"	1.39 - 2.00	6'-6"	8'-0"	9'-6"
8'-0"x8'-0"	2.01 - 2.50	7'-0"	9'-0"	9'-0"
5'-8"x12'-0" (ADVANCESPAN)	0.25 - 2.00	6'-6"	8'-0"	9'-0"

TABLE 1 AND 2 NOTES:

- SEE S5 AND FIGURES IN THIS SHEET FOR DEFINITION OF 'H' AND BRACE ANGLE 'Θ'.
- SEE DETAIL 1/S5A FOR BRACE CONNECTION WHERE BACK-TO-BACK BRACES ARE REQUIRED.
- GRIDLOK SPACING CHOSEN PER TABLE 1 ON SHEET S3.
- VERTICAL STRUT ALLOWED TO BE ROTATED A MAXIMUM OF 10 DEGREES PER GRIDLOK ELEVATION 2/S5.
- VERTICAL PORTION OF FLY PLATE PIECE ALLOWED TO BE BENT IN FIELD ONCE PER GRIDLOK ELEVATION 1/S5. TO POSITION THE VERTICAL STRUT, A MAXIMUM OF 10 DEGREES, NO REBENDING.

1 BACK-TO-BACK BRACE SECTION
3" = 1'-0"

2 VERTICAL STRUT SECTION
3" = 1'-0"

45° ONLY

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DR: Jeffrey Kikumoto
JOB NUMBER: B8769007.01
DATE: 12/20/2022
SCALE: NTS
SHEET: S4A

OPM-0544: Reviewed for Code Compliance by Jeffrey Kikumoto

TABLE 1: MAXIMUM PLENUM HEIGHT 'H' FOR DIFFERENT BRACE SIZES, BRACE ANGLE 'Θ', AND S₃₀ VALUES

GRIDLOK SPACING	BRACE SIZE	2505125-33		2505162-33		3625162-33		(2) 2505162-33 BACK-TO-BACK		6005350-54		(2) 3625200-43 BACK-TO-BACK	
		0.25-1.00	1.01-1.38	1.39-2.00	2.01-2.50	0.25-1.00	1.01-1.38	1.39-2.00	2.01-2.50	0.25-1.00	1.01-1.38	1.39-2.00	2.01-2.50
12'-0"x12'-0"	0.25 - 1.00	N/A	4'-6"	4'-6"	5'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"
12'-0"x12'-0"	1.01 - 1.38	N/A	N/A	N/A	4'-6"	5'-0"	6'-6"	7'-6"	9'-6"	9'-6"	9'-6"	9'-6"	9'-6"
8'-0"x12'-0"	1.39 - 2.00	N/A	N/A	N/A	4'-6"	5'-0"	6'-6"	7'-6"	9'-6"	9'-6"	9'-6"	9'-6"	9'-6"
8'-0"x8'-0"	2.01 - 2.50	N/A	N/A	N/A	5'-0"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"
5'-8"x12'-0" (ADVANCESPAN)	0.25 - 2.00	N/A	N/A	N/A	4'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"

TABLE 2: MAXIMUM PLENUM HEIGHT 'H' FOR DIFFERENT VERTICAL STRUT SIZES, BRACE ANGLE 'Θ', AND S₃₀ VALUES

GRIDLOK SPACING	VERTICAL STRUT SIZE	2505125-33		2505162-33		3625162-33		3625200-33	
		0.25-1.00	1.01-1.38	1.39-2.00	2.01-2.50	0.25-1.00	1.01-1.38	1.39-2.00	2.01-2.50
12'-0"x12'-0"	0.25 - 1.00	7'-0"	5'-6"	9'-6"	6'-6"	7'-0"	8'-0"	8'-0"	8'-0"
12'-0"x12'-0"	1.01 - 1.38	7'-0"	5'-6"	N/A	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
8'-0"x12'-0"	1.39 - 2.00	7'-0"	5'-6"	N/A	9'-0"	8'-0"	8'-0"	8'-0"	8'-0"
8'-0"x8'-0"	2.01 - 2.50	6'-6"	5'-0"	9'-6"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
5'-8"x12'-0" (ADVANCESPAN)	0.25 - 2.00	5'-6"	N/A	8'-6"	7'-6"	8'-0"	8'-0"	8'-0"	8'-0"

TABLE 1 AND 2 NOTES:

- SEE S5 AND FIGURES IN THIS SHEET FOR DEFINITION OF 'H' AND BRACE ANGLE 'Θ'.
- SEE DETAIL 1/S5A FOR BRACE CONNECTION WHERE BACK-TO-BACK BRACES ARE REQUIRED.
- GRIDLOK SPACING CHOSEN PER TABLE 1 ON SHEET S3.
- 45-DEGREE FLY PLATE PIECE TO BE BENT IN FIELD ONCE, A MAXIMUM OF 15 DEGREES IN ANY DIRECTION, TO CORRECT ANGLE. NO REBENDING. WHERE BENDING IS REQUIRED.
- VERTICAL STRUT ALLOWED TO BE ROTATED A MAXIMUM OF 10 DEGREES PER GRIDLOK ELEVATION 2/S5.
- VERTICAL PORTION OF FLY PLATE PIECE ALLOWED TO BE BENT IN FIELD ONCE PER GRIDLOK ELEVATION 1/S5. TO POSITION THE VERTICAL STRUT, A MAXIMUM OF 10 DEGREES, NO REBENDING.
- WHEN BRACE ANGLE 'Θ' IS GREATER THAN 55 DEGREES, INCREASE BRACE SIZE TO MIN 43 MIL THICKNESS.

1 GRIDLOK ELEVATION
N.T.S.

2 GRIDLOK ELEVATION
N.T.S.

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DR: Jeffrey Kikumoto
JOB NUMBER: B8769007.01
DATE: 12/20/2022
SCALE: NTS
SHEET: S4B

OPM-0544: Reviewed for Code Compliance by Jeffrey Kikumoto

TABLE 1: MAXIMUM PLENUM HEIGHT 'H' FOR DIFFERENT BRACE SIZES, BRACE ANGLE 'Θ', AND S₃₀ VALUES

GRIDLOK SPACING	BRACE SIZE	2505125-33		2505162-33		3625162-33		(2) 2505162-33 BACK-TO-BACK		6005350-54		(2) 3625200-43 BACK-TO-BACK	
		0.25-1.00	1.01-1.38	1.39-2.00	2.01-2.50	0.25-1.00	1.01-1.38	1.39-2.00	2.01-2.50	0.25-1.00	1.01-1.38	1.39-2.00	2.01-2.50
12'-0"x12'-0"	0.25 - 1.00	N/A	4'-6"	4'-6"	5'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"
12'-0"x12'-0"	1.01 - 1.38	N/A	N/A	N/A	4'-6"	5'-0"	6'-6"	7'-6"	9'-6"	9'-6"	9'-6"	9'-6"	9'-6"
8'-0"x12'-0"	1.39 - 2.00	N/A	N/A	N/A	4'-6"	5'-0"	6'-6"	7'-6"	9'-6"	9'-6"	9'-6"	9'-6"	9'-6"
8'-0"x8'-0"	2.01 - 2.50	N/A	N/A	N/A	5'-0"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"
5'-8"x12'-0" (ADVANCESPAN)	0.25 - 2.00	N/A	N/A	N/A	4'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"

TABLE 2: MAXIMUM PLENUM HEIGHT 'H' FOR DIFFERENT VERTICAL STRUT SIZES, BRACE ANGLE 'Θ', AND S₃₀ VALUES

GRIDLOK SPACING	VERTICAL STRUT SIZE	2505125-33		2505162-33		3625162-33		3625200-33	
		0.25-1.00	1.01-1.38	1.39-2.00	2.01-2.50	0.25-1.00	1.01-1.38	1.39-2.00	2.01-2.50
12'-0"x12'-0"	0.25 - 1.00	7'-0"	5'-6"	9'-6"	6'-6"	7'-0"	8'-0"	8'-0"	8'-0"
12'-0"x12'-0"	1.01 - 1.38	7'-0"	5'-6"	N/A	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
8'-0"x12'-0"	1.39 - 2.00	7'-0"	5'-6"	N/A	9'-0"	8'-0"	8'-0"	8'-0"	8'-0"
8'-0"x8'-0"	2.01 - 2.50	6'-6"	5'-0"	9'-6"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
5'-8"x12'-0" (ADVANCESPAN)	0.25 - 2.00	5'-6"	N/A	8'-6"	7'-6"	8'-0"	8'-0"	8'-0"	8'-0"

TABLE 1 AND 2 NOTES:

- SEE TABLE 1 ON SHEET S4 FOR SCHEDULE OF CONNECTION DETAIL OF GRIDLOK BC45 AND BC90 CONNECTORS TO THE FLOOR ABOVE FOR DIFFERENT DECK TYPES.
- SEE DETAIL 1/S5 FOR INFO NOT SHOWN OR NOTED.

1 GRIDLOK ELEVATION
N.T.S.

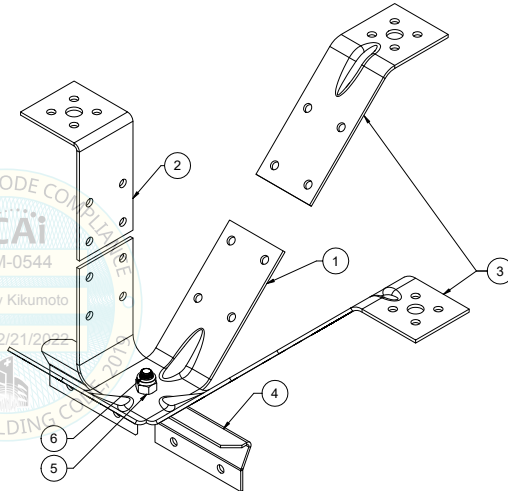
2 GRIDLOK ELEVATION
N.T.S.

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JOB NUMBER: B8769007.01
DATE: 12/20/2022
SCALE: NTS
SHEET: S5

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ITEM NO.	PART NO.	GRIDLOK-10 P / QTY	DETAIL
1	GRIDLOK-FLY-PLATE	1	2/S9
2	GRIDLOK-BC90-CONNECTOR	1	1/810 & 1/810A
3	GRIDLOK-BC45-CONNECTOR	2	2/810 & 2/810A
4	GRIDLOK-10 P-SADDLE	1	1/S9
5	ISO 7041-MB-S	1	-
6	PEM FH-MB-18 X-S	1	-



NOTES
1. SEE SCHEDULE ON S2 FOR ACCEPTABLE CEILING GRID ASSEMBLY TO BE USED WITH GRIDLOK-10P ASSEMBLY.

1 GRIDLOK-10 P ASSEMBLY
3/32" = 1/4"



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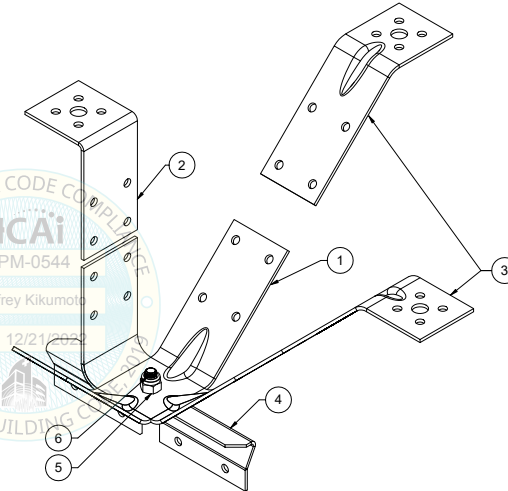
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GRIDLOK OPM-0544

Drawn: JEB Job number: B8769007.01 Sheet: S6
Design: PGMLH Rev: -
Check: AC Scale: AS INDICATED
Date: 12/20/2022

OPM-0544: Reviewed for Code Compliance by Jeffrey Kikumoto

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ITEM NO.	PART NO.	GRIDLOK-10 / QTY	DETAIL
1	GRIDLOK-FLY-PLATE	1	2/S9
2	GRIDLOK-BC90-CONNECTOR	1	1/810 & 1/810A
3	GRIDLOK-BC45-CONNECTOR	2	2/810 & 2/810A
4	GRIDLOK-10-SADDLE	1	3/S9
5	ISO 7041-MB-S	1	-
6	PEM FH-MB-18 X-S	1	-



NOTES
1. SEE SCHEDULE ON S2 FOR ACCEPTABLE CEILING GRID ASSEMBLY TO BE USED WITH GRIDLOK-10 ASSEMBLY.

1 GRIDLOK-10 ASSEMBLY
3/32" = 1/4"



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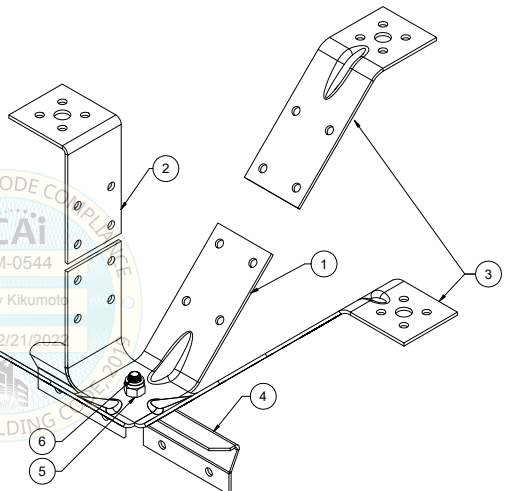
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Design: PGMLH Rev: -
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Date: 12/20/2022

OPM-0544: Reviewed for Code Compliance by Jeffrey Kikumoto

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ITEM NO.	PART NO.	GRIDLOK-10 CT / QTY	DETAIL
1	GRIDLOK-FLY-PLATE	1	2/S9
2	GRIDLOK-BC90-CONNECTOR	1	1/810 & 1/810A
3	GRIDLOK-BC45-CONNECTOR	2	2/810 & 2/810A
4	GRIDLOK-10CT-SADDLE	1	3/S9
5	ISO 7041-MB-S	1	-
6	PEM FH-MB-18 X-S	1	-



NOTES
1. SEE SCHEDULE ON S2 FOR ACCEPTABLE CEILING GRID ASSEMBLY TO BE USED WITH GRIDLOK-10CT ASSEMBLY.

1 GRIDLOK-10CT ASSEMBLY
3/32" = 1/4"



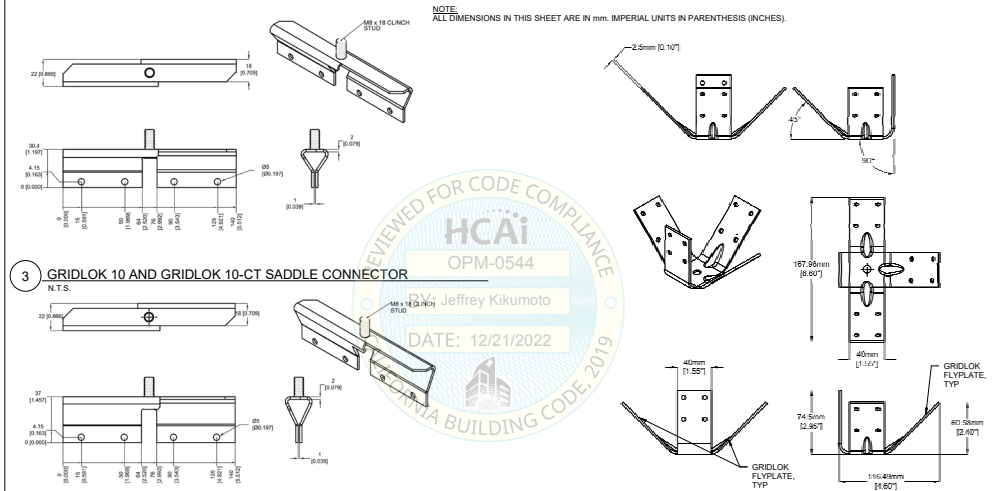
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3 GRIDLOK 10 AND GRIDLOK 10-CT SADDLE CONNECTOR
N.T.S.

1 GRIDLOK 10-P SADDLE CONNECTOR
N.T.S.

2 GRIDLOK FLY-PLATE CONNECTOR
N.T.S.



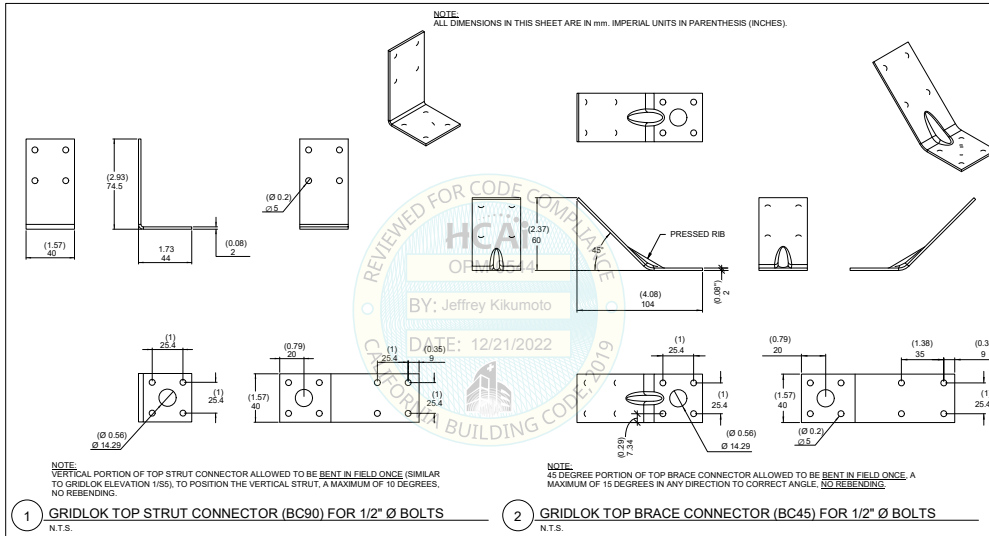
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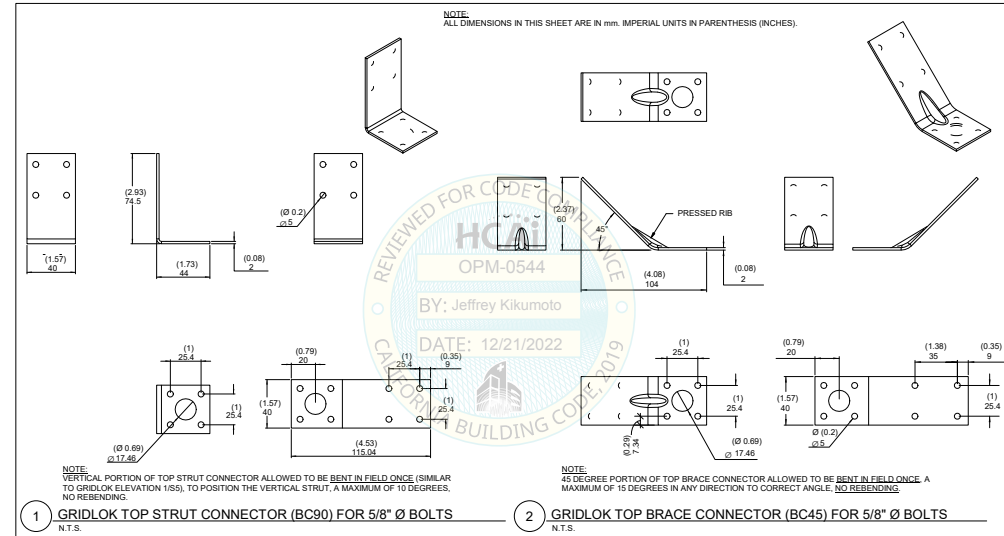
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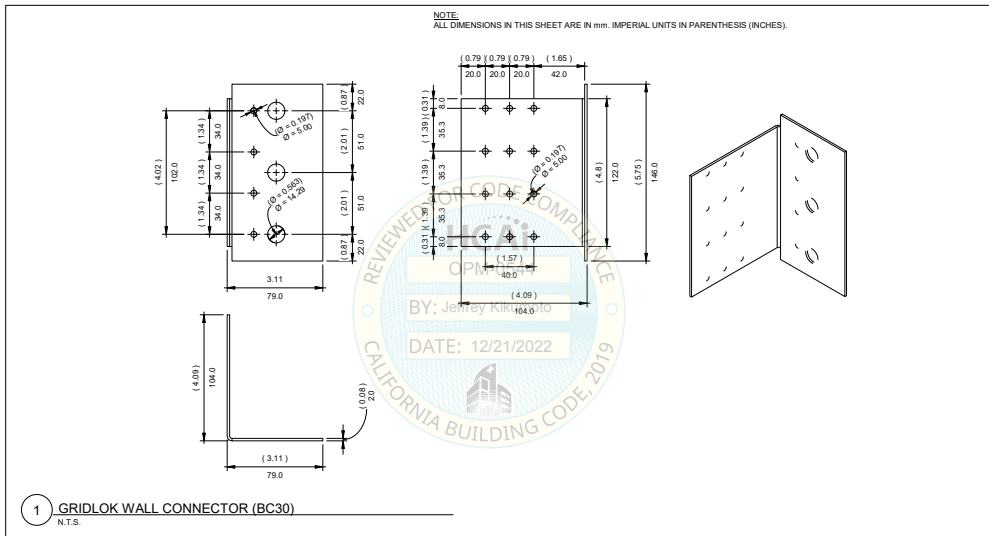
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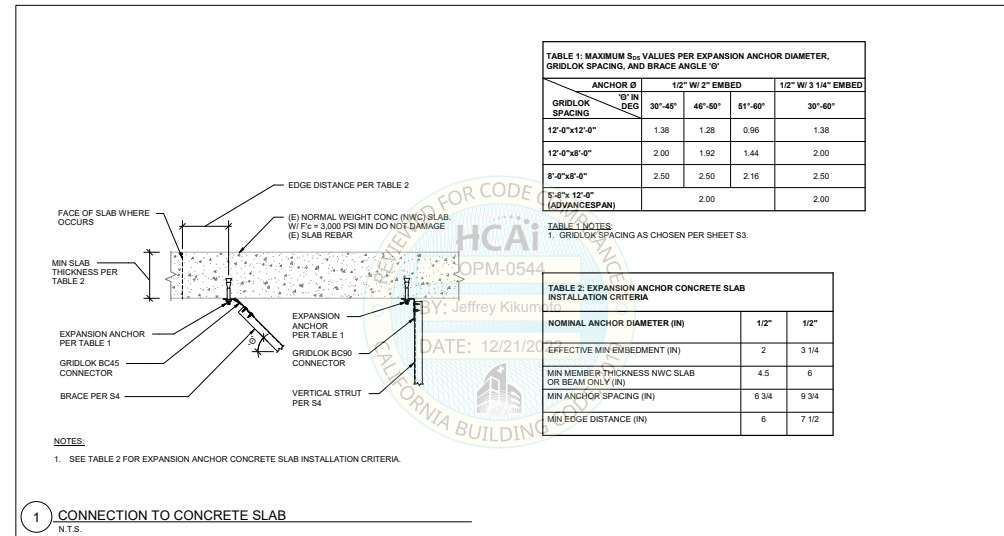
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Design: PGMLH Rev: S11
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1 CONNECTION AT W3 DECK LOWER FLUTE (OPTION 1)
N.T.S.

TABLE 1: MAXIMUM S₂₄ VALUES PER EXPANSION ANCHOR DIAMETER, GRIDLOCK SPACING, AND BRACE ANGLE (°) (OPTION 1)

GRIDLOCK SPACING	ANCHOR Ø					
	30°-40°	41°-44°	45°	46°-50°	51°-60°	30°-60°
12'-0"x12'-0"	1.05	0.96	0.94	0.83	0.63	1.38
12'-0"x8'-0"	1.58	1.44	1.41	1.25	0.95	2.00
8'-0"x8'-0"	2.36	2.16	2.12	1.87	1.42	2.50
8'-8"x12'-0" (ADVANCESPAN)	2.00		1.76	1.33	2.00	2.00

TABLE 2: MAXIMUM S₂₄ VALUES PER EXPANSION ANCHOR DIAMETER, GRIDLOCK SPACING, AND BRACE ANGLE (°) (OPTION 2)

GRIDLOCK SPACING	ANCHOR Ø		
	30°-50°	51°-60°	30°-60°
12'-0"x12'-0"	1.38	1.26	1.38
12'-0"x8'-0"	2.00	1.89	2.00
8'-0"x8'-0"	2.50	2.50	
8'-8"x12'-0" (ADVANCESPAN)	2.00	2.00	

TABLE 3: EXPANSION ANCHOR W3 DECK INSTALLATION CRITERIA

NOMINAL ANCHOR DIAMETER (IN)	1/2"	1/2"
EFFECTIVE MIN EMBEDMENT (IN)	2	3 1/4
MIN ANCHOR SPACING (IN)	6 3/4	9 3/4

NOTES:
1. SEE GENERAL NOTES FOR ANCHOR REQUIREMENTS.
2. SEE DETAIL 1 FOR REMAINING INFORMATION NOT SHOWN ON DETAIL 2.
3. SEE TABLE 3 FOR EXPANSION ANCHOR W3 DECK INSTALLATION CRITERIA.

2 CONNECTION BETWEEN W3 DECK LOWER FLUTES (OPTION 2)
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Design: JEB Job number: B8769007.01
Drawn: PGM/MLH Rev: S12
Check: AC Scale: NTS
Date: 12/20/2022

OPM-0544: Reviewed for Code Compliance by Jeffrey Kikumoto 19 of 30

1 CONNECTION AT B DECK LOWER FLUTE (OPTION 1)
N.T.S.

TABLE 1: MAXIMUM S₂₄ VALUES PER EXPANSION ANCHOR DIAMETER, GRIDLOCK SPACING, AND BRACE ANGLE (°) (OPTION 1)

GRIDLOCK SPACING	ANCHOR Ø					
	30°-40°	41°-44°	45°	46°-50°	51°-60°	30°-60°
12'-0"x12'-0"	0.90	0.80	0.78	0.66	0.48	1.38
12'-0"x8'-0"	1.35	1.20	1.17	0.99	0.72	2.00
8'-0"x8'-0"	2.03	1.80	1.76	1.49	1.08	2.50
8'-8"x12'-0" (ADVANCESPAN)	1.91	1.69	1.65	1.40	1.02	2.00

TABLE 2: MAXIMUM S₂₄ VALUES PER EXPANSION ANCHOR DIAMETER, GRIDLOCK SPACING, AND BRACE ANGLE (°) (OPTION 2)

GRIDLOCK SPACING	ANCHOR Ø		
	30°-45°	46°-50°	51°-60°
12'-0"x12'-0"	1.38	1.32	0.96
12'-0"x8'-0"	2.00	1.98	1.44
8'-0"x8'-0"	2.50	2.16	2.50
8'-8"x12'-0" (ADVANCESPAN)	2.00	2.00	

TABLE 3: EXPANSION ANCHOR B DECK INSTALLATION CRITERIA

NOMINAL ANCHOR DIAMETER (IN)	1/2"	5/8"
EFFECTIVE MIN EMBEDMENT (IN)	2	2 3/4
MIN ANCHOR SPACING (IN)	6 3/4	8 1/4
MIN CONCRETE TOPPING (IN)	2 1/4	3 1/4

NOTES:
1. SEE GENERAL NOTES FOR ANCHOR REQUIREMENTS.
2. SEE DETAIL 1 FOR REMAINING INFORMATION NOT SHOWN ON DETAIL 2.
3. SEE TABLE 3 FOR EXPANSION ANCHOR B DECK INSTALLATION CRITERIA.

2 CONNECTION BETWEEN B DECK LOWER FLUTES (OPTION 2)
N.T.S.

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Design: JEB Job number: B8769007.01
Drawn: PGM/MLH Rev: S13
Check: AC Scale: NTS
Date: 12/20/2022

OPM-0544: Reviewed for Code Compliance by Jeffrey Kikumoto 20 of 30

1 CONNECTION TO STRUCTURAL STEEL
1 1/2" = 1'-0"

TABLE 1: MAXIMUM S₂₄ VALUES PER NUMBER OF SHOTPIES, GRIDLOCK SPACING, AND BRACE ANGLE (°)

GRIDLOCK SPACING	NUMBER OF SHOTPIES					
	30°-40°	41°-44°	45°	46°-50°	51°-60°	30°-60°
12'-0"x12'-0"	1.15	1.08	1.06	0.96	0.74	1.38
12'-0"x8'-0"	1.73	1.61	1.58	1.43	1.11	2.00
8'-0"x8'-0"	2.50	2.42	2.38	2.15	1.67	2.50
8'-8"x12'-0" (ADVANCESPAN)	2.00		1.57	2.00		

TABLE 1 NOTES:
1. SHOTPIES INSTALLED IN STAGGERED HOLES ON DIAGONAL.
2. GRIDLOCK SPACING AS CHOSEN PER SHEET S3.

NOTES:
1. BEAM FLANGE THICKNESS SHALL NOT BE LESS THAN 1/4" OR MORE THAN 3/8".
2. FRAMING MEMBERS SHALL BE DESIGNED TO CARRY CEILING LOADS, RDP TO VERIFY.
3. RDP IN RESPONSIBLE CHARGE, I.O.R. AND CONTRACTOR SHALL VERIFY THAT NO PAF IS INSTALLED IN THE PROTECTED ZONE OF ANY STEEL MEMBER. SEE ANSI/AISC 341-10.
4. MINIMUM F_y = 30 KSI FOR STEEL BEAM.
5. RDP IN RESPONSIBLE CHARGE TO CONFIRM THAT STRUCTURAL STEEL BEAM IS SUFFICIENT TO DEVELOP THE LOAD WHERE THE BRACE IS PERPENDICULAR TO THE BEAM.
6. FOR PAF INSTALLED IN STEEL, THE FASTENER PENETRATION SHALL HAVE THE ENTIRE POINTED END OF THE FASTENER DRIVEN THROUGH THE STEEL MEMBER, EXCEPT AS NOTED IN CURRENT REPORTS FROM TESTING AGENCIES ACCEPTABLE TO HCAI.

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Design: JEB Job number: B8769007.01
Drawn: PGM/MLH Rev: S14
Check: AC Scale: AS INDICATED
Date: 12/20/2022

OPM-0544: Reviewed for Code Compliance by Jeffrey Kikumoto 21 of 30

1 CONNECTION TO SAWN TIMBER
1 1/2" = 1'-0"

TABLE 1: MAXIMUM S₂₄ VALUES PER NUMBER OF SHOTPIES, GRIDLOCK SPACING, AND BRACE ANGLE (°)

GRIDLOCK SPACING	NUMBER OF SHOTPIES					
	30°-40°	41°-44°	45°	46°-50°	51°-60°	30°-60°
12'-0"x12'-0"	1.15	1.08	1.06	0.96	0.74	1.38
12'-0"x8'-0"	1.73	1.61	1.58	1.43	1.11	2.00
8'-0"x8'-0"	2.50	2.42	2.38	2.15	1.67	2.50
8'-8"x12'-0" (ADVANCESPAN)	2.00		1.57	2.00		

TABLE 1 NOTES:
1. SHOTPIES INSTALLED IN STAGGERED HOLES ON DIAGONAL.
2. GRIDLOCK SPACING AS CHOSEN PER SHEET S3.

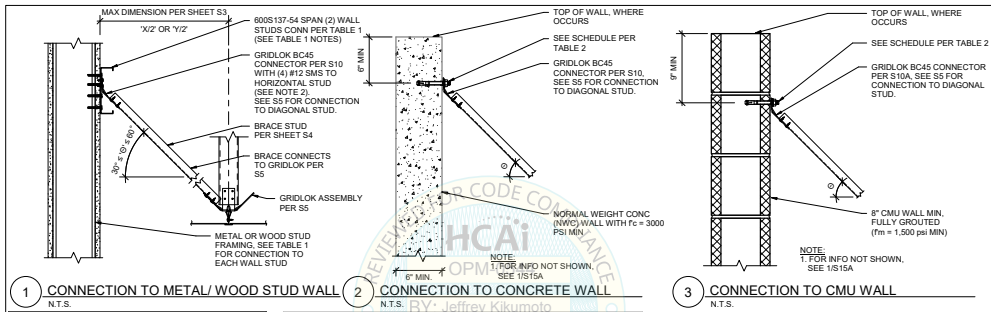
NOTES:
1. FRAMING MEMBERS SHALL BE DESIGNED TO CARRY CEILING LOADS, RDP TO VERIFY.
2. SCREWS SHOWN ARE BASED ON DOUGLAS FIR LARCH WOOD MEMBERS. (WOOD SCREWS TO BE IN CONFORMANCE W/ ANSI B18.6.1).
3. RDP IN RESPONSIBLE CHARGE TO CONFIRM THAT THE WOOD BEAM IS SUFFICIENT TO CARRY THE LOAD FROM THE BRACE.
4. ALL BRACE ANGLES, Ø, RANGING FROM 30° TO 60° ARE APPLICABLE.

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Check: AC Scale: AS INDICATED
Date: 12/20/2022

OPM-0544: Reviewed for Code Compliance by Jeffrey Kikumoto 22 of 30



WALL STUD GAUGE	MAX LAYER OF GYP BD	CONN TO EACH WALL STUD
METAL STUDS 20 GA MIN (33 KSI)	1	(6) #10 SMS
METAL STUDS 18 GA MIN (33 KSI)	2	(10) #10 SMS
METAL STUDS 16 GA MIN (33 KSI)	1	(5) #12 SMS
WOOD STUDS, 2x MIN.	2	(6) #12 SMS
WOOD STUDS, 2x MIN.	2	(6) #14 WOOD SCREWS W/ MIN 1/2\"/>

WALL TYPE	ANCHOR TYPE	DIAMETER (IN)	EFFECTIVE MIN EMBEDMENT (IN)
CONCRETE	KB-T22	1/2	3 1/4
CMU	KH-EZ	5/8	5

MAX SPAN	BRACE STUD SIZE
6'-6"	2505 162-33 (20 GA)
14'-0"	4005300-54 (16 GA)

TABLE 1 NOTES:
 1. WHERE (6) SCREWS OR MORE ARE REQUIRED, USE 6005137-54 IN LIEU OF 6005137-54.
 2. FOR BRACE ANGLES, θ , RANGING BETWEEN 30° TO 55°, (5) #14 WOOD SCREWS ALLOWED TO BE USED.
 3. FOR WOOD CONN, SEE NOTES ON S15 FOR ATTACHMENTS.

TABLE 2 NOTES:
 1. HLT-KH-EZ MUST BE INSTALLED IN THE FACE OF CMU SHELLS A MINIMUM OF 1-3/8" FROM ANY VERTICAL MORTAR JOINT & LIMITED TO ONE ANCHOR PER CELL.
 2. WHEN USING HLT-KH-EZ ANCHOR ATTACHMENT TO CMU WALL, SEOR MUST VERIFY:
 A. MASONRY IS NOT CRACKED AS DEFINED IN ICC-ES AC108, CALCULATION RED TO SHOW MASONRY WALL WOULD NOT CRACK UNDER DESIGN EQ LOADS UNDER ALL SERVICE LOAD CONDITIONS WALL HAS TO REMAIN ELASTIC.
 B. PRODUCT USE REQUIREMENTS IN ACCORDANCE WITH ESR-3056 IS SATISFIED.
 C. OVERSTRENGTH FACTOR AS REQUIRED FOR ANCHORAGE TO CONCRETE AND CMU.
 3. RDP SHALL DESIGN OR VERIFY WALLS FOR THE CEILING LOADS
 2. TABLE 1 AND 2 ARE APPLICABLE TO ALL BRACE ANGLES, θ , RANGING FROM 30° TO 60°.
 3. WALL CONNECTION PERMITTED ONLY AT ATTACHED CEILING JOINT. SEE S3.

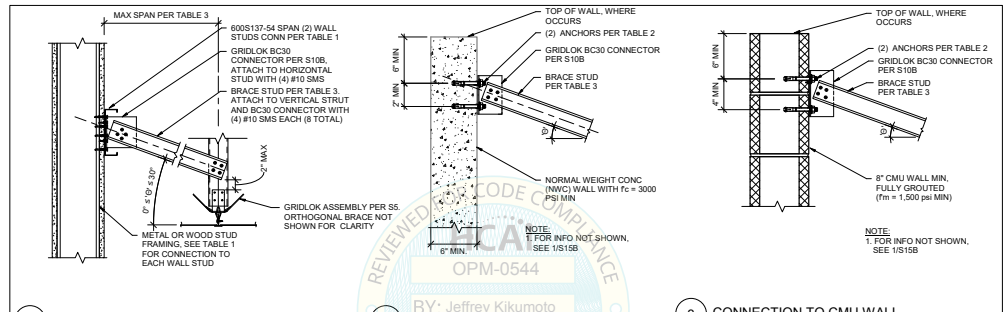
30° - 60°

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 AND GRIDLOK-10 CONNECTORS
 GRIDLOK OPM-0544

BY: Jeffrey Kikumoto
 DATE: 12/20/2022

Sheet No. S15A
 Scale: AS INDICATED
 Date: 12/20/2022



WALL STUD GAUGE	MAX LAYER OF GYP BD	CONN TO EACH WALL STUD
METAL STUDS 20 GA MIN (33 KSI)	1	(5) #10 SMS
METAL STUDS 18 GA MIN (33 KSI)	2	(6) #10 SMS
METAL STUDS 16 GA MIN (33 KSI)	1	(4) #10 SMS
WOOD STUDS, 2x MIN.	2	(4) #10 WOOD SCREWS W/ MIN 1/2\"/>

WALL TYPE	ANCHOR TYPE	DIAMETER (IN)	EFFECTIVE MIN EMBEDMENT (IN)
CONCRETE	KB-T22	1/2	3 1/4
CMU	KH-EZ	1/2	4 1/4

MAX SPAN	BRACE STUD SIZE
6'-6"	2505 162-33 (20 GA)
14'-0"	4005300-54 (16 GA)

TABLE 1 NOTES:
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TABLE 2 NOTES:
 1. HLT-KH-EZ MUST BE INSTALLED IN THE FACE OF CMU SHELLS A MINIMUM OF 1-3/8" FROM ANY VERTICAL MORTAR JOINT & LIMITED TO ONE ANCHOR PER CELL.
 2. WHEN USING HLT-KH-EZ ANCHOR ATTACHMENT TO CMU WALL, SEOR MUST VERIFY:
 A. MASONRY IS NOT CRACKED AS DEFINED IN ICC-ES AC108, CALCULATION RED TO SHOW MASONRY WALL WOULD NOT CRACK UNDER DESIGN EQ LOADS UNDER ALL SERVICE LOAD CONDITIONS WALL HAS TO REMAIN ELASTIC.
 B. PRODUCT USE REQUIREMENTS IN ACCORDANCE WITH ESR-3056 IS SATISFIED.
 C. OVERSTRENGTH FACTOR AS REQUIRED FOR ANCHORAGE TO CONCRETE AND CMU.

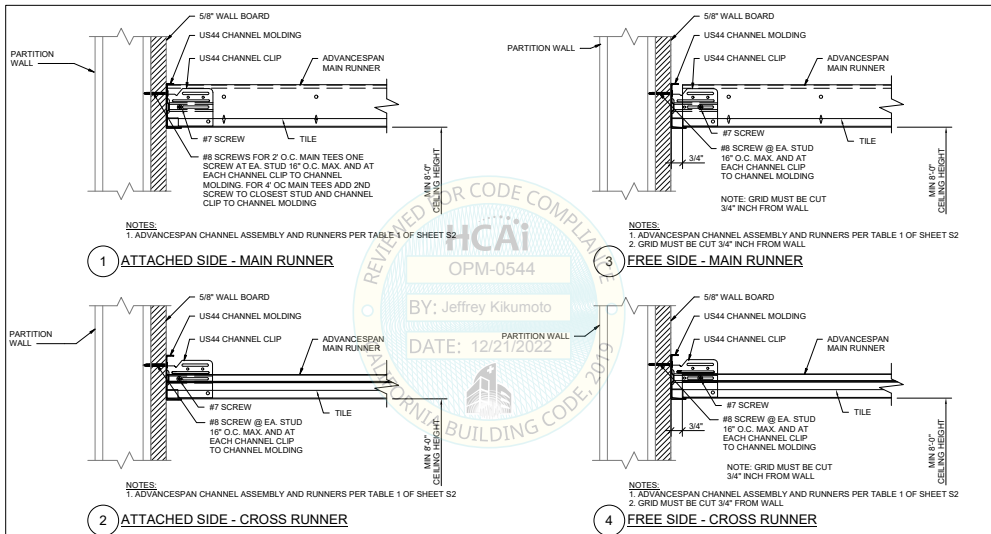
0° - 30°

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Sheet No. S15B
 Scale: AS INDICATED
 Date: 12/20/2022



1 ATTACHED SIDE - MAIN RUNNER

2 ATTACHED SIDE - CROSS RUNNER

3 FREE SIDE - MAIN RUNNER

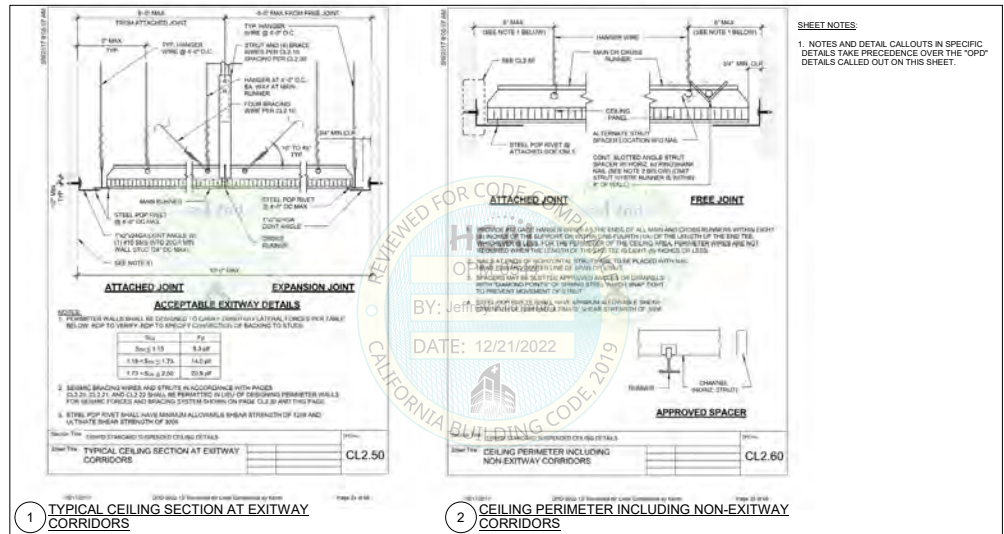
4 FREE SIDE - CROSS RUNNER

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 DATE: 12/21/2022

Sheet No. S16
 Scale: AS INDICATED
 Date: 12/20/2022



1 TYPICAL CEILING SECTION AT EXITWAY CORRIDORS

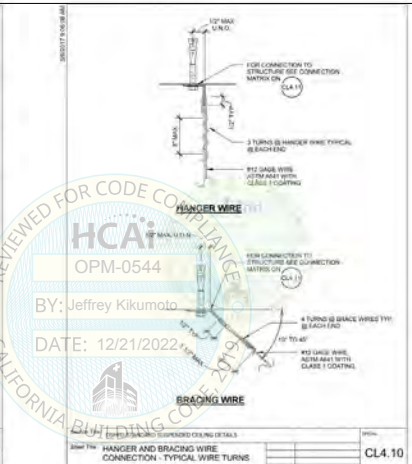
2 CEILING PERIMETER INCLUDING NON-EXITWAY CORRIDORS

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BY: Jeffrey Kikumoto
 DATE: 12/21/2022

Sheet No. S17
 Scale: NTS
 Date: 12/20/2022



SHEET NOTES:
 1. NOTES AND DETAIL CALLOUTS IN SPECIFIC DETAILS TAKE PRECEDENCE OVER THE "OPD" DETAILS CALLED OUT ON THIS SHEET.
 2. FOR THE SCOPE OF THIS OPM BRACING WIRES HAVE BEEN REPLACED BY THE GRIDLOK BRACING SYSTEM AND ARE NOT APPLICABLE FOR USE UNDER THIS OPM. GRIDLOK BRACES TO BE INSTALLED AT 45 DEGREES AS INDICATED ON SPECIFIC DETAIL SHEETS.

1 GENERAL NOTES - PAGE 3 OF 4

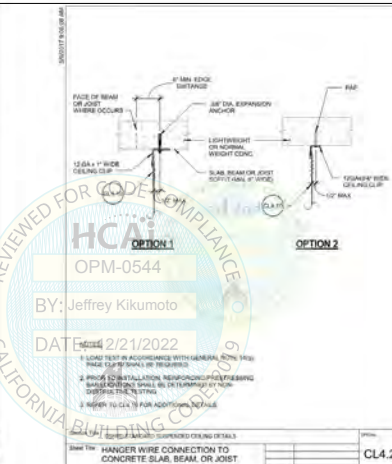
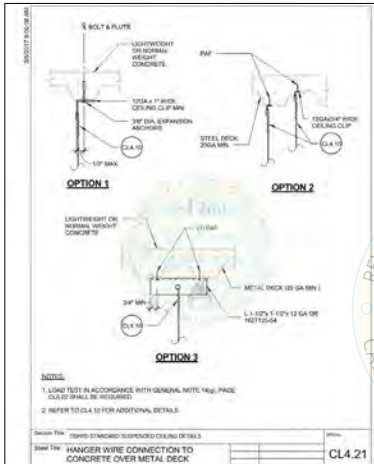
2 HANGER AND BRACING WIRE CONNECTION - TYPICAL WIRE TURNS

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 GRIDLOK OPM-0544
 The OPD-0002-13 DETAILS (CL.02, CL.4.10)

Drawn: JEB Job number: B8769007.01 Sheet: S18
 Design: PGMLH Rev: _____
 Check: AC Scale: NTS
 Date: 12/20/2022



SHEET NOTES:
 1. NOTES AND DETAIL CALLOUTS IN SPECIFIC DETAILS TAKE PRECEDENCE OVER THE "OPD" DETAILS CALLED OUT ON THIS SHEET.
 2. FOR THE SCOPE OF THIS OPM BRACING WIRES HAVE BEEN REPLACED BY THE GRIDLOK BRACING SYSTEM AND ARE NOT APPLICABLE FOR USE UNDER THIS OPM.

1 HANGER WIRE CONNECTION TO CONCRETE OVER METAL DECK

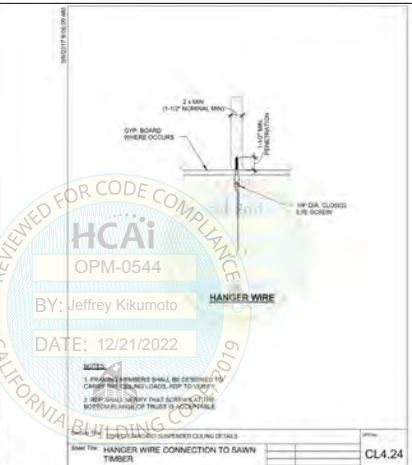
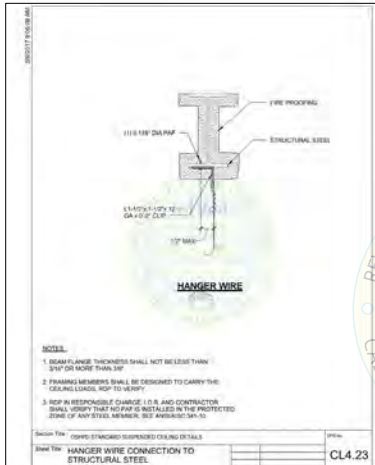
2 HANGER WIRE CONNECTION TO CONCRETE SLAB, BEAM, OR JOIST

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OPM-0544: Reviewed for Code Compliance by Jeffrey Kikumoto

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 The OPD-0002-13 DETAILS (CL.21, CL.22)

Drawn: JEB Job number: B8769007.01 Sheet: S19
 Design: PGMLH Rev: _____
 Check: AC Scale: NTS
 Date: 12/20/2022



SHEET NOTES:
 1. NOTES AND DETAIL CALLOUTS IN SPECIFIC DETAILS TAKE PRECEDENCE OVER THE "OPD" DETAILS CALLED OUT ON THIS SHEET.
 2. FOR THE SCOPE OF THIS OPM BRACING WIRES HAVE BEEN REPLACED BY THE GRIDLOK BRACING SYSTEM AND ARE NOT APPLICABLE FOR USE UNDER THIS OPM.

1 HANGER WIRE CONNECTION TO STRUCTURAL STEEL

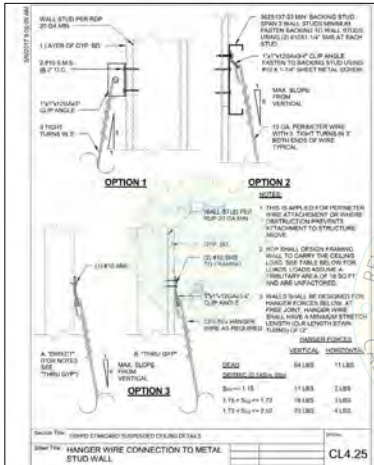
2 HANGER WIRE CONNECTION TO SAWN TIMBER

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 The OPD-0002-13 DETAILS (CL.23, CL.24, CL.24)

Drawn: JEB Job number: B8769007.01 Sheet: S20
 Design: PGMLH Rev: _____
 Check: AC Scale: NTS
 Date: 12/20/2022



SHEET NOTES:
 1. NOTES AND DETAIL CALLOUTS IN SPECIFIC DETAILS TAKE PRECEDENCE OVER THE "OPD" DETAILS CALLED OUT ON THIS SHEET.
 2. FOR THE SCOPE OF THIS OPM BRACING WIRES HAVE BEEN REPLACED BY THE GRIDLOK BRACING SYSTEM AND ARE NOT APPLICABLE FOR USE UNDER THIS OPM.

1 HANGER WIRE CONNECTION TO METAL STUD WALL

2 HANGER WIRE CONNECTION TO METAL STUD WALL

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Drawn: JEB Job number: B8769007.01 Sheet: S21
 Design: PGMLH Rev: _____
 Check: AC Scale: NTS
 Date: 12/20/2022