



DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION

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

OFFICE USE ONLY

APPLICATION #: OPM-0585

HCAI Preapproval of Manufacturer's Certification (OPM)

Type: [X] New [ ] Renewal/Update

Manufacturer Information

Manufacturer: DIRT Environmental Solutions

Manufacturer's Technical Representative: Trevor Didluck

Mailing Address: 7303-30th ST SE, Calgary, AB T2C1N6

Telephone: (403) 471-7274

Email: tdidluck@dirtt.com

Product Information

Product Name: Curvilinear, Rectilinear, Blade, and Single Sided Glass Walls. Solid Walls.

Product Type: Interior Partition Walls

Product Model Number: See Drawings for Part Numbers

General Description: Interior partition walls consisting of aluminum extrusion frames that capture glass or support mdf Tiles. Frames are screwed together and typically weigh 5.5 psf or less. Walls are mechanically attached at the sill & laterally braced at the head with wire tiebacks, stud tiebacks, and/or ceiling track to bulkhead with mechanical fasteners

Applicant Information

Applicant Company Name: DIRT Environmental Solutions

Contact Person: Trevor Didluck

Mailing Address: 7303-30th ST SE, Calgary, AB T2C1N6

Telephone: (403) 471-7274

Email: tdidluck@dirtt.com

Title: Director Code Compliance

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"

STATE OF CALIFORNIA - HEALTH AND HUMAN SERVICES AGENCY





DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION

Registered Design Professional Preparing Engineering Recommendations

Company Name: DIRTT ENVIRONMENTAL SOLUTIONS
Name: Jeremy Klaas California License Number: CE82314
Mailing Address: 2830 Curry Ct. Ste 8, Green Bay, WI 54311
Telephone: (920) 819-8733 Email: jklaas@dirtt.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: 04/25/2022
Name: William Staehlin Title: Senior Structural Engineer
Condition of Approval (if applicable):

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"

STATE OF CALIFORNIA - HEALTH AND HUMAN SERVICES AGENCY



## GENERAL NOTES:

- A1. This OSHPD Preapproval of Manufacturer's Certification (OPM) is based on the CBC 2019. The demand (design forces) for use with this OPM shall be based on the CBC 2019.
- A2. All Construction, Testings, and Inspections shall conform to the California Building Code (CBC), 2019 Edition
- A3. Seismic Design Forces per 2019 CBC 1613A & ASCE 7-16:  
 a. Risk Category: IV. Component Importance Factor:  $I_p = 1.5$   
 b. Component Amplification/Response Factors:  $a_p = 1.0 / R_p = 2.5$   
 c.  $\Omega_o = 2.0$  (Concrete anchor design)
- Note that if site specific seismic design forces/design ground accelerations exceed the maximum values shown in these drawings, contact DIRT Environmental Solutions directly for a custom code compliant seismic solution.
- A4. Common weights of the DIRT wall system and components are as follows:  
 a. 1/2" thick mdf tile = 2 psf  
 b. 1/4" (6mm) thick glass tile/panel = 3.5 psf  
 c. Solid wall frame without tiles = 1.5 psf  
 d. Solid wall frame with 1/2" thick mdf tiles cladded both sides = 5.5 psf  
 e. Solid wall frame with 1/4" thick glass tiles cladded both sides = 8.4 psf  
 f. Glass wall frame without glass panel = 1 psf  
 g. Glass wall frame with 1/4" (6mm) glass panel = 4.5 psf  
 h. 3/8" (10mm) thick glass tile/panel = 5.5 psf  
 i. Glass wall frame with 3/8" (10mm) thick glass panel = 6.5 psf  
 j. 1/2" (12mm) thick glass tile/panel = 7 psf  
 k. Glass wall frame with 1/2" (12mm) thick glass panel = 8 psf
- Weights of DIRT product/components may also be obtained by contacting DIRT directly.
- A5. Typical details apply to all construction except where shown differently elsewhere.
- A6. The supporting wall structure must be capable of withstanding the loads imposed by DIRT partition wall system(s) acting in conjunction with the loads specified in the paragraph above. In addition, the structure must provide suitable anchorage for the DIRT partition walls and must be erected within specified building tolerances.
- A7. Unless detailed, specified, or indicated otherwise, construction shall be as indicated in the applicable typical details and general notes. Typical details are meant to apply even though no reference at specific locations or in specific drawings.
- A8. Notify the structural engineer of any conflicts and do not proceed with the work until conflicts are resolved.
- A9. Contractor shall inspect all existing conditions which affect the work shown and shall notify engineer of any existing conditions which conflict with or differ from the new work shown. Contractor shall not proceed with the work until these conflicts and/or differences are resolved. Contractor shall field verify all dimensions prior to work.
- A10. The contractor is completely responsible for the conduct of the work, including all construction methods and procedures; site safety; and methods, design, and material for temporary vertical and lateral support of existing and new structures. Engineer's site observation visits shall not be interpreted as a review of contractor's safety measures.
- A11. Anchor forces shown on the drawings are a combination of ASD and LRFD loads and are noted as such. Anchor forces are based on  $S_{DS} = 1.98g$  and  $z/h = 1$  which are the maximum's associated with this OPM, though these maximums do not occur simultaneously.
- A12. Where dissimilar metals are in contact, protect surfaces with a coat of bituminous paint. Separation of dissimilar materials is not the responsibility of DIRT.
- A13. If a site specific job has associated  $S_{DS}$  and  $z/h$  values that fallout outside the range reported in this OPM, the manufacturer, DIRT, has other solutions and details that are not contained within this OPM. Such site specific jobs should be brought to DIRT's attention for further engineering analysis.

## INSPECTION & OBSERVATION

- B1. It is the contractors responsibility to coordinate all inspections by the enforcement agency, as per section 110 of the CBC, 2019 Edition. In addition the contractor will coordinate all special inspections and structural observation with the structural engineer of record per section 1704A of the 2019 CBC. Additional costs incurred by the failure of the contractor to coordinate inspection requirements shall be the responsibility of the contractor. All special inspections not done by the structural engineer shall be done by an approved agent retained by the owner.

## INSPECTION / TESTING OF CONCRETE ANCHORS:

- C1. Testing/Inspections per CBC 2019 Sections 1705A3.8, 1705A.12.5, and 1910A.5
- C2. Approved Concrete Anchors:  
 a. 1/4" and 3/8" Ø Hilti Kwik HUS-EZ (ICC-ESR-3027).  
 b. 3/8" Ø Dewalt Power-Stud+ SD2 (ICC-ESR-2502).  
 c. 1/4" Ø Dewalt Screw-Bolt+ (ICC-ESR-3889).  
 d. 0.157" Ø Hilti X-U Powder Actuated Shot Pin (ICC-ESR-2269)
- C3. Concrete substrate for anchor design/installation shall have a minimum concrete compressive strength ( $f'_c$ ) = 3000 psi, normal or sand-lightweight. Anchors are acceptable for use in cracked concrete with no supplementary reinforcement necessary (Condition B).
- C4. Testing  
 a. Testing is required for 3/8" Ø Dewalt Power-Stud+ SD2, 1/4" and 3/8" Ø Hilti Kwik HUS-EZ (KH-EZ), 1/4" Ø Dewalt Screw-Bolt+ anchors, and 0.157" Ø Hilti X-U Powder Actuated Shot Pin Anchor. Testing of post-installed anchors shall be done in the presence of the special inspector and a report of the results shall be submitted to OSHPD.  
 b. Test Loads:  
 i. The 3/8" Ø Power-Stud+ SD2 recommended installation torque per ICC-ESR-2502 shall qualify as the required test load:  $T_{inst} = 20 \text{ ft}\cdot\text{lb}$   
 ii. The following anchors shall be tension tested to one and quarter (1.25) times the maximum design strength:  
 - 0.157" Ø Hilti X-U Powder Actuated Shot Pin (3/4" Embedment) =  $1.25 * 66 \text{ lb} = 83 \text{ lb}$ , (1" Embedment) =  $1.25 * 107 \text{ lb} = 134 \text{ lb}$   
 Exception: Testing of power actuated fasteners used to attach the DIRT base track to the floor is not required where there are at least three fasteners per segment of track  
 - 1/4" Ø Hilti Kwik HUS-EZ =  $1.25 * 356 \text{ lb} = 445 \text{ lb}$   
 - 1/4" Ø Dewalt Screw-Bolt+ =  $1.25 * 356 \text{ lb} = 445 \text{ lb}$   
 - 3/8" Ø Hilti Kwik HUS-EZ =  $1.25 * 681 \text{ lb} = 851 \text{ lb}$
- C5. Test Acceptance Criteria  
 a. The torque wrench method shall be used on the The 3/8" Ø Power-Stud+ SD2 anchors as criteria for anchor test acceptance. A calibrated torque wrench must attain the specified torque for mentioned anchor type within one-quarter (1/4) turn of the nut.  
 b. The hydraulic ram method shall be used on the 0.157" Ø Hilti X-U Powder Actuated Shot Pin, 1/4" Ø Hilti HUS-EZ, 3/8" Ø Hilti Kwik HUS-EZ, and 1/4" Ø Dewalt Screw-Bolt+ anchors as criteria for anchor test acceptance. Anchors shall maintain the above mentioned test load tension requirement for a minimum of 15 seconds and shall exhibit no discernible movement during the tension test as evidenced by the loosening of the washer under the nut.

## RESPONSIBILITIES OF THE STRUCTURAL ENGINEER OF RECORD (SEOR) OR PROJECT PRINCIPAL - IN - CHARGE

- D1. Verify that the concrete slab and/or deck which the wall is anchored to meets minimum thickness and compressive strength.
- D2. Verify that the anchors are an adequate distance from any slab openings or edges.
- D3. Verify that the anchors are an adequate distance from any new or existing anchors.
- D4. Design any supplementary members and their attachment which the wall is anchored to.
- D5. Verify the adequacy of any existing members and their attachment which the wall is anchored to for the forces exerted on them by the wall in addition to all other loads and forces.
- D6. Verify that the installation is in conformance with the 2019 CBC and with the details shown in this pre-approval.
- D7. Manufacturer, project principal-in-charge, and/or SEOR must verify that the wall's actual weight, CG location, anchor locations, anchor details and the material and gauge of the wall where attachments are made agree with the information shown in this pre-approval.
- D8. Verify that the existing wood joist which the wall is anchored to has a minimum specific gravity, SG, equal to 0.42 and has capacity to support the indicated load.
- D9. Verify that the suspended ceiling grid does not tie/connect to or support off the partition wall.
- D10. Verify that the top seismic braces are clear, minimum of 6", from building duct, pipe and conduit to avoid impact during an earthquake.

## MATERIAL SPECIFICATION & DESIGN CRITERIA

- E1. Glass panels shall be 1/4" thick fully tempered with maximum panel dimensions as specified in the drawings.

- E2. Solid wall tiles shall be 1/2" thick medium density fiberboard (MDF) with a minimum Modulus of Rupture (MOR) = 3000 psi.
- E3. Deflection to be a limit of L/175 or 3/4" maximum for glass wall frame members & panels. Deflection to be a limit of L/120 for solid wall frame members and for members with flexible finishes.
- E4. Aluminum members shall be alloy-temper 6063-T6 ( $F_y = 25 \text{ ksi}$ ). Members designed per the Aluminum Association's 2015 Aluminum Design Manual.
- E5. Steel plates, threaded rods, and leveler parts shall be minimum ASTM A36 ( $F_y = 36 \text{ ksi}$ ). Steel designed per the AISC 360-16 Specification for Structural Steel.
- E6. Steel welds to be E70XX or better. Steel weld alloy to have a minimum ultimate tensile strength,  $F_u$ , of 70 ksi.
- E7. Steel studs shall be ASTM A1003, Grade 33 Type H (ST33H), minimum 20 gauge (0.0359" thick), and minimum yield strength  $F_y = 33 \text{ ksi}$ . Steel studs designed per AISI S100-16w/S1-18 North American Specification for the Design of Cold-Formed Steel Structural Members.
- E8. Wire to be minimum 12 gauge galvanized, soft-annealed mild carbon steel manufactured in accordance with ASTM A641 (Diameter = 0.106",  $F_y = 48 \text{ ksi}$ ,  $F_u = 63 \text{ ksi}$ , minimum).
- E9. Sheet metal screws designed in accordance with OPD-0001-13 and AISI S100-16w/S1-18 and shall have a minimum yield strength of  $F_y = 30 \text{ ksi}$  and ultimate tensile strength  $F_u = 75 \text{ ksi}$ .
- E10. Wood screws designed in accordance with AWC NDS-18 (ANSI/ASME Standard B18.6.1). Wood members assumed minimum specific gravity (SG) = 0.42 for wood screw design.
- E11. Powers Power-Stud+ SD2, Dewalt Screw-Bolt+, Hilti Kwik HUS-EZ (KH-EZ), and/or Hilti X-U Powder Actuated Shot Pin concrete anchors with specified diameters, embedment depths, minimum concrete slab thicknesses, minimum edge distances, and spacing's shall be used as specified in the drawings. Anchors to be installed per manufacturers' specifications.
- E12. Concrete substrate assumed to be minimum  $f'_c = 3000 \text{ psi}$ , sand-lightweight, cracked, and no supplementary reinforcement present (Condition B) for anchor design.

## INSTRUCTIONS TO END USERS

- F1. For more information, please call:  
 DIRT Environmental Solutions LTD  
 7303 30 Street SE  
 Calgary, Canada T2C 1N6  
 (403) 723-5000
- F2. There are six wall profile types:  
 a. Curvilinear Glass Wall See Sheet A1  
 b. Rectilinear Glass Wall See Sheet A1  
 c. Blade Glass Wall: See Sheet A1  
 d. Single-Sided Glass Wall: See Sheet A1  
 e. Evil-Twin Glass Wall See Sheet A1  
 f. Solid Wall: See Sheet A2
- F3. Wall Bracing Details:  
 Sill: See Sheets 5, 6, and 7  
 Header with Tiebacks: See Sheets 8-17  
 Header with Ceiling Track: See Sheet 18

## DRAWING INDEX

Sheet(s):	Description:
<i>In scope of OPM:</i>	
1	General Notes
2	Example Elevation
3	Wall Sections and Bracing
4	Top of Wall Tieback Bracing Plan
5-6	Bottom of Wall Bracing
7	Bottom of Wall Attachment Parts
8	Top Of Wall Tieback Bracing
9	Top of Wall Tieback Attachment Parts
10	Tieback Attachment to Unfilled Metal Deck
11-15	Tieback Attachments to Concrete Filled Metal Deck
16-17	Tieback Attachments to Wood Deck
18	Top of Wall Attachment to Bulkhead

## Appendix (Not in Scope of OPM)

- A1 Glass Wall Frame Section Properties  
 A2 Solid Wall Frame Section Properties  
 A3 Top Of Wall Details (Tiebacks Only)

# DIRTT

DIRTT Environmental Solutions Ltd.  
 7303 - 30th Street S.E., Calgary, AB, Canada T2C 1N6  
 403.723.5000 Fax: 403.723.6644 www.dirtt.net

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OSHPD PREAPPROVAL OF MANUFACTURER'S CERTIFICATION (OPM)

SIGNATURE, SEAL, AND DATE OF ENGINEER



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 CLIENT CONTACT:

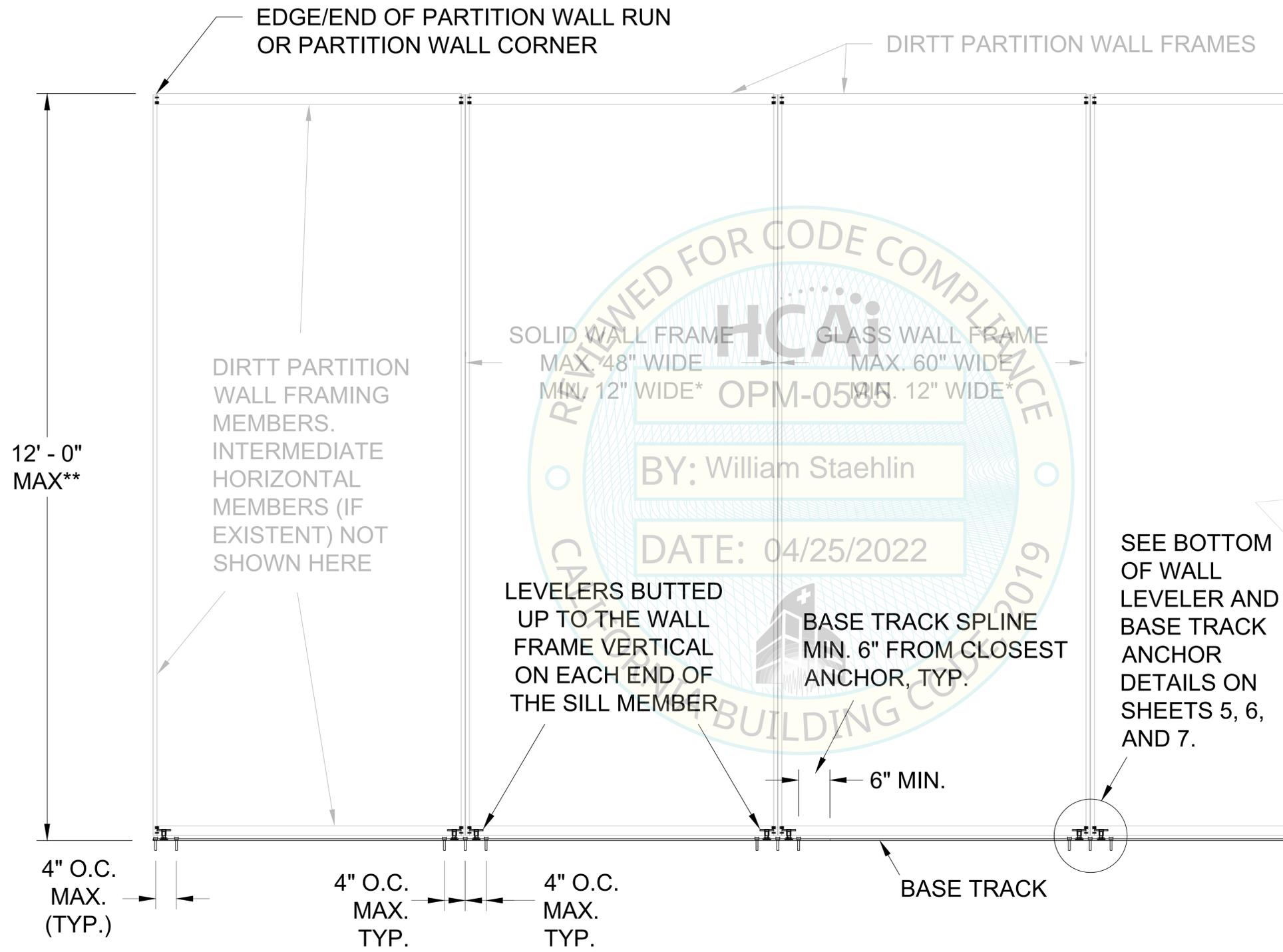
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 2006024

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SCALE: SCALE AS NOTED DATE: 4/9/2021 DRAWN BY: TJD

NOTE THAT TOP OF WALL BRACING NOT SHOWN  
HERE FOR CLARITY; SEE SHEETS 3 AND 4.



\* THERE ARE A FEW SEISMIC CASES WHERE MIN. FRAME WIDTHS NEED TO BE LARGER THAN 12". SEE SHEET 6.  
\*\* DEPENDENT ON PROJECT SPECIFIC SEISMIC CONDITIONS. SEE SHEETS 5 & 6.

1 EXAMPLE WALL ELEVATION  
2 SCALE: NTS

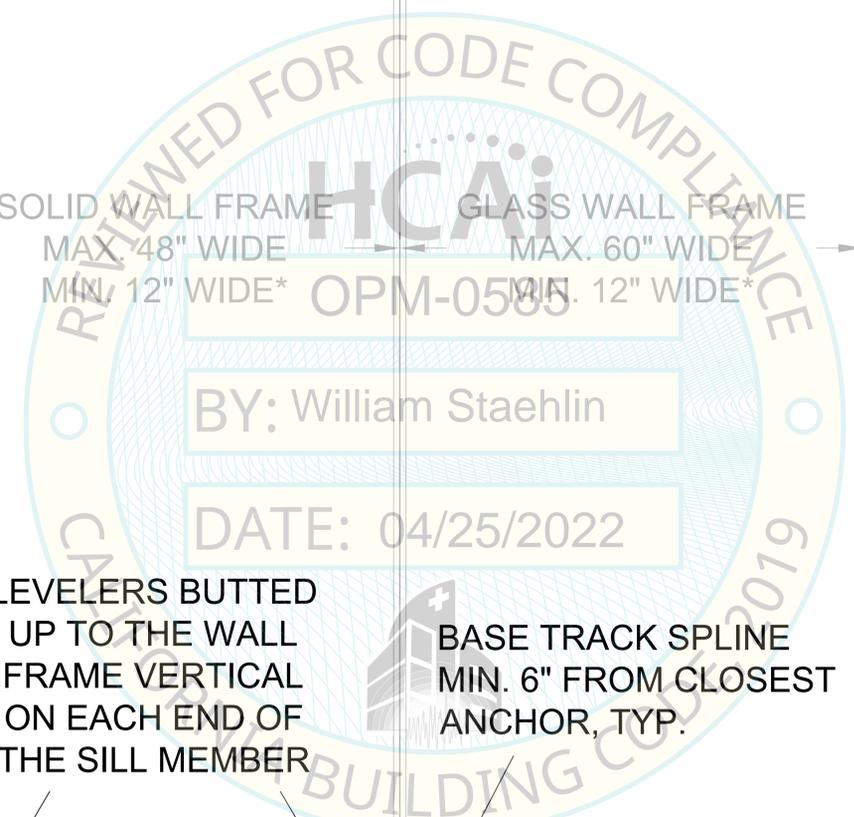
**DIRTT**

DIRTT Environmental Solutions Ltd.  
7303 - 30th Street S.E., Calgary, AB Canada T2C 1N6  
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EXAMPLE ELEVATION

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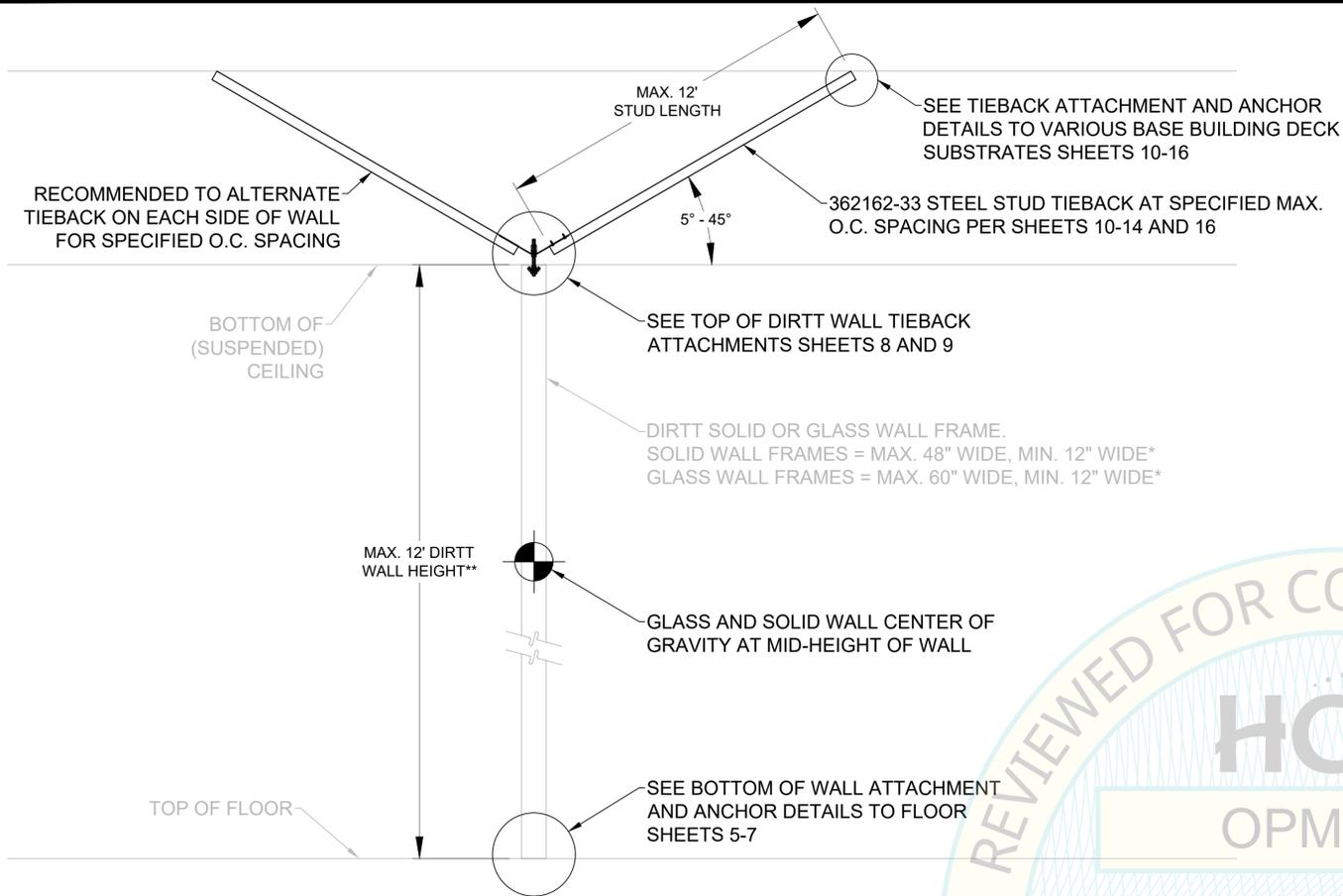


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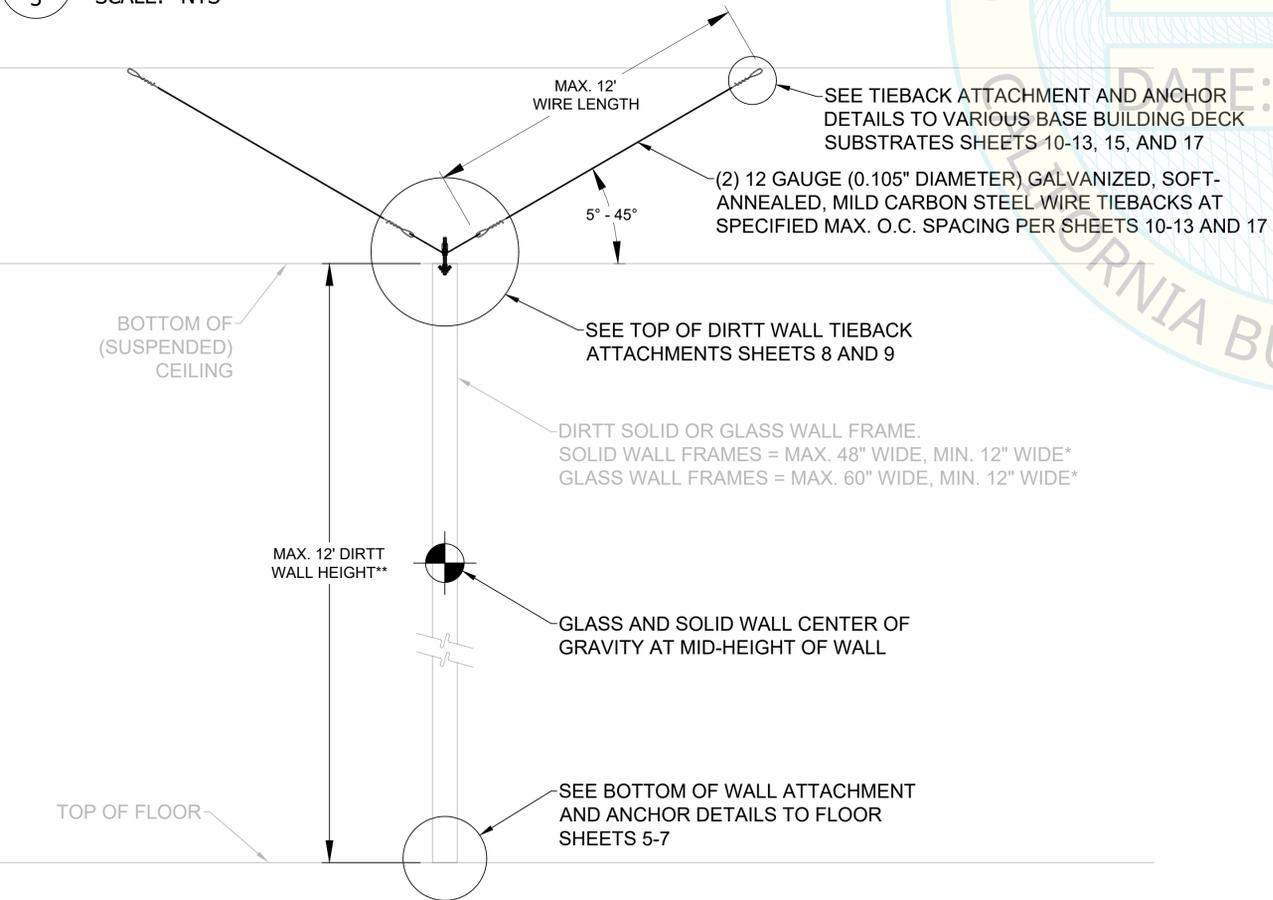
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SHEET NAME:  
**WALL SECTIONS AND BRACING**

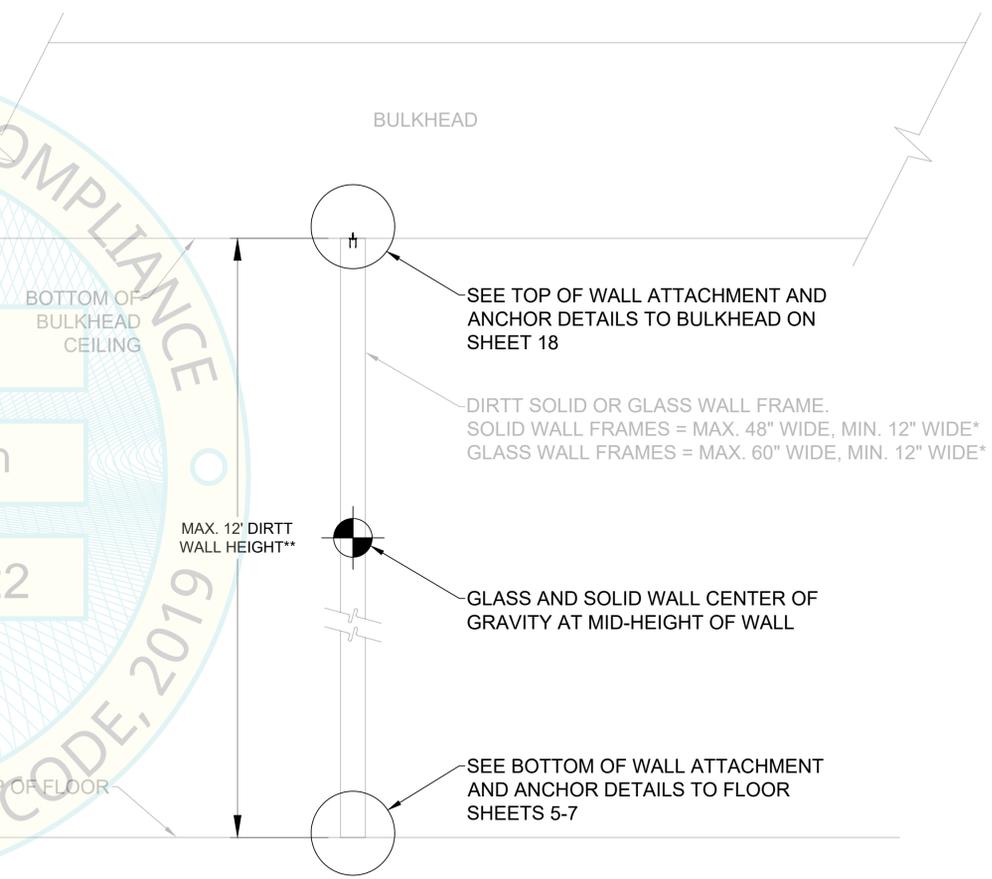
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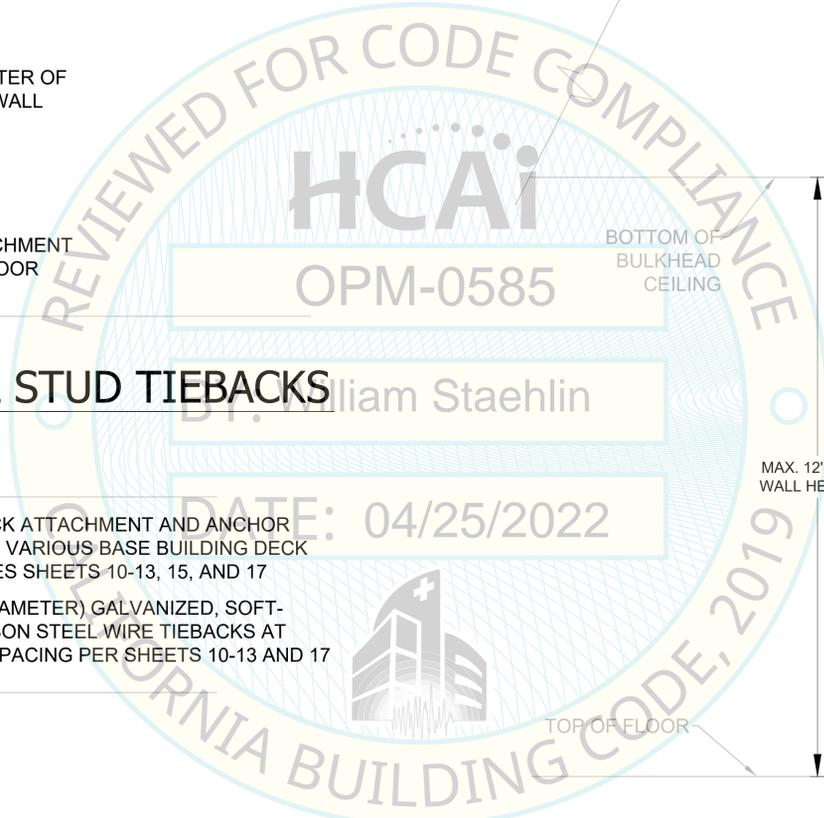
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**3** **GENERIC WALL SECTION W/ TOP OF WALL STUD TIEBACKS**  
SCALE: NTS



**2**  
**3** **GENERIC WALL SECTION W/ TOP OF WALL WIRE TIEBACKS**  
SCALE: NTS



**3**  
**3** **GENERIC WALL SECTION W/ TOP OF WALL BRACED BY BULKHEAD**  
SCALE: NTS



\* THERE ARE A FEW SEISMIC CASES WHERE MIN. FRAME WIDTHS NEED TO BE LARGER THAN 12". SEE SHEET 6.  
\*\* DEPENDENT ON PROJECT SPECIFIC SEISMIC CONDITIONS. SEE SHEETS 5 & 6.

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CERTIFICATION (OPM)**

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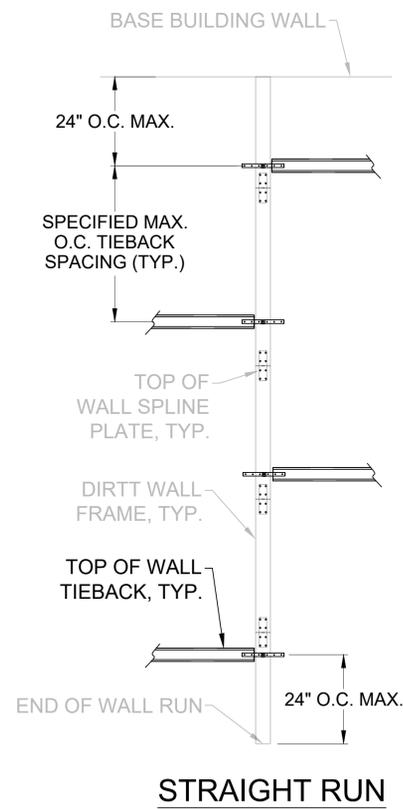
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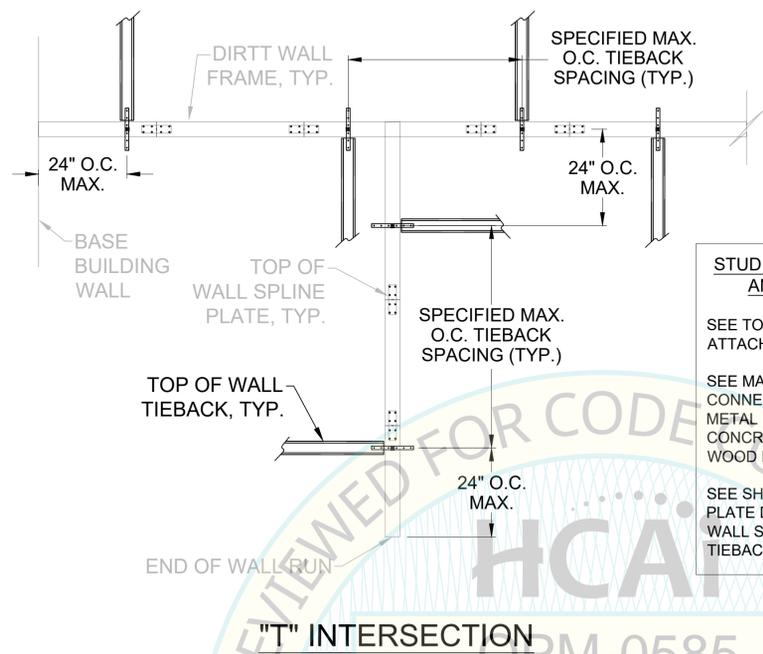
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Top of Wall Tieback Bracing Plan

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**4**

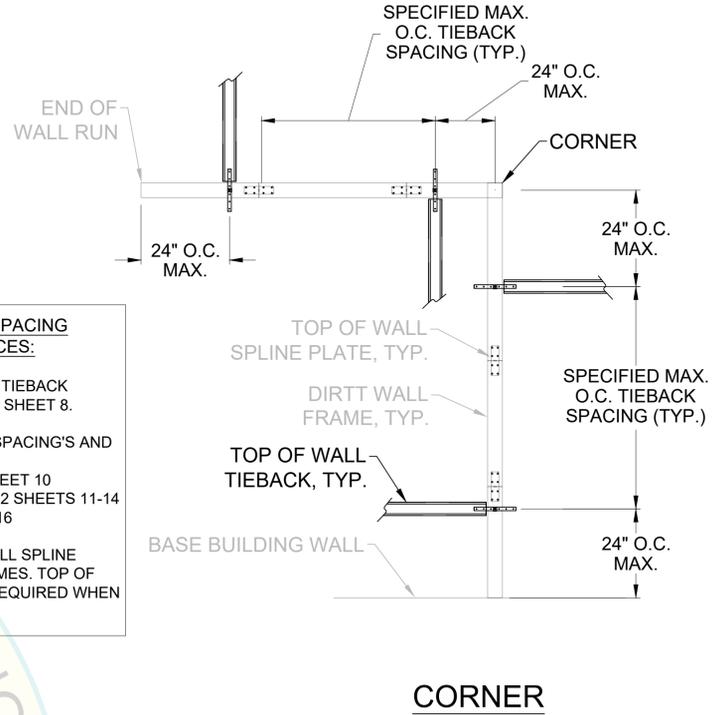
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**STRAIGHT RUN**



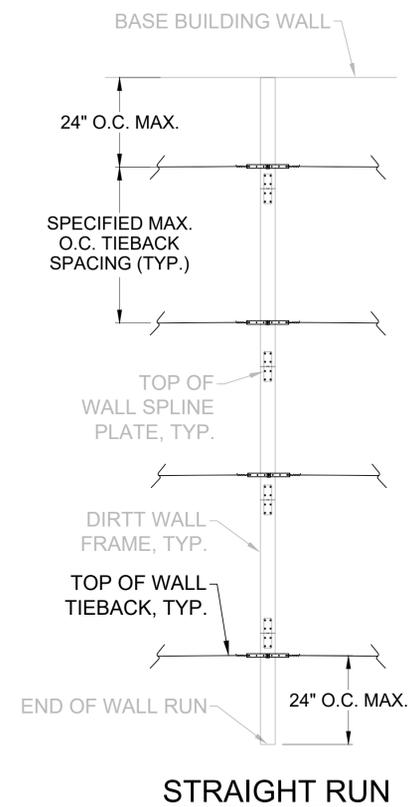
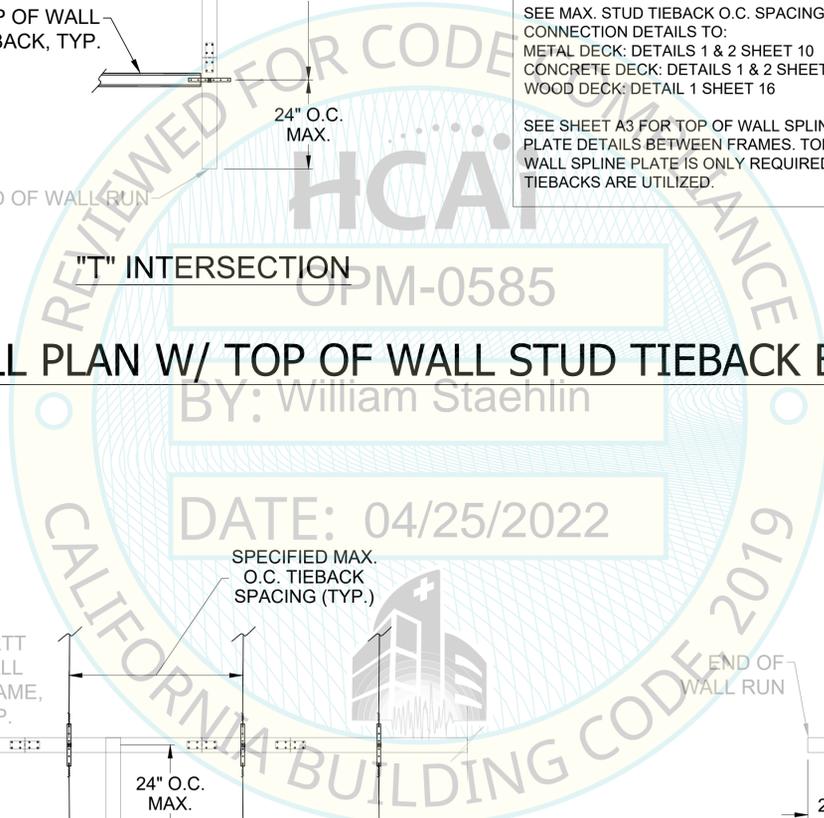
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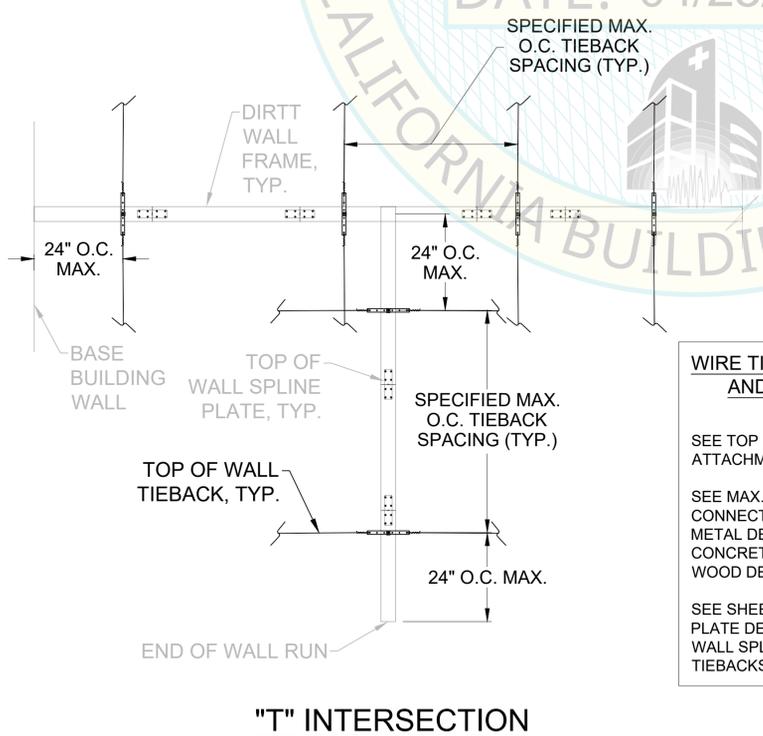
**CORNER**

**STUD TIEBACK MAX. O.C. SPACING AND DETAIL REFERENCES:**  
SEE TOP OF DIRTT WALL STUD TIEBACK ATTACHMENT DETAILS 1 AND 2 SHEET 8.  
SEE MAX. STUD TIEBACK O.C. SPACING'S AND CONNECTION DETAILS TO:  
METAL DECK: DETAILS 1 & 2 SHEET 10  
CONCRETE DECK: DETAILS 1 & 2 SHEETS 11-14  
WOOD DECK: DETAIL 1 SHEET 16  
SEE SHEET A3 FOR TOP OF WALL SPLINE PLATE DETAILS BETWEEN FRAMES. TOP OF WALL SPLINE PLATE IS ONLY REQUIRED WHEN TIEBACKS ARE UTILIZED.

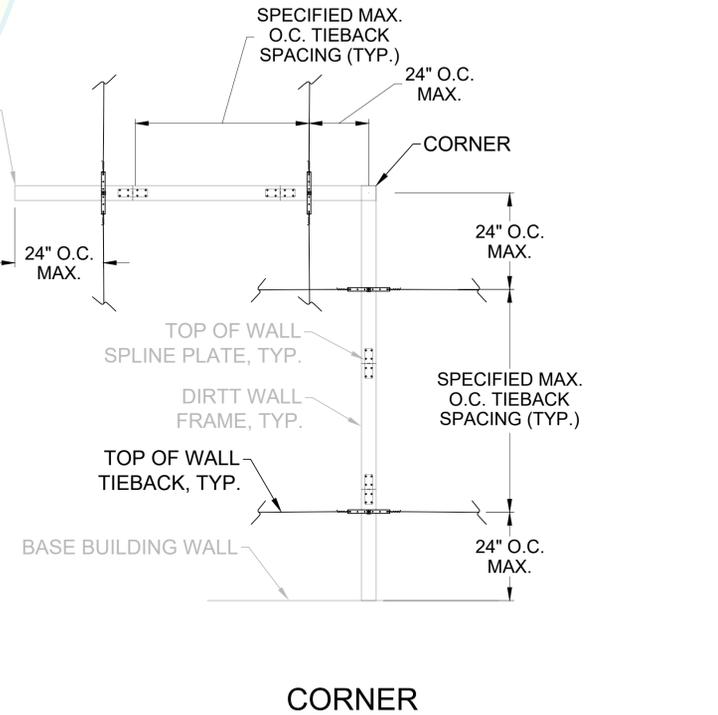
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4 SCALE: NTS



**STRAIGHT RUN**



**"T" INTERSECTION**



**CORNER**

**WIRE TIEBACK MAX. O.C. SPACING AND DETAIL REFERENCES:**  
SEE TOP OF DIRTT WALL WIRE TIEBACK ATTACHMENT DETAILS 3 AND 4 SHEET 8.  
SEE MAX. WIRE TIEBACK O.C. SPACING'S AND CONNECTION DETAILS TO:  
METAL DECK: DETAILS 3 & 4 SHEET 10  
CONCRETE DECK: DETAILS 3 & 4 SHEETS 11-13  
WOOD DECK: DETAIL 1 SHEET 17  
SEE SHEET A3 FOR TOP OF WALL SPLINE PLATE DETAILS BETWEEN FRAMES. TOP OF WALL SPLINE PLATE IS ONLY REQUIRED WHEN TIEBACKS ARE UTILIZED.

**2** **GENERIC WALL PLAN W/ TOP OF WALL WIRE TIEBACK BRACING**  
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Bottom of Wall Bracing

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**5**

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**TABLE A.1 - MAX.  $S_{DS}$  FOR WALL HEIGHTS  $\leq 108'$**

DL (psf)	z/h						
	0.43	0.5	0.6	0.7	0.8	0.9	1
3	0.96	0.90	0.83	0.76	0.71	0.66	0.62
3.5	0.87	0.81	0.74	0.68	0.63	0.59	0.54
4	0.79	0.74	0.67	0.61	0.57	0.53	0.49
4.5	0.70	0.66	0.60	0.55	0.50	0.47	0.44
5	0.63	0.59	0.53	0.49	0.45	0.42	0.39
5.5	0.57	0.54	0.49	0.45	0.41	0.38	0.36
6	0.52	0.48	0.44	0.40	0.37	0.34	0.32
7	0.44	0.41	0.37	0.34	0.32	0.29	0.27
8	0.39	0.36	0.33	0.30	0.28	0.26	0.24
9	0.34	0.32	0.29	0.27	0.24	0.23	0.21
10	0.31	0.29	0.26	0.24	0.22	0.20	0.19
11	0.28	0.26	0.24	0.22	0.20	0.18	0.17
12	0.26	0.24	0.22	0.20	0.18	0.17	0.16
13	0.24	0.22	0.20	0.18	0.17	0.16	0.14
14	0.22	0.20	0.18	0.17	0.16	0.14	0.13

DL = DIRTT WALL DEAD LOAD IN POUNDS PER SQUARE FOOT (PSF)  
Z/H = RATIO OF HEIGHT IN STRUCTURE OF POINT OF ATTACHMENT OF DIRTT WALL TO AVERAGE ROOF HEIGHT OF STRUCTURE WITH RESPECT TO THE BASE.  
- INTERPOLATION NOT PERMITTED. USE MORE CONSERVATIVE/RESTRICTIVE RESULT WHEN SITE SPECIFIC CONDITIONS FALL IN-BETWEEN VALUES IN TABLE.

**BASE TRACK ANCHOR OPTIONS FOR MAXIMUM  $S_{DS}$   
RESULT OBTAINED FROM TABLE A.1**

USE 3/8" DIAMETER POWERS-STUD+ SD2 CARBON STEEL EXPANSION ANCHORS AS SHOWN. (ICC-ESR-2592). ASSUMED MINIMUM FC = 3000 PSI. STRUCTURAL SAND-LIGHTWEIGHT, CONDITION B, CRACKED CONCRETE FOR PURPOSE OF CONCRETE ANCHOR DESIGN.  
NOMINAL EMBEDMENT = 2-3/8"  
DISTANCE FROM EDGE OF CONCRETE SLAB = 8" O.C. MIN.  
SPACING = 4" O.C.  
CONCRETE SLAB THICKNESS = 4" MIN.  
(SEE ICC-ESR REPORT FOR MINIMUM CONCRETE FILLED STEEL METAL DECK PROFILE/ANCHOR SPACING REQUIREMENTS IF APPLICABLE)

USE 1/4" DIAMETER HILTI KWIK HUS-EZ CARBON STEEL SCREW ANCHORS AS SHOWN. (ICC-ESR-3027). ASSUMED MINIMUM FC = 3000 PSI. STRUCTURAL SAND-LIGHTWEIGHT, CONDITION B, CRACKED CONCRETE FOR PURPOSE OF CONCRETE ANCHOR DESIGN.  
NOMINAL EMBEDMENT = 2-5/8"  
DISTANCE FROM EDGE OF CONCRETE SLAB = 9" O.C. MIN.  
SPACING = 4" O.C.  
CONCRETE SLAB THICKNESS = 4-1/2" MIN.  
(SEE ICC-ESR REPORT FOR MINIMUM CONCRETE FILLED STEEL METAL DECK PROFILE/ANCHOR SPACING REQUIREMENTS IF APPLICABLE)

USE 1/4" DIAMETER DEWALT SCREW-BOLT+ CARBON STEEL SCREW ANCHORS AS SHOWN. (ICC-ESR-3889). ASSUMED MINIMUM FC = 3000 PSI. STRUCTURAL SAND-LIGHTWEIGHT, CONDITION B, CRACKED CONCRETE FOR PURPOSE OF CONCRETE ANCHOR DESIGN.  
NOMINAL EMBEDMENT = 2-5/8"  
DISTANCE FROM EDGE OF CONCRETE SLAB = 9" O.C. MIN.  
SPACING = 4" O.C.  
CONCRETE SLAB THICKNESS = 4" MIN.  
(SEE ICC-ESR REPORT FOR MINIMUM CONCRETE FILLED STEEL METAL DECK PROFILE/ANCHOR SPACING REQUIREMENTS IF APPLICABLE)

USE 0.157" DIAMETER HILTI X-U POWER ACTUATED ANCHORS AS SHOWN. (ICC-ESR-2269). ASSUMED MINIMUM FC = 3000 PSI. STRUCTURAL SAND-LIGHTWEIGHT, UNCRACKED CONCRETE FOR PURPOSE OF CONCRETE ANCHOR DESIGN.  
EMBEDMENT = 3/4"  
DISTANCE FROM EDGE OF CONCRETE SLAB = 3" O.C. MIN.  
SPACING = 4" O.C.  
CONCRETE SLAB THICKNESS = 2-25/8" MIN.  
(SEE ICC-ESR REPORT FOR MINIMUM CONCRETE FILLED STEEL METAL DECK PROFILE/ANCHOR SPACING REQUIREMENTS IF APPLICABLE)

**MAXIMUM ANCHOR FORCES, PER ANCHOR (LRFD):**  
 $V_{MAX,IN} = 0$  LB LIVE, 129 LB SEISMIC  
 $V_{MAX,OUT} = 120$  LB LIVE, 32 LB SEISMIC  
 $T_{MAX} = 0$  LB LIVE, 66 LB SEISMIC

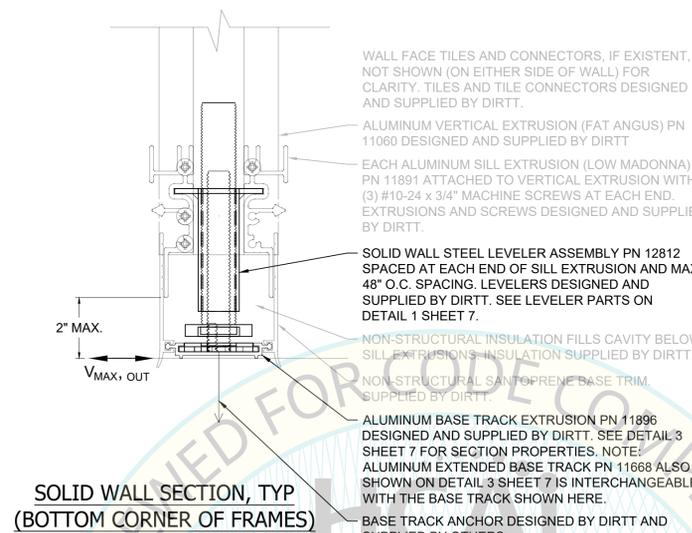
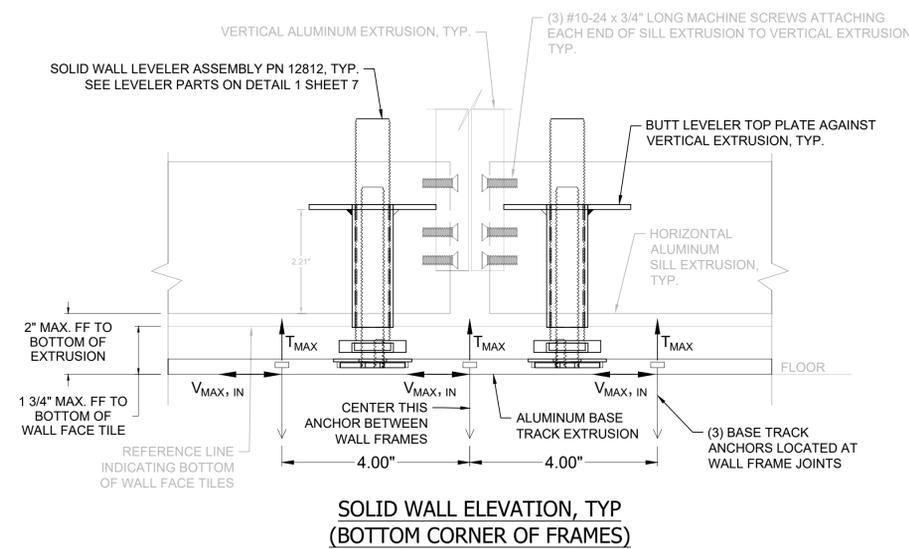
**ANCHOR FORCES INCLUDE SEISMIC OVER-STRENGTH FACTOR  $\Omega_0 = 2.0$**

**NOTE THAT ONLY  $V_{MAX,IN}$  AND  $T_{MAX}$  FORCES OCCUR SIMULTANEOUSLY**

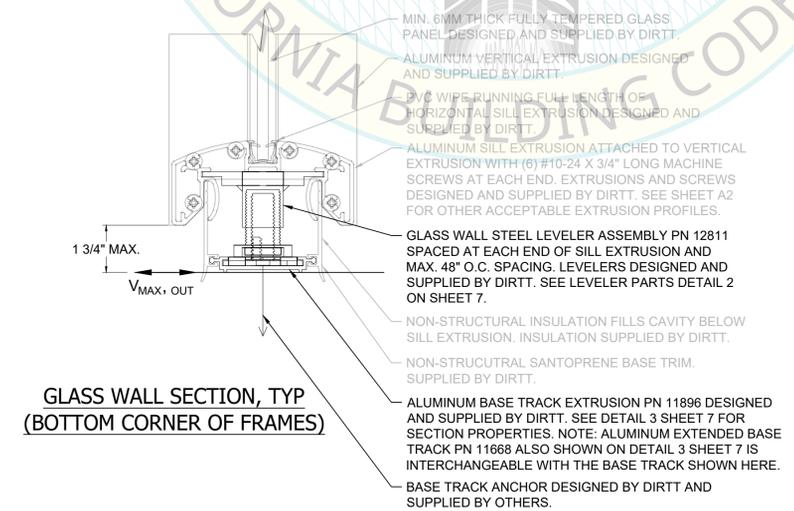
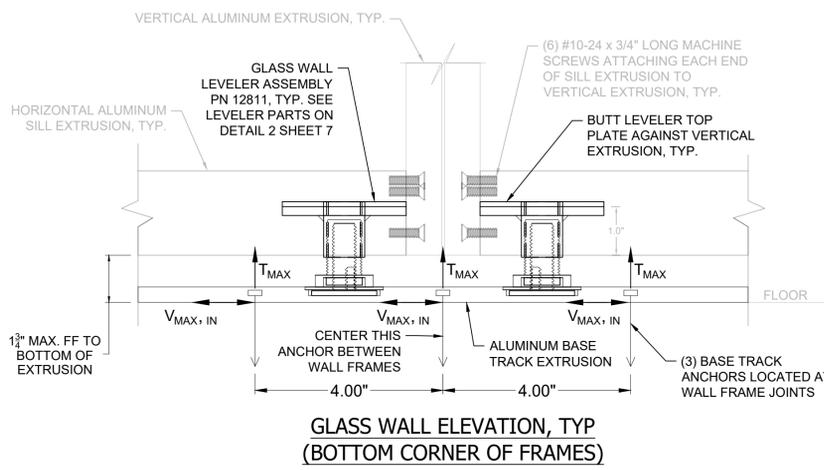
**MAXIMUM ANCHOR FORCES, PER ANCHOR (ASD):**  
 $V_{MAX,IN} = 0$  LB LIVE, 90 LB SEISMIC  
 $V_{MAX,OUT} = 75$  LB LIVE, 22 LB SEISMIC  
 $T_{MAX} = 0$  LB LIVE, 46 LB SEISMIC

**ANCHOR FORCES INCLUDE SEISMIC OVER-STRENGTH FACTOR  $\Omega_0 = 2.0$**

**NOTE THAT ONLY  $V_{MAX,IN}$  AND  $T_{MAX}$  FORCES OCCUR SIMULTANEOUSLY**



**1** **BOTTOM OF SOLID WALL FRAME ELEVATION AND SECTION DETAILS**  
**5** SCALE: NTS



**2** **BOTTOM OF GLASS WALL FRAME ELEVATION AND SECTION DETAILS**  
**5** SCALE: NTS

TABLE A.2 - MAX.  $S_{Ds}$  FOR WALL HEIGHTS  $\leq 108"$

DL (psf)	z/h						
	$\leq 0.43$	0.5	0.6	0.7	0.8	0.9	1
3	4.22	3.99	3.66	3.36	3.15	2.94	2.75
3.5	3.69	3.49	3.20	2.96	2.75	2.57	2.41
4	3.30	3.11	2.85	2.64	2.45	2.29	2.15
4.5	2.98	2.80	2.59	2.39	2.22	2.07	1.95
5	2.74	2.58	2.36	2.19	2.04	1.90	1.78
5.5	2.53	2.39	2.19	2.02	1.88	1.75	1.64
6	2.36	2.22	2.05	1.89	1.75	1.62	1.52
7	2.08	1.95	1.78	1.64	1.51	1.40	1.31
8	1.84	1.72	1.57	1.44	1.34	1.24	1.16
9	1.65	1.55	1.41	1.30	1.20	1.11	1.04
10	1.50	1.41	1.28	1.18	1.09	1.01	0.95
11	1.37	1.29	1.18	1.08	1.00	0.93	0.87
12	1.27	1.19	1.08	0.99	0.91	0.85	0.79
13	1.17	1.10	1.00	0.91	0.84	0.78	0.73
14	1.09	1.02	0.92	0.85	0.78	0.73	0.68

DL = DIRTT WALL DEAD LOAD IN POUNDS PER SQUARE FOOT (PSF)  
 Z/H = RATIO OF HEIGHT IN STRUCTURE OF POINT OF ATTACHMENT OF DIRTT WALL TO AVERAGE ROOF HEIGHT OF STRUCTURE WITH RESPECT TO THE BASE.  
 - INTERPOLATION NOT PERMITTED. USE MORE CONSERVATIVE/RESTRICTIVE RESULT WHEN SITE SPECIFIC CONDITIONS FALL IN-BETWEEN VALUES IN TABLE.

TABLE A.3 - MAX.  $S_{Ds}$  FOR WALL HEIGHTS  $> 108"$ ,  $\leq 144"$

DL (psf)	z/h						
	$\leq 0.43$	0.5	0.6	0.7	0.8	0.9	1
3	2.68	2.51	2.29	2.10	1.95	1.81	1.69
3.5	2.31	2.17	1.98	1.82	1.68	1.56	1.46
4	2.04	1.91	1.74	1.60	1.48	1.37	1.28
4.5	1.82	1.71	1.56	1.43	1.32	1.23	1.15
5 <sup>1</sup>	1.82	1.71	1.56	1.43	1.32	1.23	1.15
5.5 <sup>1</sup>	1.73	1.62	1.48	1.36	1.26	1.17	1.10
6 <sup>1</sup>	1.60	1.50	1.37	1.26	1.17	1.08	1.01
7 <sup>2</sup>	1.51	1.42	1.29	1.19	1.10	1.03	0.96
8 <sup>2</sup>	1.34	1.26	1.16	1.07	0.99	0.92	0.86
9 <sup>2</sup>	1.22	1.15	1.05	0.97	0.90	0.84	0.79
10 <sup>2</sup>	1.13	1.06	0.97	0.89	0.83	0.77	0.72
11 <sup>2</sup>	1.04	0.97	0.88	0.81	0.75	0.69	0.65
12 <sup>2</sup>	0.95	0.89	0.81	0.74	0.68	0.63	0.59
13 <sup>2</sup>	0.88	0.82	0.75	0.68	0.63	0.59	0.55
14 <sup>2</sup>	0.81	0.76	0.69	0.63	0.59	0.54	0.51

<sup>1</sup> Minimum Frame Width = 18", <sup>2</sup> Minimum Frame Width = 24"  
 DL = DIRTT WALL DEAD LOAD IN POUNDS PER SQUARE FOOT (PSF)  
 Z/H = RATIO OF HEIGHT IN STRUCTURE OF POINT OF ATTACHMENT OF DIRTT WALL TO AVERAGE ROOF HEIGHT OF STRUCTURE WITH RESPECT TO THE BASE.  
 - INTERPOLATION NOT PERMITTED. USE MORE CONSERVATIVE/RESTRICTIVE RESULT WHEN SITE SPECIFIC CONDITIONS FALL IN-BETWEEN VALUES IN TABLE.

BASE TRACK ANCHOR OPTIONS FOR MAXIMUM  $S_{Ds}$  RESULT OBTAINED FROM TABLES A.2 AND A.3

USE 3/8" DIAMETER POWERS-STUD+ SD2 CARBON STEEL EXPANSION ANCHORS AS SHOWN (ICC-ESR-2502). ASSUMED MINIMUM FC = 3000 PSI. STRUCTURAL SAND-LIGHTWEIGHT, CONDITION B, CRACKED CONCRETE FOR PURPOSE OF CONCRETE ANCHOR DESIGN. NOMINAL EMBEDMENT = 2-3/8". DISTANCE FROM EDGE OF CONCRETE SLAB = 8" O.C. MIN. SPACING = 4" O.C. CONCRETE SLAB THICKNESS = 4" MIN. (SEE ICC-ESR REPORT FOR MINIMUM CONCRETE FILLED STEEL METAL DECK PROFILE/ANCHOR SPACING REQUIREMENTS IF APPLICABLE)

USE 1/4" DIAMETER HILTI KWIK HUS-EZ CARBON STEEL SCREW ANCHORS AS SHOWN (ICC-ESR-3027). ASSUMED MINIMUM FC = 3000 PSI. STRUCTURAL SAND-LIGHTWEIGHT, CONDITION B, CRACKED CONCRETE FOR PURPOSE OF CONCRETE ANCHOR DESIGN. NOMINAL EMBEDMENT = 2-5/8". DISTANCE FROM EDGE OF CONCRETE SLAB = 9" O.C. MIN. SPACING = 4" O.C. CONCRETE SLAB THICKNESS = 4-1/2" MIN. (SEE ICC-ESR REPORT FOR MINIMUM CONCRETE FILLED STEEL METAL DECK PROFILE/ANCHOR SPACING REQUIREMENTS IF APPLICABLE)

USE 1/4" DIAMETER DEWALT SCREW-BOLT+ CARBON STEEL SCREW ANCHORS AS SHOWN (ICC-ESR-3880). ASSUMED MINIMUM FC = 3000 PSI. STRUCTURAL SAND-LIGHTWEIGHT, CONDITION B, CRACKED CONCRETE FOR PURPOSE OF CONCRETE ANCHOR DESIGN. NOMINAL EMBEDMENT = 2-5/8". DISTANCE FROM EDGE OF CONCRETE SLAB = 9" O.C. MIN. SPACING = 4" O.C. CONCRETE SLAB THICKNESS = 4" MIN. (SEE ICC-ESR REPORT FOR MINIMUM CONCRETE FILLED STEEL METAL DECK PROFILE/ANCHOR SPACING REQUIREMENTS IF APPLICABLE)

MAXIMUM ANCHOR FORCES, PER ANCHOR (LRFD):  
 $V_{MAX,IN}$  = 0 LB LIVE, 617 LB SEISMIC  
 $V_{MAX,OUT}$  = 120 LB LIVE, 154 LB SEISMIC  
 $T_{MAX}$  = 0 LB LIVE, 356 LB SEISMIC

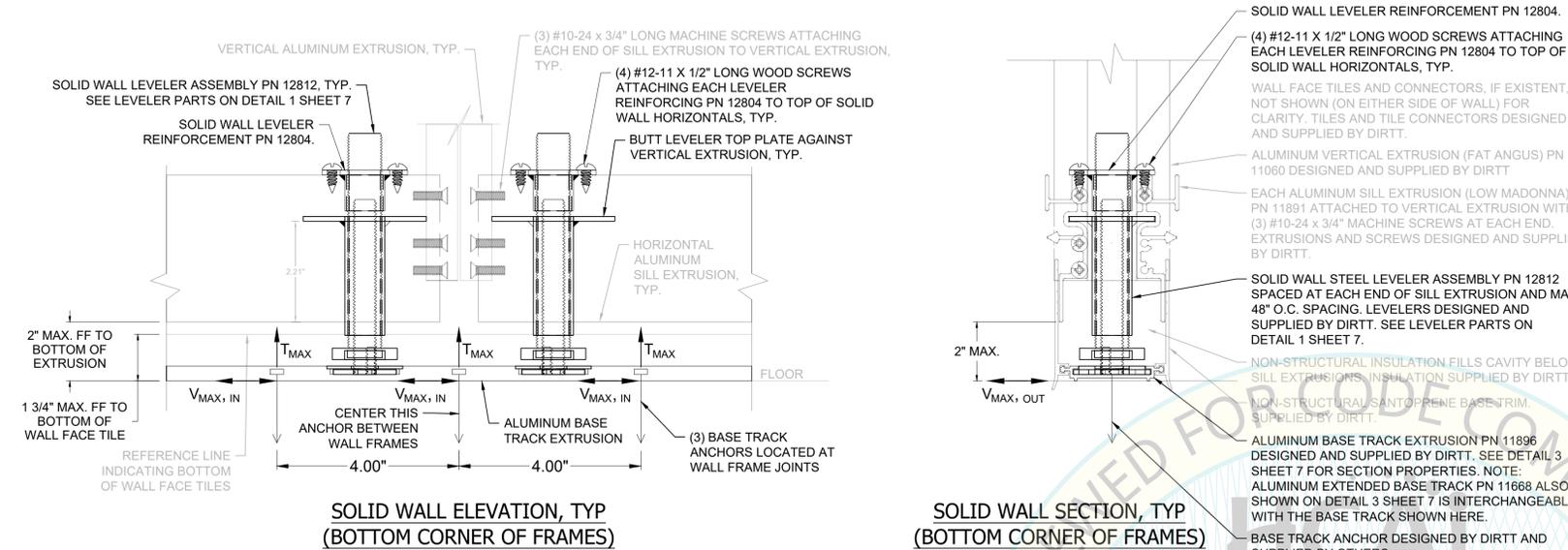
ANCHOR FORCES INCLUDE SEISMIC OVER-STRENGTH FACTOR  $\Omega_0 = 2.0$

NOTE THAT ONLY  $V_{MAX,IN}$  AND  $T_{MAX}$  FORCES OCCUR SIMULTANEOUSLY

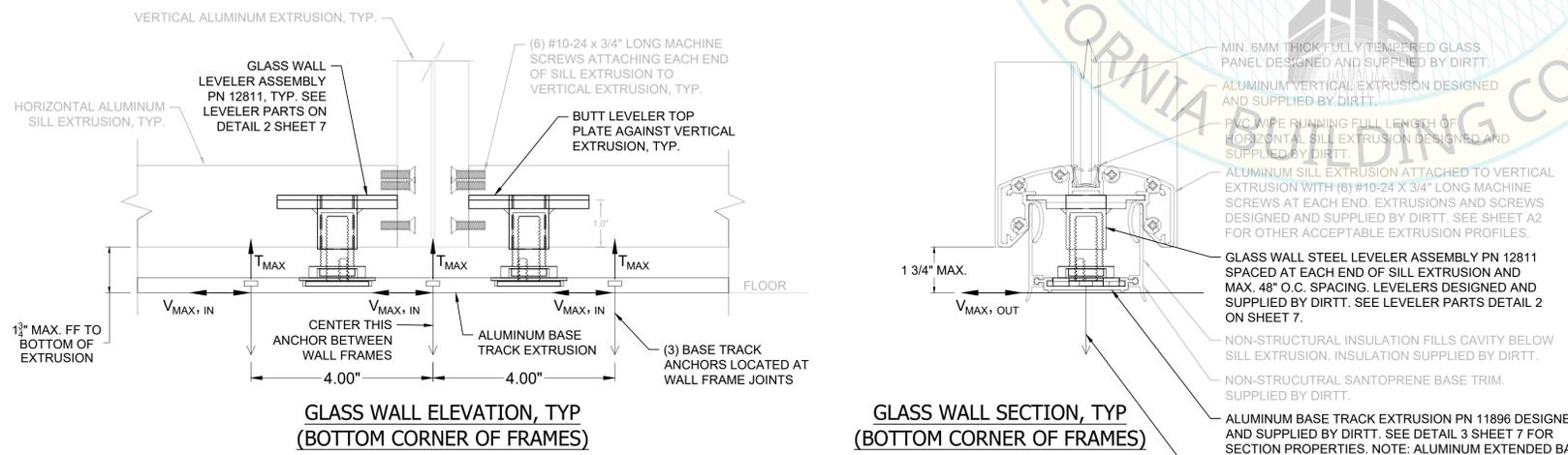
MAXIMUM ANCHOR FORCES, PER ANCHOR (ASD):  
 $V_{MAX,IN}$  = 0 LB LIVE, 432 LB SEISMIC  
 $V_{MAX,OUT}$  = 75 LB LIVE, 108 LB SEISMIC  
 $T_{MAX}$  = 0 LB LIVE, 250 LB SEISMIC

ANCHOR FORCES INCLUDE SEISMIC OVER-STRENGTH FACTOR  $\Omega_0 = 2.0$

NOTE THAT ONLY  $V_{MAX,IN}$  AND  $T_{MAX}$  FORCES OCCUR SIMULTANEOUSLY



1 BOTTOM OF SOLID WALL FRAME ELEVATION AND SECTION DETAILS  
 SCALE: NTS



2 BOTTOM OF GLASS WALL FRAME ELEVATION AND SECTION DETAILS  
 SCALE: NTS

OPM-0585

BY: William Staehlin

DATE: 04/25/2022

CALIFORNIA BUILDING CODE, 2019

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OSHDP PREAPPROVAL OF  
 MANUFACTURER'S  
 CERTIFICATION (OPM)

SIGNATURE, SEAL, AND DATE OF ENGINEER

PROFESSIONAL ENGINEER  
 WILLIAM STAHLIN  
 License No. 85582  
 Expires 07/30/2022  
 CIVIL  
 STATE OF CALIFORNIA

NO.	REVISION/ISSUE	DATE
1		
2		
3		

CLIENT:  
 CLIENT ADDRESS:  
 CLIENT CONTACT:

DIRTT ENGINEERING PROJECT NUMBER:  
 2006024

SHEET NAME:  
 Bottom of Wall Bracing

PAGE:  
 6

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**OSHPD PREAPPROVAL OF MANUFACTURER'S CERTIFICATION (OPM)**

SIGNATURE, SEAL, AND DATE OF ENGINEER



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2006024  
SHEET NAME:  
Bottom of Wall Attachment Parts

PAGE:  
**7**  
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SOLID WALL LEVELER REINFORCEMENT ASSEMBLY 12804 (SHOWN BELOW) IS ONLY REQUIRED WHEN UTILIZING  $S_{ps}$  RESULTS PER TABLES ON SHEET 6

NOTE THAT PN 12804 ISN'T AUTOMATICALLY SHIPPED WHEN "SEISMIC" IS SPECIFIED IN DIRTT'S ICE SOFTWARE. PN 12804 WILL NEED TO BE A MANUAL ADD-ON TO THE ORDER

#	DESCRIPTION	PART #	QTY
1	SOLID LEVELER TOP ASSEMBLY	92827	1
2	SOLID LEVELER DRIVE COLLAR	12005	1
3	#1/2-13 x 4MM THICK HEX NUT	STOCK	1
4	SEISMIC BASE PLATE COVER (NON-STRUCTURAL)	72691	1
5	SOLID SEISMIC LEVELER BASE	92723	1

**SOLID WALL DRIVE COLLAR PN 12005**

**SEISMIC BASE PLATE COVER PN 72691 (NON-STRUCTURAL)**

**SOLID WALL LEVELER TOP ASSEMBLY PN 92827**

**SOLID WALL LEVELER TOP COLLAR REINFORCEMENT PIPE PN 94128**

**SOLID WALL LEVELER BASE ASSEMBLY PN 92723**

**LEVELER BASE PLATE PN 72690**

DESCRIPTION	PART #	QTY
SOLID LEVELER REINFORCEMENT ASSEMBLY	12804	1
SOLID LEVELER REINFORCEMENT PLATE	30243	1
SOLID LEVELER REINFORCEMENT COLLAR	94128	1

**SOLID WALL LEVELER TOP COLLAR REINFORCEMENT ASSEMBLY PN 12804**

**SOLID WALL LEVELER TOP COLLAR REINFORCEMENT PLATE PN 30243**

**SOLID WALL LEVELER TOP COLLAR REINFORCEMENT PIPE PN 94128**

#	DESCRIPTION	PART #	QTY
1	GLASS LEVELER TOP ASSEMBLY	94642	1
2	GLASS LEVELER DRIVE COLLAR	72593	1
3	#1/2-13 x 4MM THICK HEX NUT	STOCK	1
4	SEISMIC BASE PLATE COVER (NON-STRUCTURAL)	72691	1
5	GLASS SEISMIC LEVELER BASE	92725	1

**GLASS WALL DRIVE COLLAR PN 72593**

**SEISMIC BASE PLATE COVER PN 72691 (NON-STRUCTURAL)**

**GLASS WALL LEVELER TOP ASSEMBLY PN 94642**

**GLASS WALL LEVELER TOP COLLAR REINFORCEMENT ASSEMBLY PN 12811**

**GLASS WALL LEVELER TOP COLLAR REINFORCEMENT PIPE PN 94128**

**GLASS WALL LEVELER TOP COLLAR PN 72589**

**GLASS WALL LEVELER TOP COLLAR REINFORCEMENT PLATE PN 52145**

**GLASS WALL LEVELER TOP COLLAR REINFORCEMENT PIPE PN 94128**

**GLASS WALL LEVELER BASE ASSEMBLY PN 92725**

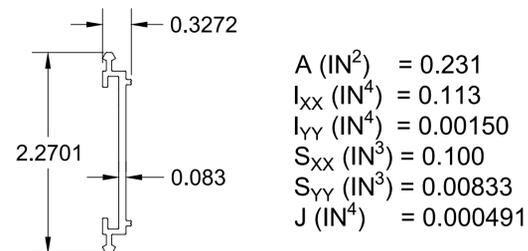
**GLASS WALL LEVELER BASE THREADED ROD PN 72590**

**LEVELER BASE PLATE PN 72690**

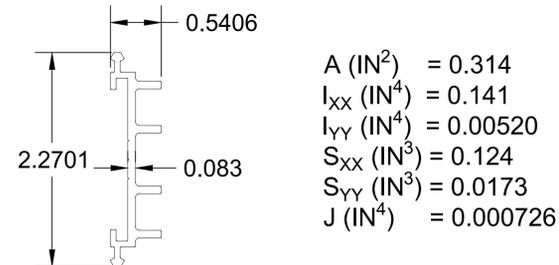
**1** BOTTOM OF SOLID WALL PANEL LEVELER PART DETAILS  
SCALE: NTS

**2** BOTTOM OF GLASS WALL PANEL LEVELER PART DETAILS  
SCALE: NTS

**LOW PROFILE BASE TRACK PN 11896**



**EXTENDED LOW PROFILE BASE TRACK PN 11668**



**3** BASE TRACK SECTION PROPERTIES  
SCALE: NTS

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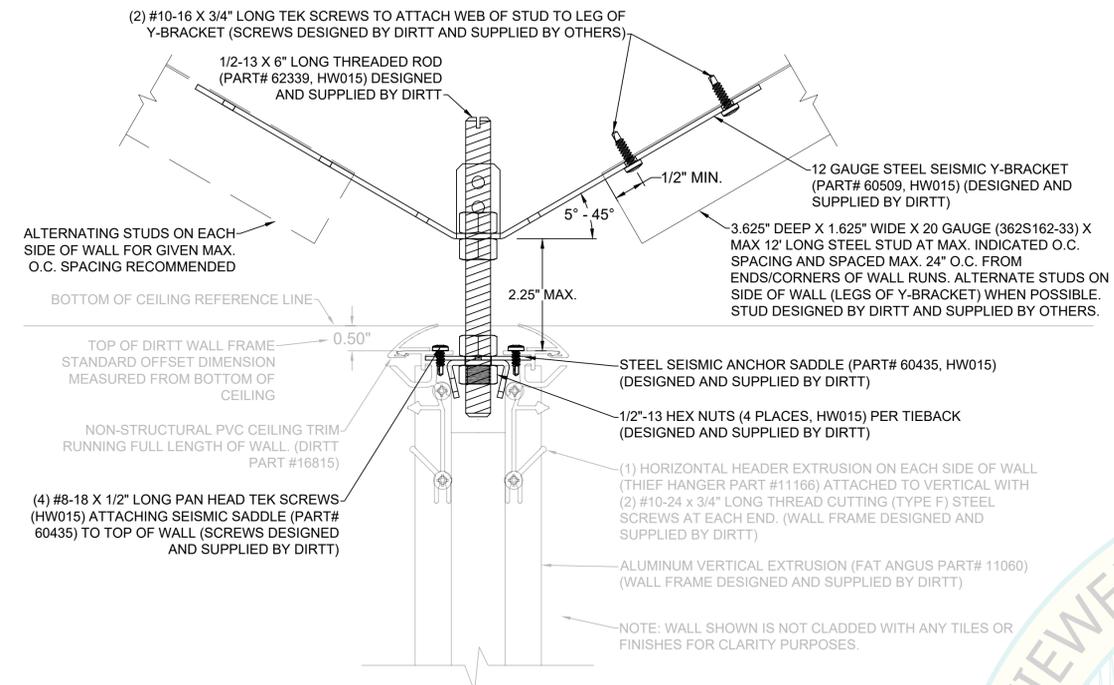
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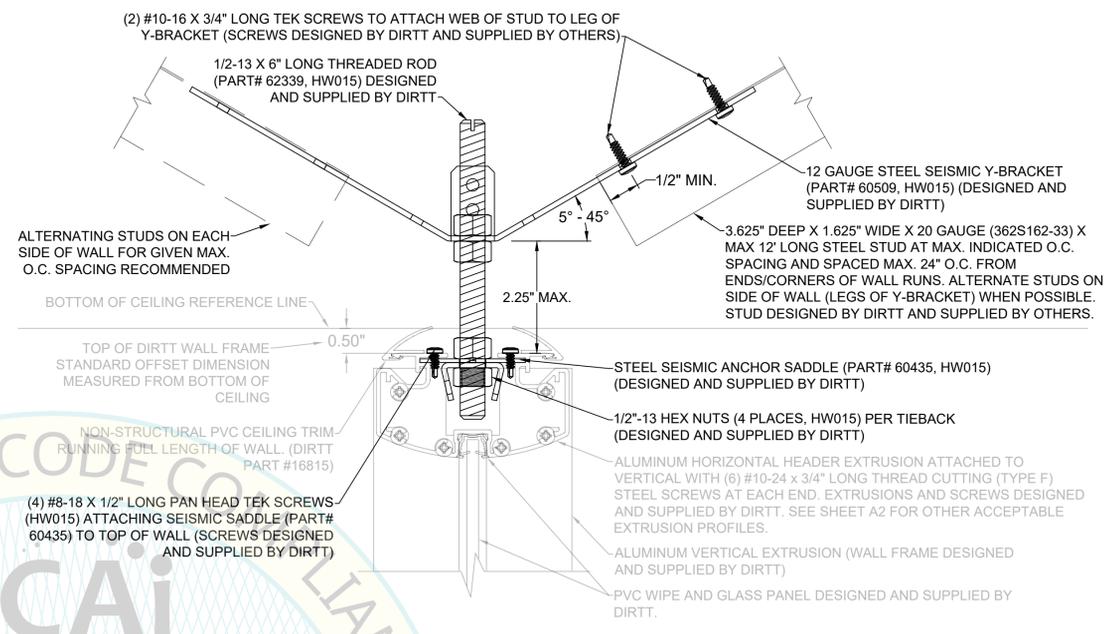
DIRTT ENGINEERING PROJECT NUMBER:  
2006024

SHEET NAME:  
Top Of Wall Tieback Bracing

PAGE:  
**8**  
SCALE: SCALE AS NOTED DATE: 4/9/2021 DRAWN BY: TJD



**1**  
**8** TOP OF SOLID WALL STUD TIEBACK ATTACHMENTS  
SCALE: NTS

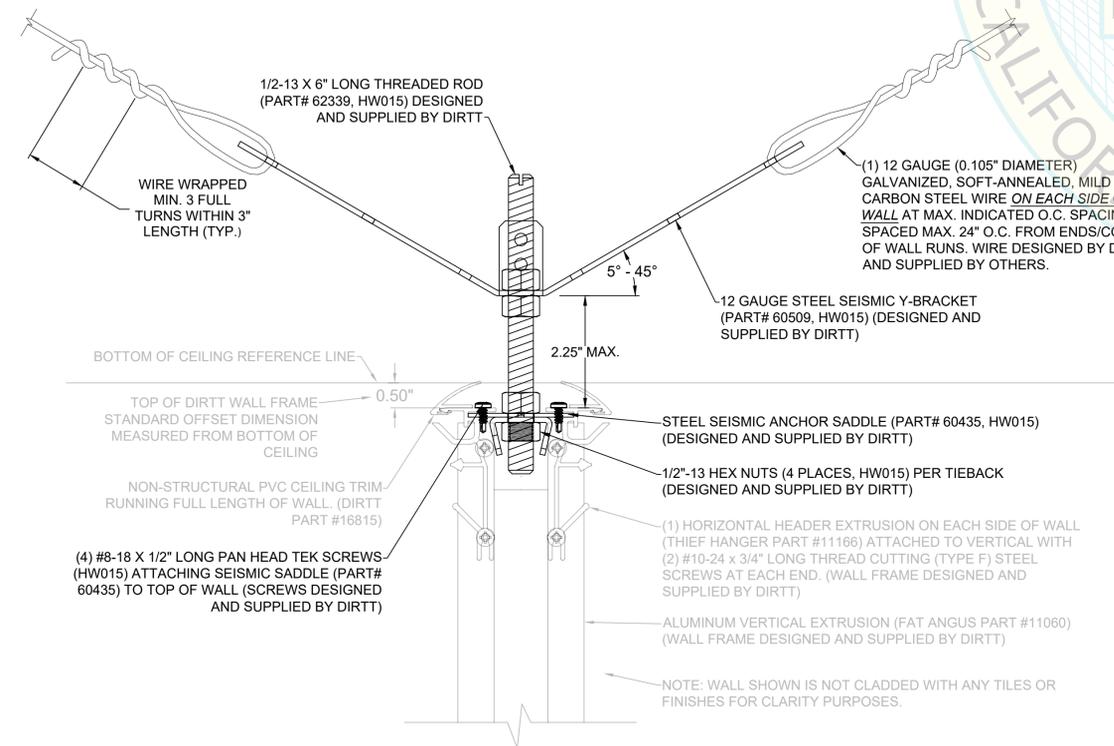


**2**  
**8** TOP OF GLASS WALL STUD TIEBACK ATTACHMENTS  
SCALE: NTS

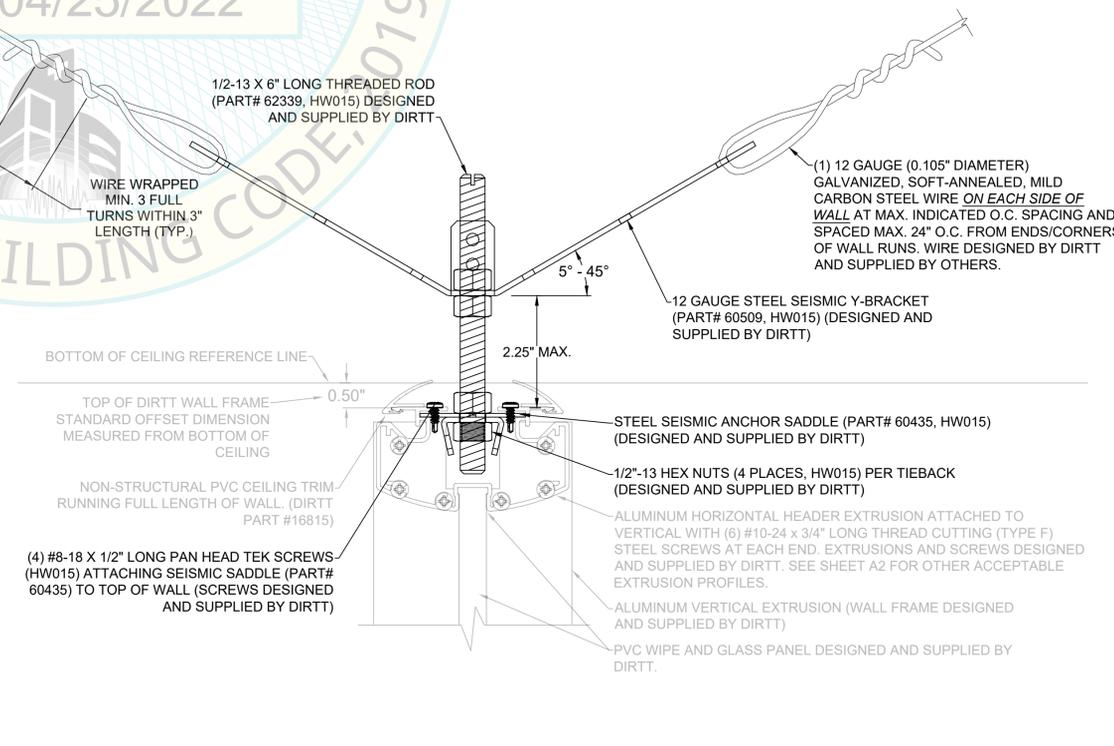
TOP OF WALL ATTACHMENTS SHOWN HERE ON SHEET 8 WHICH INCLUDE: SEISMIC ANCHOR SADDLE PN 60435, 1/2" DIAMETER THREADED ROD PN 62339, AND Y-BRACKET PN 60509 PART DETAILS CAN BE FOUND ON DETAILS 1, 2, AND 3 ON SHEET 9, RESPECTIVELY.

MAXIMUM SPACING OF STUD TIEBACKS CAN BE DETERMINED ON SHEETS 10-16 AND MAXIMUM SPACING OF WIRE TIEBACKS CAN BE DETERMINED ON SHEETS 10-13 AND 17.

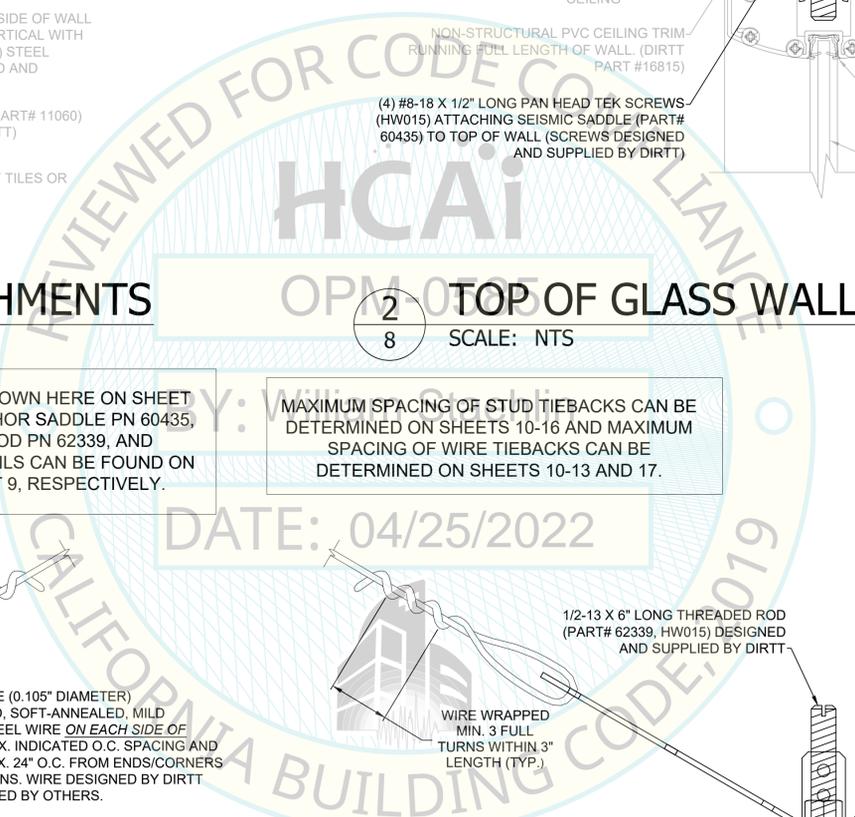
DATE: 04/25/2022

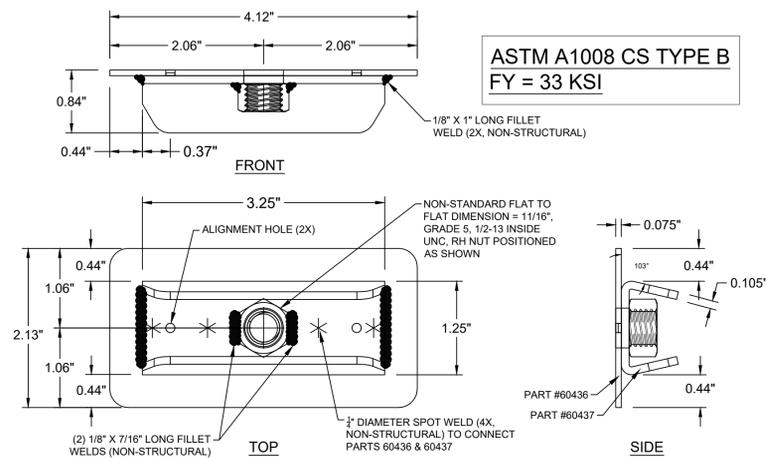


**3**  
**8** TOP OF SOLID WALL WIRE TIEBACK ATTACHMENTS  
SCALE: NTS

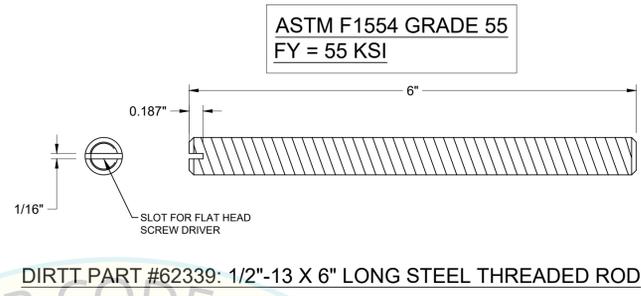


**4**  
**8** TOP OF GLASS WALL WIRE TIEBACK ATTACHMENTS  
SCALE: NTS

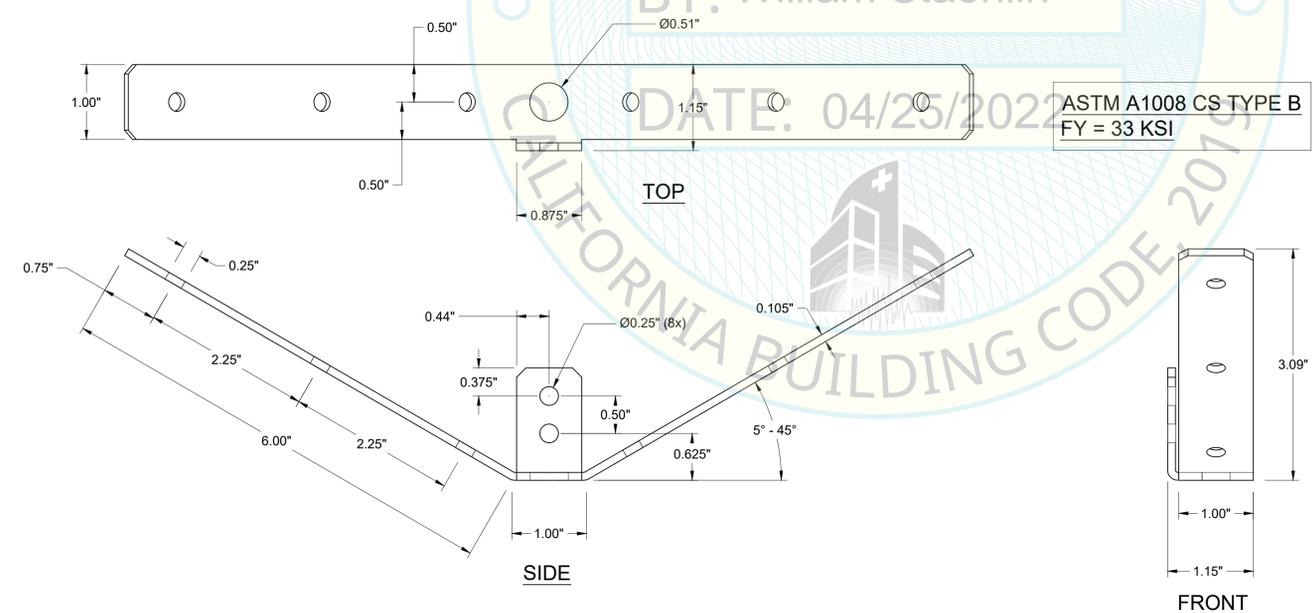




1 STEEL SADDLE PN 60435  
SCALE: NTS

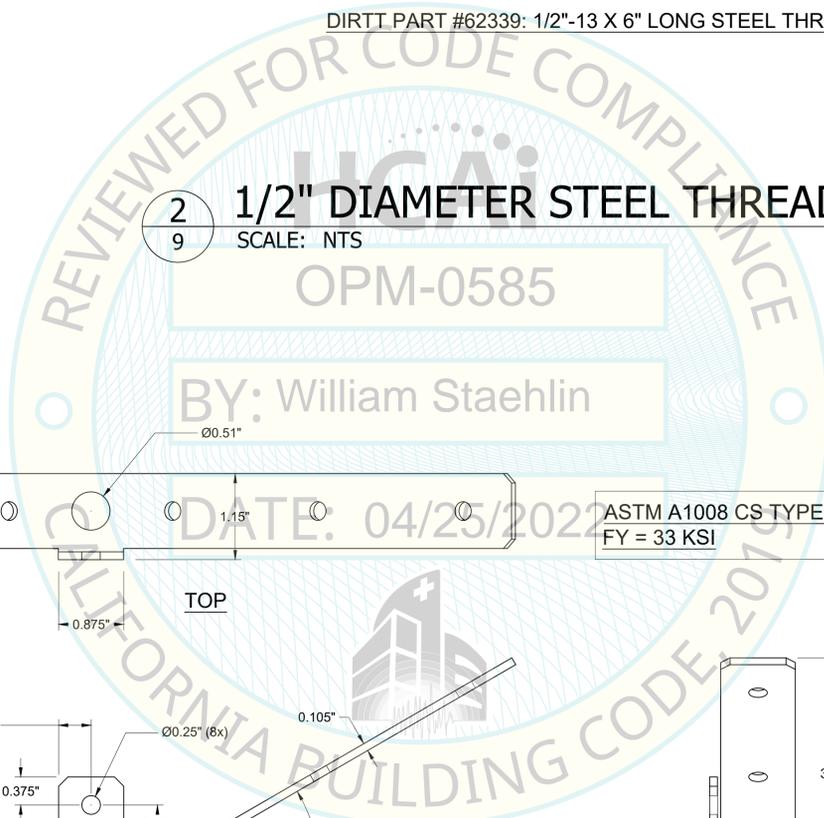


2 1/2" DIAMETER STEEL THREADED ROD PN 62339  
SCALE: NTS



3 12 GAUGE STEEL Y-BRACKET PN 60509  
SCALE: NTS

NOTE: COLLECTIVELY, THE TOP OF WALL ATTACHMENT DIRTT PARTS SHOWN ON DETAILS 1, 2, AND 3 ON SHEET 9 ARE REFERRED TO AS HARDWARE PACK 15 (HW015). THESE (3) PARTS, HW015, ARE AUTOMATICALLY SHIPPED WITH EACH DIRTT WALL FRAME WHEN "SEISMIC" IS SPECIFIED IN DIRTT'S ICE SOFTWARE PROGRAM. DEPENDING ON THE DETERMINED MAXIMUM TIEBACK O.C. SPACING AND DIRTT WALL FRAME WIDTHS, NOT EVERY DIRTT WALL FRAME MAY NEED A TIEBACK. IF CERTAIN FRAMES ARE DEEMED NOT TO NEED A TIEBACK, THEN PARTS ASSOCIATED WITH HW015 MAY SIMPLY BE LEFT IN THOSE FRAMES NOT UTILIZING TIEBACKS.



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2006024  
SHEET NAME:  
Top of Wall Tieback Attachment Parts

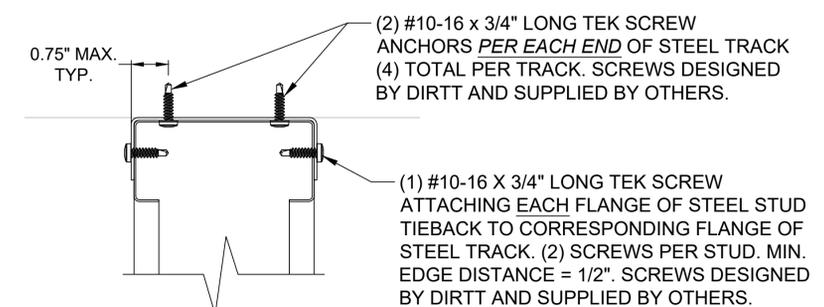
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2006024

SHEET NAME:  
Tieback Attachment to Unfilled Metal Deck

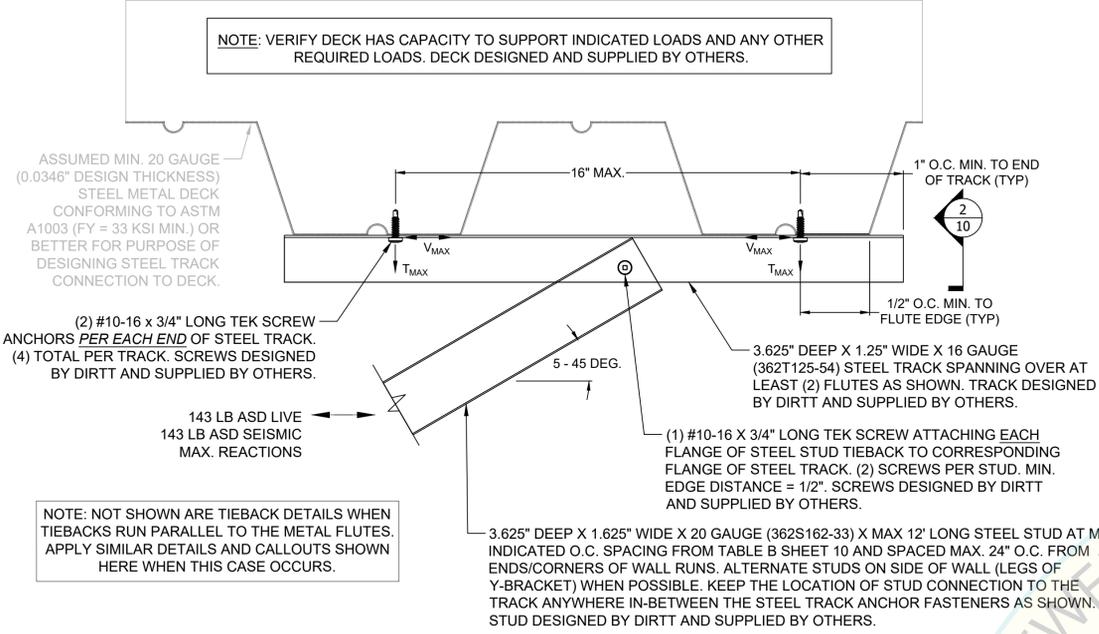


**2 CROSS-SECTION OF STUD TIEBACK ATTACHMENT TO DECK**  
SCALE: NTS

**TABLE B - MAXIMUM O.C. SPACING'S FOR (STUD OR WIRE) TIEBACK ATTACHMENTS TO UNFILLED METAL DECK**

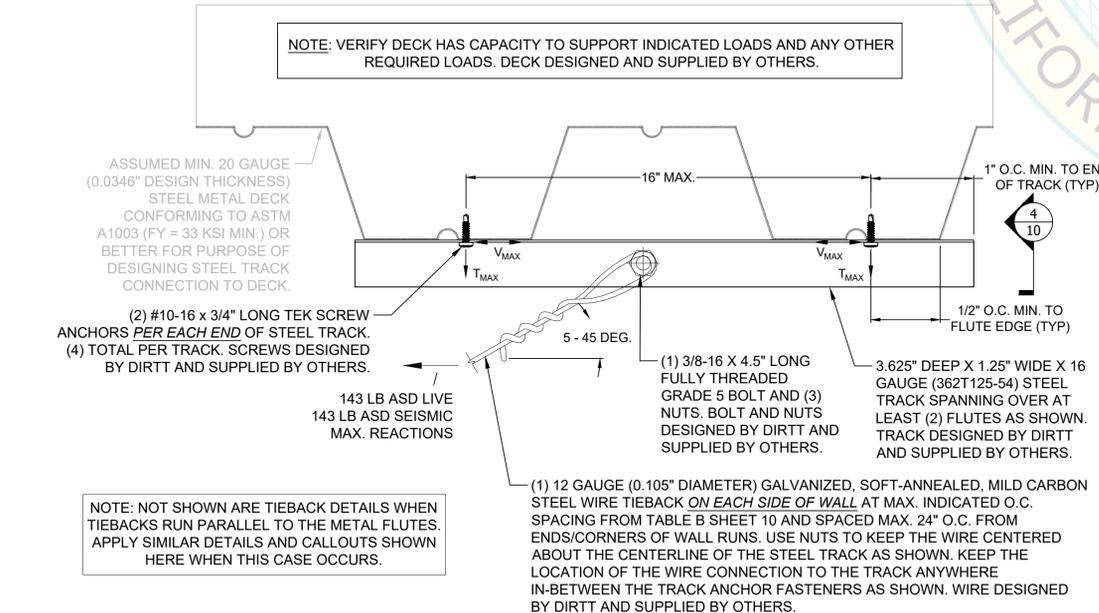
S <sub>ps</sub>	Max. O.C. Tieback Spacing (in)																			
	≤ 5				5 < 7				7 < 9				9 < 11				11 < 14			
	Wall Weight (psf)																			
	Wall Height (ft)																			
	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12					
≤ 0.70	72	65	57	72	65	57	72	65	57	72	65	57	72	65	57					
0.80	72	65	57	72	65	57	72	65	57	72	65	57	64	57	50					
0.90	72	65	57	72	65	57	72	65	57	72	65	57	56	51	44					
1.00	72	65	57	72	65	57	72	65	57	65	58	51	51	46	40					
1.10	72	65	57	72	65	57	72	65	57	72	65	57	46	42	36					
1.20	72	65	57	72	65	57	66	60	52	54	49	42	42	38	33					
1.30	72	65	57	72	65	57	61	55	48	50	45	39	39	35	31					
1.40	72	65	57	72	65	57	56	51	45	46	42	36	36	33	28					
1.50	72	65	57	68	61	54	53	48	42	43	39	34	34	30	27					
1.60	72	65	57	64	57	50	49	45	39	40	36	32	32	28	25					
1.70	72	65	57	60	54	47	46	42	37	38	34	30	30	27	23					
1.80	72	65	57	56	51	45	44	40	35	36	32	28	28	25	22					
1.90	72	65	57	53	48	42	41	37	33	34	31	27	26	24	21					
2.00	71	64	56	51	46	40	39	36	31	32	29	25	25	23	20					
2.10	68	61	54	48	44	38	37	34	30	31	28	24	24	22	19					
2.20	65	58	51	46	42	36	36	32	28	29	26	23	23	21	18					
2.30	62	56	49	44	40	35	34	31	27	28	25	22	22	20	17					

TABLE CREATED WITH Z/H = 1, CONSERVATIVELY.  
INTERPOLATION NOT PERMITTED. USE MORE CONSERVATIVE/RESTRICTIVE RESULT WHEN SITE SPECIFIC CONDITIONS FALL IN-BETWEEN VALUES IN TABLE.

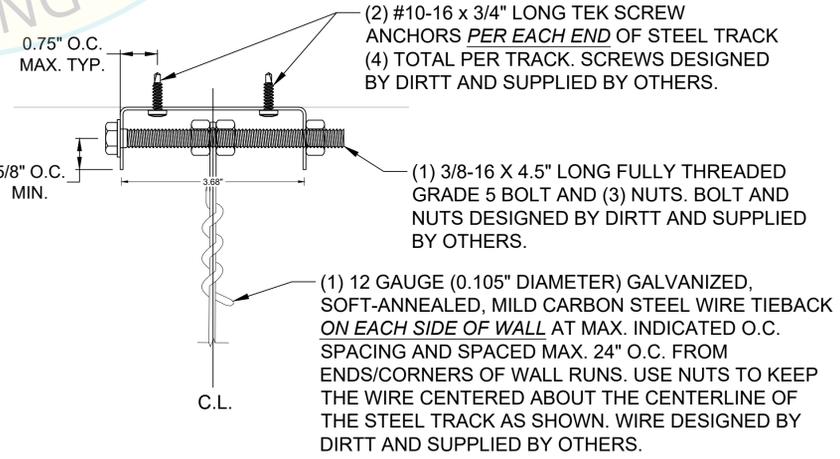


**1 STUD TIEBACK ATTACHMENT TO UNFILLED METAL DECK**  
SCALE: NTS

MAXIMUM ANCHOR FORCES (ASD):  
V<sub>MAX</sub> = 36 LB LIVE OR SEISMIC (PER SCREW)  
T<sub>MAX</sub> = 72 LB LIVE OR SEISMIC (PER SCREW)



**3 WIRE TIEBACK ATTACHMENT TO UNFILLED METAL DECK**  
SCALE: NTS



**4 CROSS-SECTION OF WIRE TIEBACK ATTACHMENT TO DECK**  
SCALE: NTS

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**DIRTT**

DIRTT Environmental Solutions Ltd.  
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403.723.5000 Fax: 403.723.6644 www.dirtt.net

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DATE OF ENGINEER



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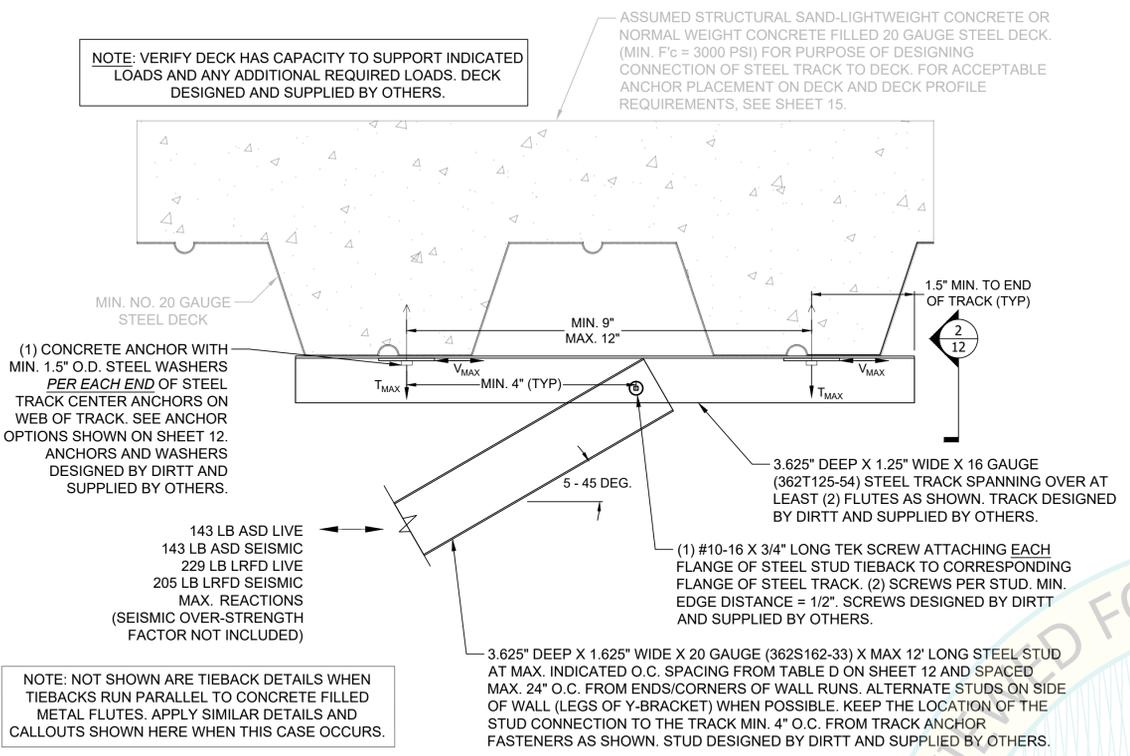
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**11**  
  
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SHEET NAME:  
Tieback Attachment to Concrete Filled Metal Deck



**2**  
**12** **CROSS-SECTION OF STUD TIEBACK ATTACHMENT TO DECK**  
SCALE: NTS

**TABLE D - MAXIMUM O.C. STUD OR WIRE TIEBACK SPACING'S FOR ATTACHMENTS TO CONCRETE FILLED METAL DECK**

S <sub>DES</sub>	Max. O.C. Tieback Spacing (in)														
	Wall Weight (psf)					Wall Height (ft)									
	≤ 5	5 ≤ 7	7 ≤ 9	9 ≤ 11	11 ≤ 14	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12	
0.70	72	65	57	72	65	57	72	65	57	72	65	57	72	65	57
0.80	72	65	57	72	65	57	72	65	57	72	65	57	72	65	57
0.90	72	65	57	72	65	57	72	65	57	72	65	57	72	65	57
1.00	72	65	57	72	65	57	72	65	57	72	65	57	72	65	57
1.10	72	65	57	72	65	57	72	65	57	59	53	46	46	42	36
1.20	72	65	57	72	65	57	66	60	52	54	49	42	42	38	33
1.30	72	65	57	72	65	57	61	55	48	50	45	39	39	35	31
1.40	72	65	57	72	65	57	56	51	45	46	42	36	36	33	28
1.50	72	65	57	68	61	54	53	48	42	43	39	34	34	30	27
1.60	72	65	57	64	57	50	49	45	39	40	36	32	32	28	25
1.70	72	65	57	60	54	47	46	42	37	38	34	30	30	27	23
1.80	72	65	57	56	51	45	44	40	35	36	32	28	28	25	22
1.90	72	65	57	53	48	42	41	37	33	34	31	27	26	24	21
2.00	71	64	56	51	46	40	39	36	31	32	29	25	25	23	20
2.10	68	61	54	48	44	38	37	34	30	31	28	24	24	22	19
2.20	65	58	51	46	42	36	36	32	28	29	26	23	23	21	18
2.30	62	56	49	44	40	35	34	31	27	28	25	22	22	20	17

TABLE CREATED WITH Z/H = 1, CONSERVATIVELY. INTERPOLATION NOT PERMITTED. USE MORE CONSERVATIVE/RESTRICTIVE RESULT WHEN SITE SPECIFIC CONDITIONS FALL IN-BETWEEN VALUES IN TABLE.

**1**  
**12** **STUD TIEBACK ATTACHMENT TO CONCRETE FILLED METAL DECK**  
SCALE: NTS

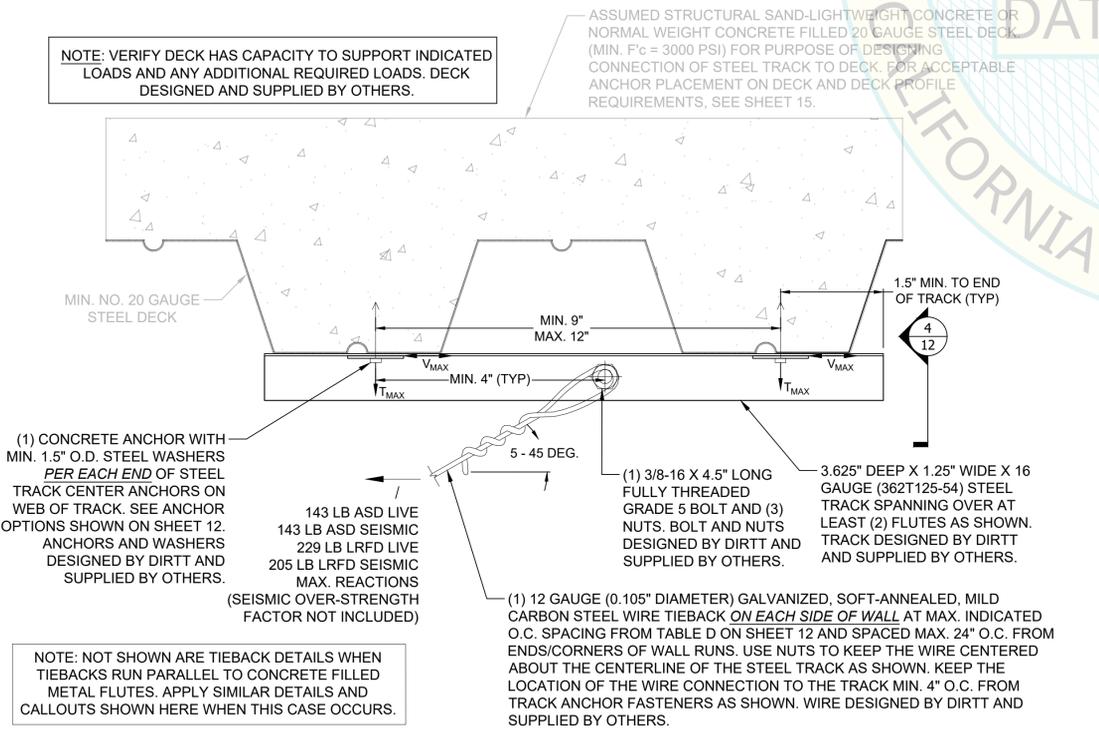
**MAXIMUM ANCHOR FORCES (LRFD):**  
 $V_{MAX} = 114$  LB LIVE, 204 LB SEISMIC (PER ANCHOR)  
 $T_{MAX} = 172$  LB LIVE, 306 LB SEISMIC (PER ANCHOR)  
 SEISMIC FORCES INCLUDE OVER-STRENGTH FACTOR  $\Omega_0 = 2$

**CONCRETE ANCHOR OPTIONS**

USE (2) 3/8" DIAMETER POWERS-STUD+ SD2 CARBON STEEL EXPANSION ANCHORS PER TIEBACK. (ICC-ESR-2502). ASSUMED MINIMUM F<sub>c</sub> = 3000 PSI, STRUCTURAL SAND-LIGHTWEIGHT, CONDITION B, CRACKED CONCRETE FOR PURPOSE OF CONCRETE ANCHOR DESIGN. NOMINAL EMBEDMENT = 2-3/8" SEE SHEET 15 FOR ACCEPTABLE ANCHOR PLACEMENT ON DECK AND DECK PROFILE REQUIREMENTS.

USE (2) 1/4" DIAMETER DEWALT SCREW-BOLT+ CARBON STEEL SCREW ANCHORS PER TIEBACK. (ICC-ESR-3889). ASSUMED MINIMUM F<sub>c</sub> = 3000 PSI, STRUCTURAL SAND-LIGHTWEIGHT, CONDITION B, CRACKED CONCRETE FOR PURPOSE OF CONCRETE ANCHOR DESIGN. NOMINAL EMBEDMENT = 2.5" SEE SHEET 15 FOR ACCEPTABLE ANCHOR PLACEMENT ON DECK AND DECK PROFILE REQUIREMENTS.

USE (2) 1/4" DIAMETER HILTI KWIK HUS-EZ CARBON STEEL SCREW ANCHORS PER TIEBACK. (ICC-ESR-3027). ASSUMED MINIMUM F<sub>c</sub> = 3000 PSI, STRUCTURAL SAND-LIGHTWEIGHT, CONDITION B, CRACKED CONCRETE FOR PURPOSE OF CONCRETE ANCHOR DESIGN. NOMINAL EMBEDMENT = 2.5" SEE SHEET 15 FOR ACCEPTABLE ANCHOR PLACEMENT ON DECK AND DECK PROFILE REQUIREMENTS.



**4**  
**12** **CROSS-SECTION OF WIRE TIEBACK ATTACHMENT TO DECK**  
SCALE: NTS

**3**  
**12** **WIRE TIEBACK ATTACHMENT TO CONCRETE FILLED METAL DECK**  
SCALE: NTS

NO.	REVISION/ISSUE	DATE
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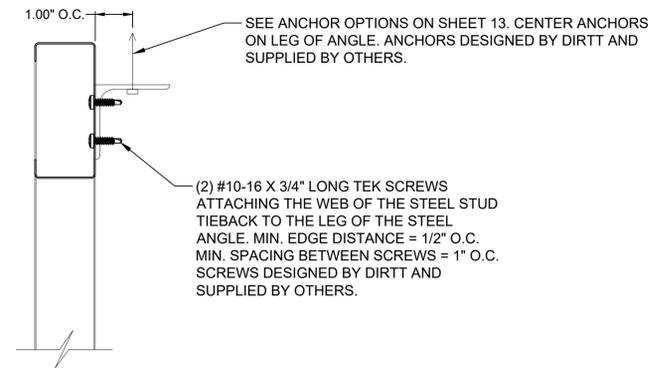
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CLIENT CONTACT:

DIRTT ENGINEERING PROJECT NUMBER:  
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SHEET NAME:  
Tieback Attachment to Concrete Filled Metal Deck

PAGE:  
**13**

SCALE: AS NOTED DATE: 4/9/2021 DRAWN BY: TJD



**2** CROSS-SECTION OF STUD TIEBACK ATTACHMENT TO DECK  
SCALE: NTS

**TABLE F - MAXIMUM O.C. STUD OR WIRE TIEBACK SPACING'S FOR ATTACHMENTS TO CONCRETE FILLED METAL DECK**

S <sub>DE</sub>	Max. O.C. Tieback Spacing (in)														
	Wall Weight (psf)					Wall Height (ft)									
	≤ 5	5 ≤ 7	7 ≤ 9	9 ≤ 11	11 ≤ 14	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12	
0.70	72	65	57	72	65	57	72	65	57	72	65	57	72	65	57
0.80	72	65	57	72	65	57	72	65	57	72	65	57	72	65	57
0.90	72	65	57	72	65	57	72	65	57	72	65	57	72	65	57
1.00	72	65	57	72	65	57	72	65	57	72	65	57	72	65	57
1.10	72	65	57	72	65	57	72	65	57	59	53	46	46	42	36
1.20	72	65	57	72	65	57	66	60	52	54	49	42	42	38	33
1.30	72	65	57	72	65	57	61	55	48	50	45	39	39	35	31
1.40	72	65	57	72	65	57	56	51	45	46	42	36	36	33	28
1.50	72	65	57	68	61	54	53	48	42	43	39	34	34	30	27
1.60	72	65	57	64	57	50	49	45	39	40	36	32	32	28	25
1.70	72	65	57	60	54	47	46	42	37	38	34	30	30	27	23
1.80	72	65	57	56	51	45	44	40	35	36	32	28	28	25	22
1.90	72	65	57	53	48	42	41	37	33	34	31	27	26	24	21
2.00	71	64	56	51	46	40	39	36	31	32	29	25	25	23	20
2.10	68	61	54	48	44	38	37	34	30	31	28	24	24	22	19
2.20	65	58	51	46	42	36	36	32	28	29	26	23	23	21	18
2.30	62	56	49	44	40	35	34	31	27	28	25	22	22	20	17

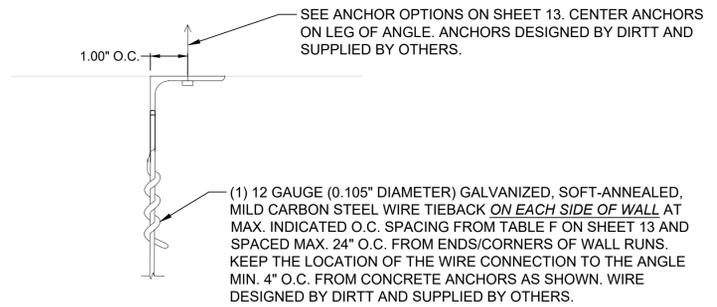
TABLE CREATED WITH Z/H = 1, CONSERVATIVELY. INTERPOLATION NOT PERMITTED. USE MORE CONSERVATIVE/RESTRICTIVE RESULT WHEN SITE SPECIFIC CONDITIONS FALL IN-BETWEEN VALUES IN TABLE.

**CONCRETE ANCHOR OPTIONS**

USE (2) 3/8" DIAMETER POWERS-STUD+ SD2 CARBON STEEL EXPANSION ANCHORS PER TIEBACK. (ICC-ESR-2502). ASSUMED MINIMUM F<sub>c</sub> = 3000 PSI, STRUCTURAL SAND-LIGHTWEIGHT, CONDITION B, CRACKED CONCRETE FOR PURPOSE OF CONCRETE ANCHOR DESIGN. NOMINAL EMBEDMENT = 2-3/8". SEE SHEET 15 FOR ACCEPTABLE ANCHOR PLACEMENT ON DECK AND DECK PROFILE REQUIREMENTS.

USE (2) 3/8" DIAMETER DEWALT SCREW-BOLT+ CARBON STEEL SCREW ANCHORS PER TIEBACK. (ICC-ESR-3889). ASSUMED MINIMUM F<sub>c</sub> = 3000 PSI, STRUCTURAL SAND-LIGHTWEIGHT, CONDITION B, CRACKED CONCRETE FOR PURPOSE OF CONCRETE ANCHOR DESIGN. NOMINAL EMBEDMENT = 2-5". SEE SHEET 15 FOR ACCEPTABLE ANCHOR PLACEMENT ON DECK AND DECK PROFILE REQUIREMENTS.

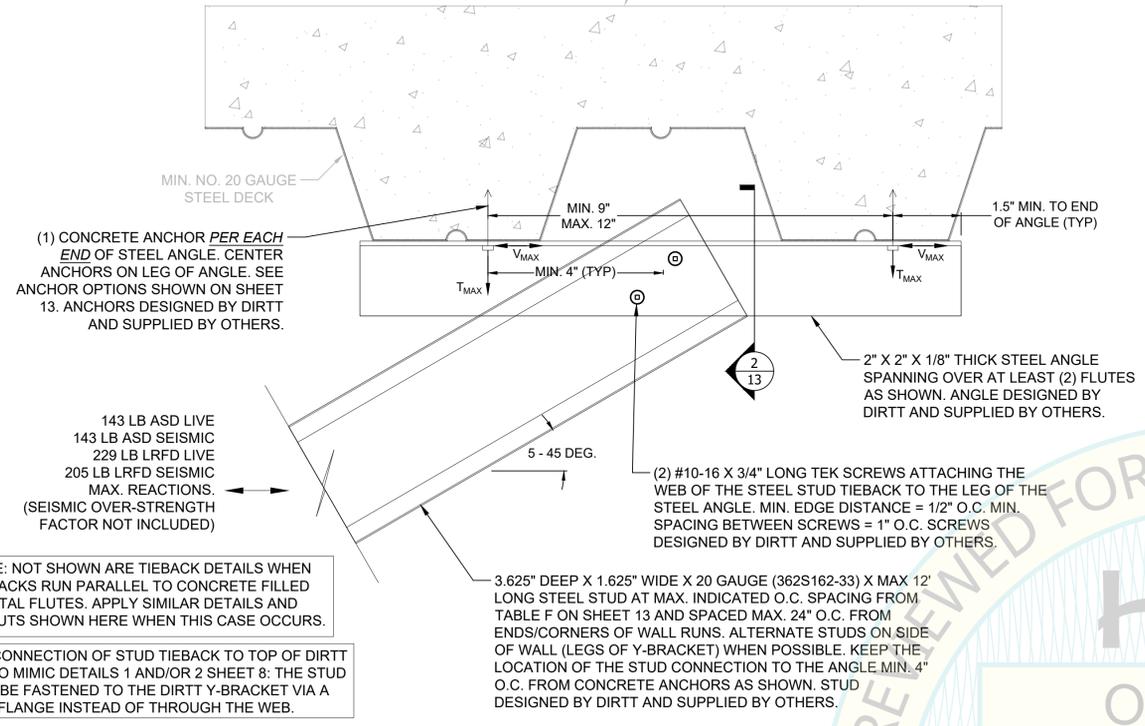
USE (2) 3/8" DIAMETER HILTI KWIK HUS-EZ CARBON STEEL SCREW ANCHORS PER TIEBACK. (ICC-ESR-3027). ASSUMED MINIMUM F<sub>c</sub> = 3000 PSI, STRUCTURAL SAND-LIGHTWEIGHT, CONDITION B, CRACKED CONCRETE FOR PURPOSE OF CONCRETE ANCHOR DESIGN. NOMINAL EMBEDMENT = 2-5". SEE SHEET 15 FOR ACCEPTABLE ANCHOR PLACEMENT ON DECK AND DECK PROFILE REQUIREMENTS.



**4** CROSS-SECTION OF WIRE TIEBACK ATTACHMENT TO DECK  
SCALE: NTS

NOTE: VERIFY DECK HAS CAPACITY TO SUPPORT INDICATED LOADS AND ANY ADDITIONAL REQUIRED LOADS. DECK DESIGNED AND SUPPLIED BY OTHERS.

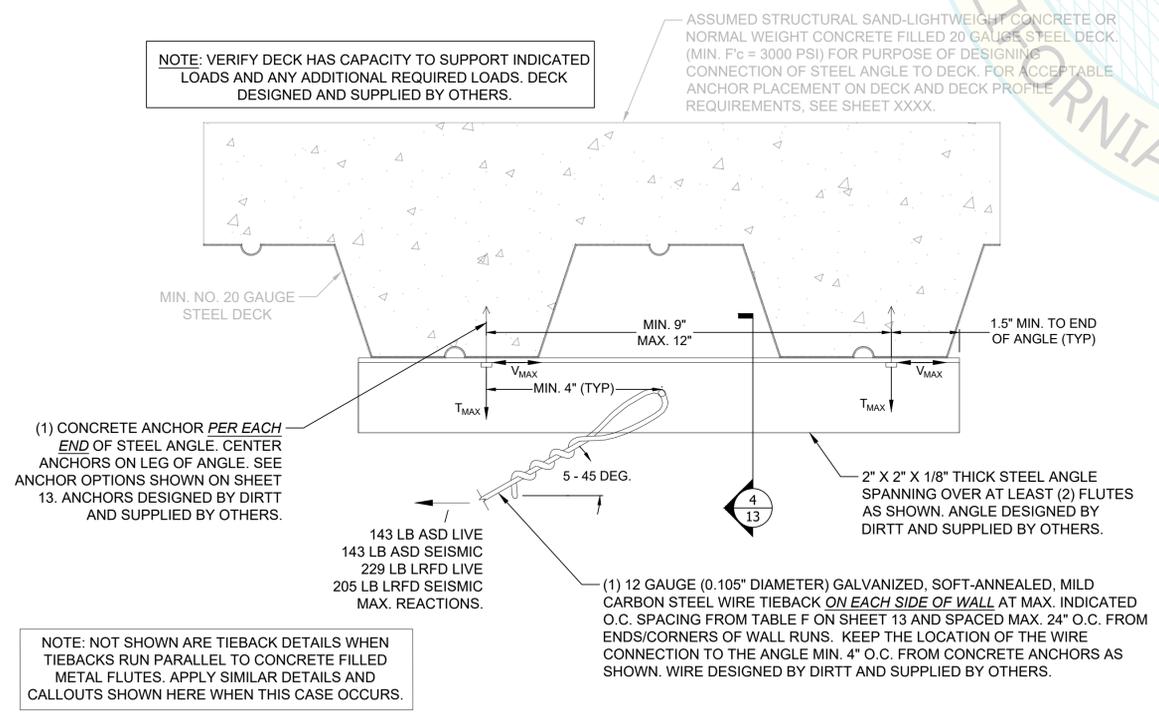
ASSUMED STRUCTURAL SAND-LIGHTWEIGHT CONCRETE OR NORMAL WEIGHT CONCRETE FILLED 20 GAUGE STEEL DECK. (MIN. F<sub>c</sub> = 3000 PSI) FOR PURPOSE OF DESIGNING CONNECTION OF STEEL ANGLE TO DECK. FOR ACCEPTABLE ANCHOR PLACEMENT ON DECK AND DECK PROFILE REQUIREMENTS, SEE SHEET XXXX.



**1** STUD TIEBACK ATTACHMENT TO CONCRETE FILLED METAL DECK  
SCALE: NTS

MAXIMUM ANCHOR FORCES (LRFD):  
V<sub>MAX</sub> = 114 LB LIVE, 204 LB SEISMIC (PER ANCHOR)  
T<sub>MAX</sub> = 381 LB LIVE, 681 LB SEISMIC (PER ANCHOR)  
SEISMIC FORCES INCLUDE OVER-STRENGTH FACTOR Ω<sub>0</sub> = 2

NOTE: VERIFY DECK HAS CAPACITY TO SUPPORT INDICATED LOADS AND ANY ADDITIONAL REQUIRED LOADS. DECK DESIGNED AND SUPPLIED BY OTHERS.



**3** WIRE TIEBACK ATTACHMENT TO CONCRETE FILLED METAL DECK  
SCALE: NTS

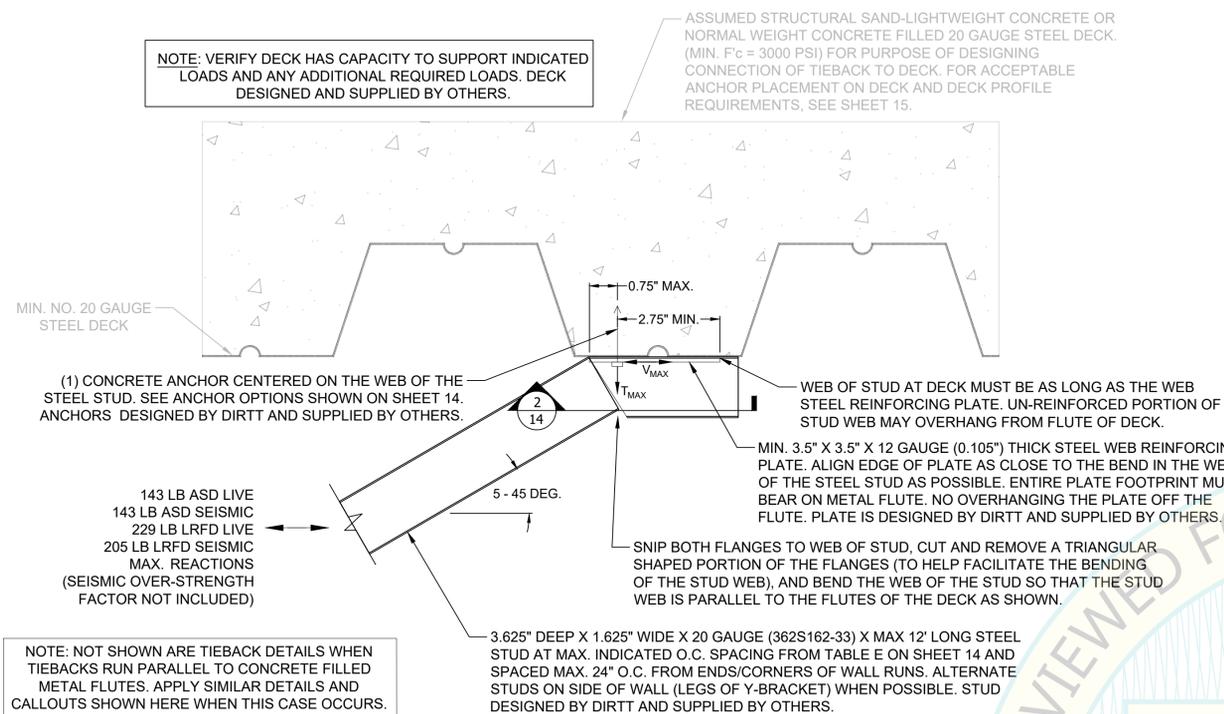
NOTE: NOT SHOWN ARE TIEBACK DETAILS WHEN TIEBACKS RUN PARALLEL TO CONCRETE FILLED METAL FLUTES. APPLY SIMILAR DETAILS AND CALLOUTS SHOWN HERE WHEN THIS CASE OCCURS.

NO.	REVISION/ISSUE	DATE
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CLIENT:  
CLIENT ADDRESS:  
CLIENT CONTACT:

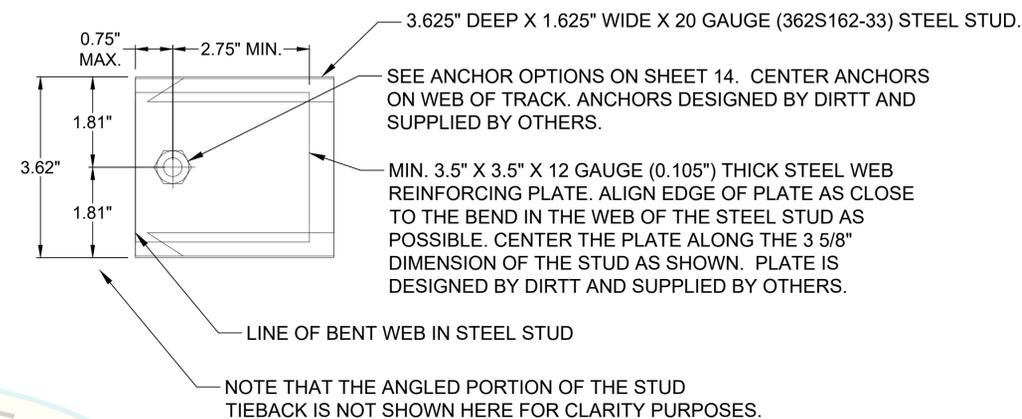
DIRTT ENGINEERING PROJECT NUMBER:  
2006024

SHEET NAME:  
Tieback Attachment to Concrete Filled Metal Deck



**1**  
14 SCALE: NTS

**STUD TIEBACK ATTACHMENT TO CONCRETE FILLED METAL DECK**



**2**  
14 SCALE: NTS

**CROSS-SECTION OF STUD TIEBACK ATTACHMENT TO DECK**

MAXIMUM ANCHOR FORCES (LRFD):  
 $V_{MAX} = 229$  LB LIVE, 408 LB SEISMIC  
 $T_{MAX} = 291$  LB LIVE, 520 LB SEISMIC  
 SEISMIC FORCES INCLUDE OVER-STRENGTH FACTOR  $\Omega_o = 2$

**TABLE E - MAXIMUM O.C. STUD TIEBACK SPACING'S FOR ATTACHMENTS TO CONCRETE FILLED METAL DECK**

S <sub>DS</sub>	Max. O.C. Tieback Spacing (in)											
	Wall Weight (psf)						Wall Height (ft)					
	≤ 5	5 ≤ 7		7 ≤ 9		9 ≤ 11		11 ≤ 14				
	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12
≤ 0.70	72	65	57	72	65	57	72	65	57	72	65	57
0.80	72	65	57	72	65	57	72	65	57	72	65	57
0.90	72	65	57	72	65	57	72	65	57	72	65	57
1.00	72	65	57	72	65	57	72	65	57	65	58	51
1.10	72	65	57	72	65	57	72	65	57	59	53	46
1.20	72	65	57	72	65	57	66	60	52	54	49	42
1.30	72	65	57	72	65	57	61	55	48	50	45	39
1.40	72	65	57	72	65	57	56	51	45	46	42	36
1.50	72	65	57	68	61	54	53	48	42	43	39	34
1.60	72	65	57	64	57	50	49	45	39	40	36	32
1.70	72	65	57	60	54	47	46	42	37	38	34	30
1.80	72	65	57	56	51	45	44	40	35	36	32	28
1.90	72	65	57	53	48	42	41	37	33	34	31	27
2.00	71	64	56	51	46	40	39	36	31	32	29	25
2.10	68	61	54	48	44	38	37	34	30	31	28	24
2.20	65	58	51	46	42	36	36	32	28	29	26	23
2.30	62	56	49	44	40	35	34	31	27	28	25	22

- TABLE CREATED WITH Z/H = 1, CONSERVATIVELY.  
 - INTERPOLATION NOT PERMITTED. USE MORE CONSERVATIVE/RESTRICTIVE RESULT WHEN SITE SPECIFIC CONDITIONS FALL IN-BETWEEN VALUES IN TABLE.

**CONCRETE ANCHOR OPTIONS**

USE (1) 3/8" DIAMETER POWERS-STUD+ SD2 CARBON STEEL EXPANSION ANCHOR PER TIEBACK. (ICC-ESR-2502). ASSUMED MINIMUM F<sub>C</sub> = 3000 PSI, STRUCTURAL SAND-LIGHTWEIGHT, CONDITION B, CRACKED CONCRETE FOR PURPOSE OF CONCRETE ANCHOR DESIGN. NOMINAL EMBEDMENT = 2-3/8" SEE SHEET 15 FOR ACCEPTABLE ANCHOR PLACEMENT ON DECK AND DECK PROFILE REQUIREMENTS.

USE (1) 3/8" DIAMETER DEWALT SCREW-BOLT+ CARBON STEEL SCREW ANCHOR PER TIEBACK. (ICC-ESR-3889). ASSUMED MINIMUM F<sub>C</sub> = 3000 PSI, STRUCTURAL SAND-LIGHTWEIGHT, CONDITION B, CRACKED CONCRETE FOR PURPOSE OF CONCRETE ANCHOR DESIGN. NOMINAL EMBEDMENT = 2.5" SEE SHEET 15 FOR ACCEPTABLE ANCHOR PLACEMENT ON DECK AND DECK PROFILE REQUIREMENTS.

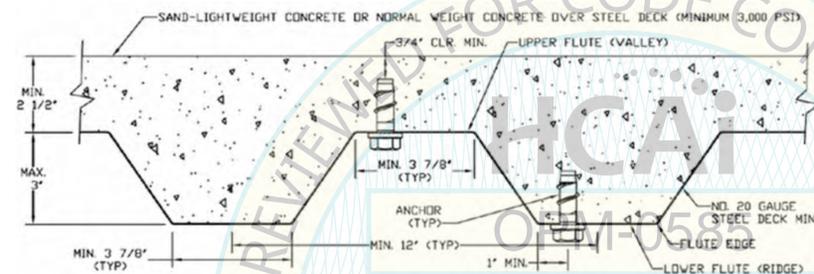
USE (1) 3/8" DIAMETER HILTI KWIK HUS-EZ CARBON STEEL SCREW ANCHOR PER TIEBACK. (ICC-ESR-3027). ASSUMED MINIMUM F<sub>C</sub> = 3000 PSI, STRUCTURAL SAND-LIGHTWEIGHT, CONDITION B, CRACKED CONCRETE FOR PURPOSE OF CONCRETE ANCHOR DESIGN. NOMINAL EMBEDMENT = 2.5" SEE SHEET 15 FOR ACCEPTABLE ANCHOR PLACEMENT ON DECK AND DECK PROFILE REQUIREMENTS.

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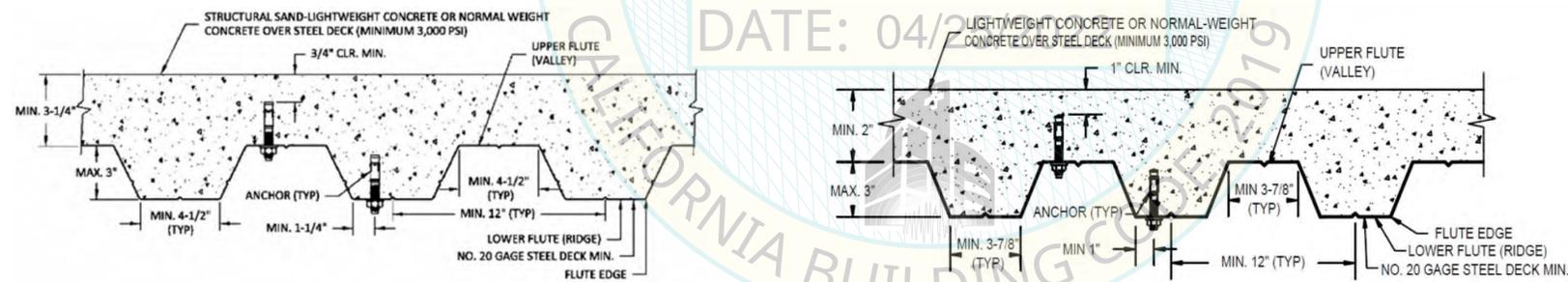
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**OSHPD PREAPPROVAL OF  
MANUFACTURER'S  
CERTIFICATION (OPM)**

## DEWALT SCREW-BOLT+



## DEWALT POWER STUD+ SD2



## HILTI KWIK HUS-EZ

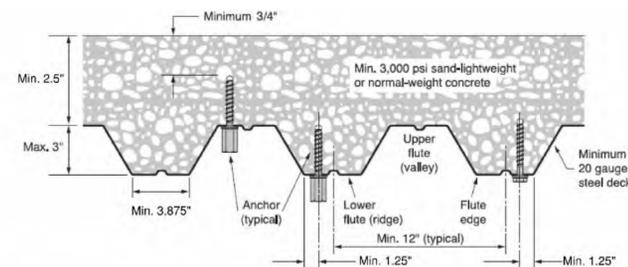


FIGURE 12—INSTALLATION OF KH-EZ, KH-EZ CRC AND KH-EZ I IN SOFFIT OF CONCRETE OVER STEEL DECK FLOOR AND ROOF ASSEMBLIES

SIGNATURE, SEAL, AND DATE OF ENGINEER



NO.	REVISION/ISSUE	DATE
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CLIENT ADDRESS:

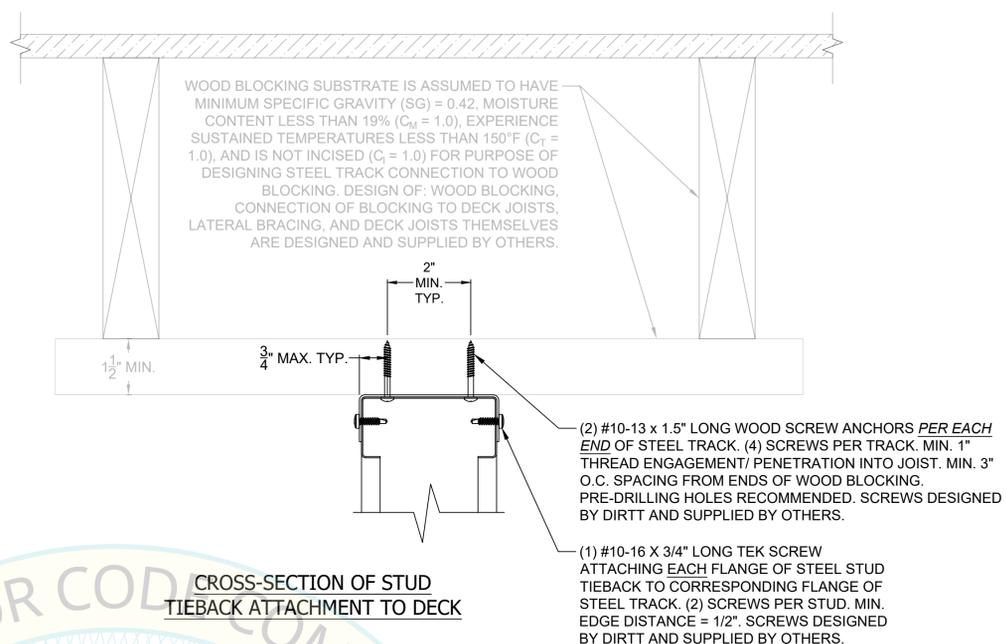
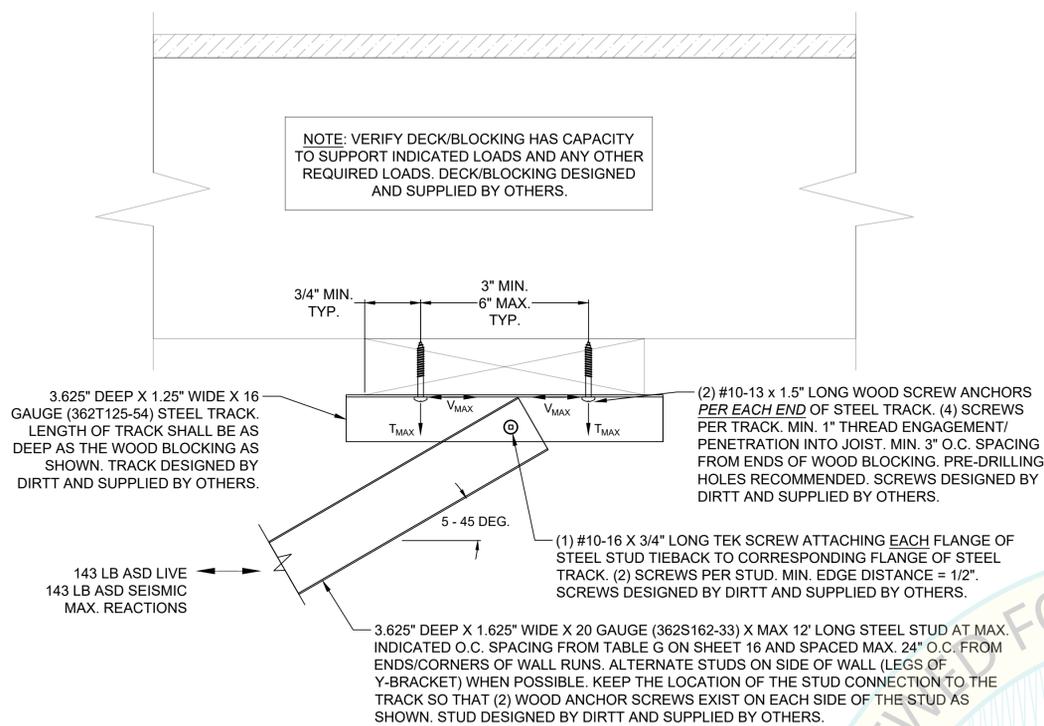
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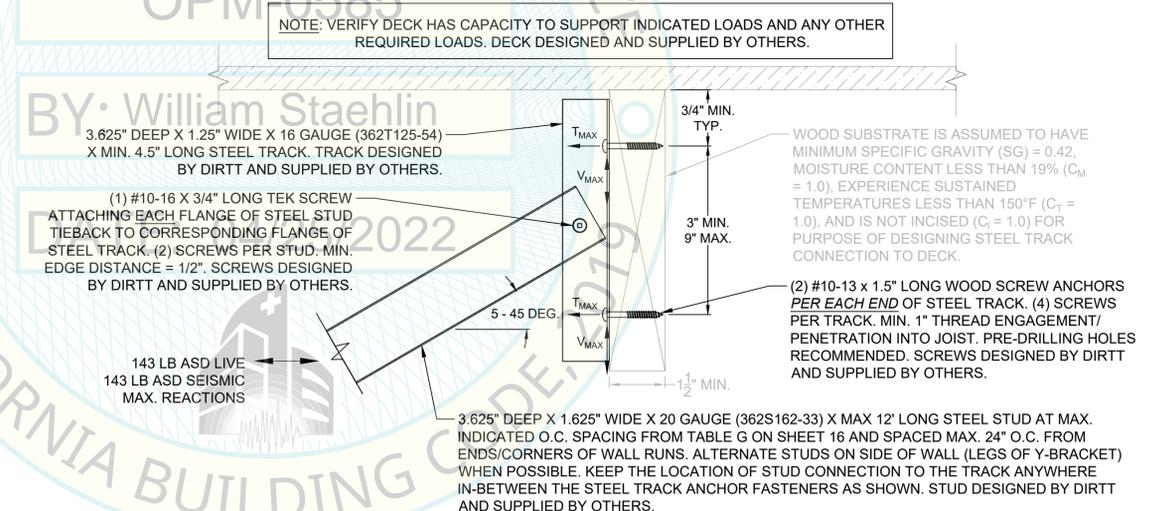
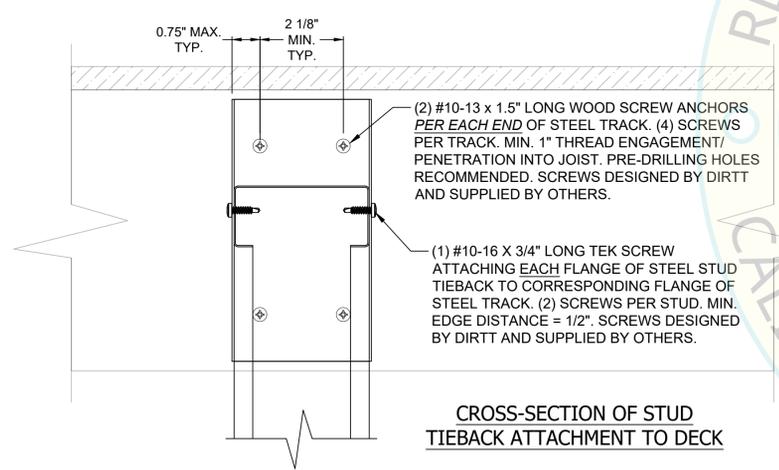
2006024

SHEET NAME:

Tieback Attachment to Concrete Filled Metal Deck



**STUDS PARALLEL TO DECK JOISTS**



**STUDS PERPENDICULAR TO DECK JOISTS**

**1 STUD TIEBACK ATTACHMENT TO WOOD DECK**  
SCALE: NTS

**MAXIMUM ANCHOR FORCES (ASD):**  
 $V_{MAX} = 36$  LB LIVE OR SEISMIC (PER SCREW)  
 $T_{MAX} = 72$  LB LIVE OR SEISMIC (PER SCREW)

**TABLE G - MAXIMUM O.C. STUD TIEBACK SPACING'S FOR ATTACHMENTS TO WOOD DECK**

S <sub>ps</sub>	Max. O.C. Tieback Spacing (in)																			
	≤ 5				5 ≤ 7				7 ≤ 9				9 ≤ 11				11 ≤ 14			
	Wall Weight (psf)																			
	Wall Height (ft)																			
	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12	≤ 9.5	9.5 ≤ 10.5	10.5 ≤ 12					
≤ 0.70	72	65	57	72	65	57	72	65	57	72	65	57	72	65	57					
0.80	72	65	57	72	65	57	72	65	57	72	65	57	64	57	50					
0.90	72	65	57	72	65	57	72	65	57	72	65	57	56	51	44					
1.00	72	65	57	72	65	57	72	65	57	65	58	51	51	46	40					
1.10	72	65	57	72	65	57	72	65	57	59	53	46	46	42	36					
1.20	72	65	57	72	65	57	66	60	52	54	49	42	42	38	33					
1.30	72	65	57	72	65	57	61	55	48	50	45	39	39	35	31					
1.40	72	65	57	72	65	57	56	51	45	46	42	36	36	33	28					
1.50	72	65	57	68	61	54	53	48	42	43	39	34	34	30	27					
1.60	72	65	57	64	57	50	49	45	39	40	36	32	32	28	25					
1.70	72	65	57	60	54	47	46	42	37	38	34	30	30	27	23					
1.80	72	65	57	56	51	45	44	40	35	36	32	28	28	25	22					
1.90	72	65	57	53	48	42	41	37	33	34	31	27	26	24	21					
2.00	71	64	56	51	46	40	39	36	31	32	29	25	25	23	20					
2.10	68	61	54	48	44	38	37	34	30	31	28	24	24	22	19					
2.20	65	58	51	46	42	36	36	32	28	29	26	23	23	21	18					
2.30	62	56	49	44	40	35	34	31	27	28	25	22	22	20	17					

- TABLE CREATED WITH Z/H = 1, CONSERVATIVELY.  
 - INTERPOLATION NOT PERMITTED. USE MORE CONSERVATIVE/RESTRICTIVE RESULT WHEN SITE SPECIFIC CONDITIONS FALL IN-BETWEEN VALUES IN TABLE.

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**OSHPD PREAPPROVAL OF MANUFACTURER'S CERTIFICATION (OPM)**

SIGNATURE, SEAL, AND DATE OF ENGINEER



NO.	REVISION/ISSUE	DATE
1		
2		
3		

CLIENT:  
 CLIENT ADDRESS:  
 CLIENT CONTACT:

DIRTT ENGINEERING PROJECT NUMBER:  
 2006024

SHEET NAME:  
 Tieback Attachment to Wood Deck

PAGE:  
**16**

SCALE: SCALE AS NOTED DATE: 4/9/2021 DRAWN BY: TJD

SIGNATURE, SEAL, AND DATE OF ENGINEER



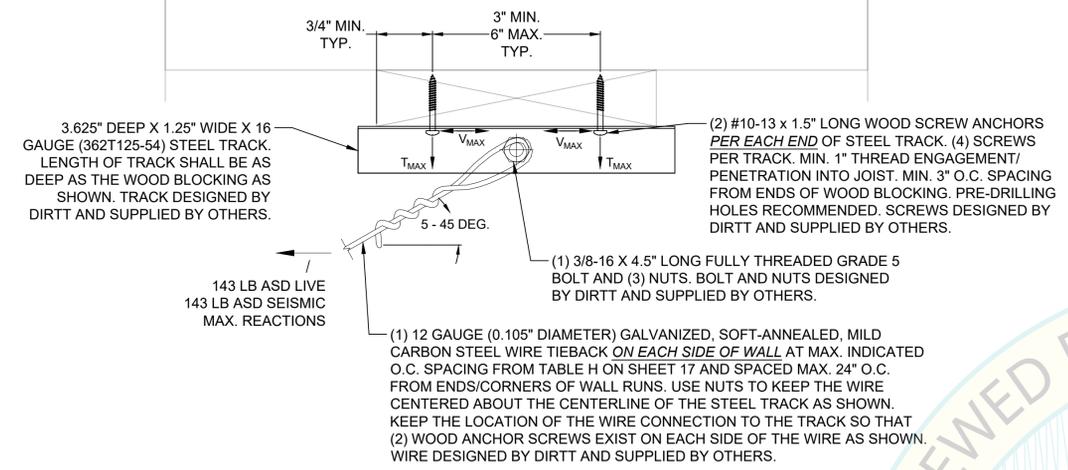
NO.	REVISION/ISSUE	DATE
1		
2		
3		

CLIENT:  
CLIENT ADDRESS:  
CLIENT CONTACT:

DIRTT ENGINEERING PROJECT NUMBER:  
**2006024**

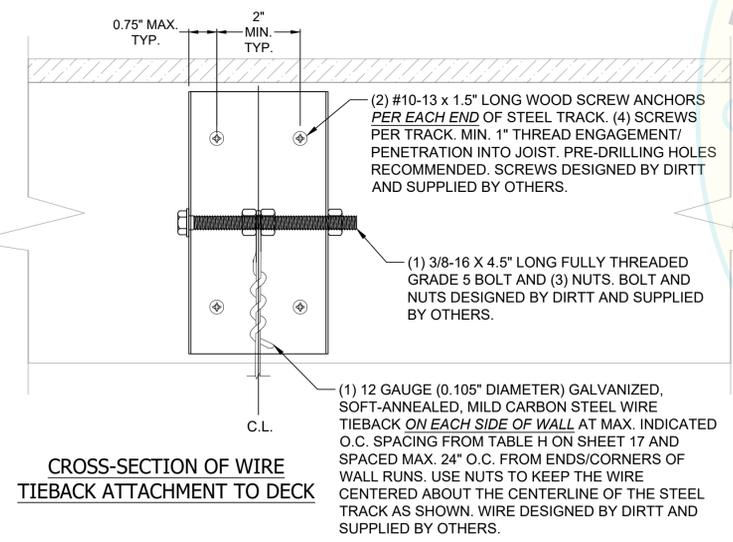
SHEET NAME:  
**Tieback Attachment to Wood Deck**

NOTE: VERIFY DECK/BLOCKING HAS CAPACITY TO SUPPORT INDICATED LOADS AND ANY OTHER REQUIRED LOADS. DECK/BLOCKING DESIGNED AND SUPPLIED BY OTHERS.



**WIRES PARALLEL TO DECK JOISTS**

NOTE: VERIFY DECK HAS CAPACITY TO SUPPORT INDICATED LOADS AND ANY OTHER REQUIRED LOADS. DECK DESIGNED AND SUPPLIED BY OTHERS.

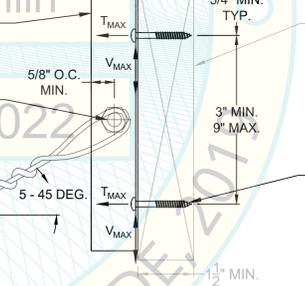


**WIRES PERPENDICULAR TO DECK JOISTS**

3.625" DEEP X 1.25" WIDE X 16 GAUGE (362T125-54) STEEL TRACK. TRACK DESIGNED BY DIRTT AND SUPPLIED BY OTHERS.

(1) 3/8-16 X 4.5" LONG FULLY THREADED GRADE 5 BOLT AND (3) NUTS. BOLT AND NUTS DESIGNED BY DIRTT AND SUPPLIED BY OTHERS.

143 LB ASD LIVE 143 LB ASD SEISMIC MAX. REACTIONS



**TABLE H - MAXIMUM O.C. WIRE TIEBACK SPACING'S FOR ATTACHMENTS TO WOOD DECK**

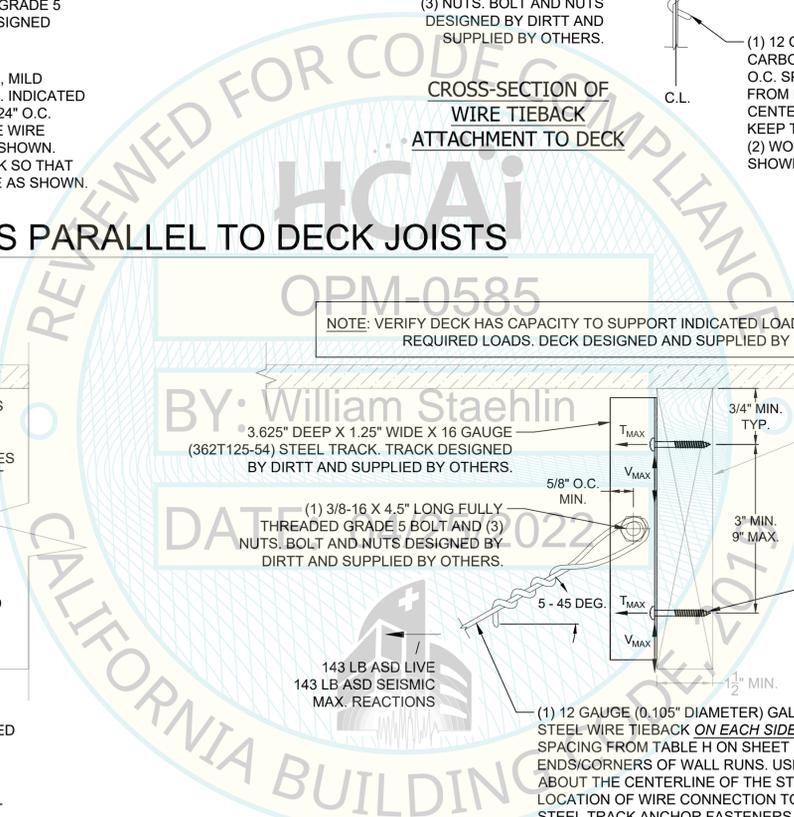
S <sub>pk</sub>	Max. O.C. Tieback Spacing (in)														
	Wall Weight (psf)						Wall Height (ft)								
	≤ 5		5 ≤ 7		7 ≤ 9		9 ≤ 11		11 ≤ 14						
≤ 0.70	72	65	57	72	65	57	72	65	57	72	65	57	72	65	57
0.80	72	65	57	72	65	57	72	65	57	72	65	57	64	57	50
0.90	72	65	57	72	65	57	72	65	57	72	65	57	56	51	44
1.00	72	65	57	72	65	57	72	65	57	65	58	51	51	46	40
1.10	72	65	57	72	65	57	72	65	57	59	53	46	46	42	36
1.20	72	65	57	72	65	57	66	60	52	54	49	42	42	38	33
1.30	72	65	57	72	65	57	61	55	48	50	45	39	39	35	31
1.40	72	65	57	72	65	57	56	51	45	46	42	36	36	33	28
1.50	72	65	57	68	61	54	53	48	42	43	39	34	34	30	27
1.60	72	65	57	64	57	50	49	45	39	40	36	32	32	28	25
1.70	72	65	57	60	54	47	46	42	37	38	34	30	30	27	23
1.80	72	65	57	56	51	45	44	40	35	36	32	28	28	25	22
1.90	72	65	57	53	48	42	41	37	33	34	31	27	26	24	21
2.00	71	64	56	51	46	40	39	36	31	32	29	25	25	23	20
2.10	68	61	54	48	44	38	37	34	30	31	28	24	24	22	19
2.20	65	58	51	46	42	36	36	32	28	29	26	23	23	21	18
2.30	62	56	49	44	40	35	34	31	27	28	25	22	22	20	17

- TABLE CREATED WITH Z/H = 1, CONSERVATIVELY.  
- INTERPOLATION NOT PERMITTED. USE MORE CONSERVATIVE/RESTRICTIVE RESULT WHEN SITE SPECIFIC CONDITIONS FALL IN-BETWEEN VALUES IN TABLE.

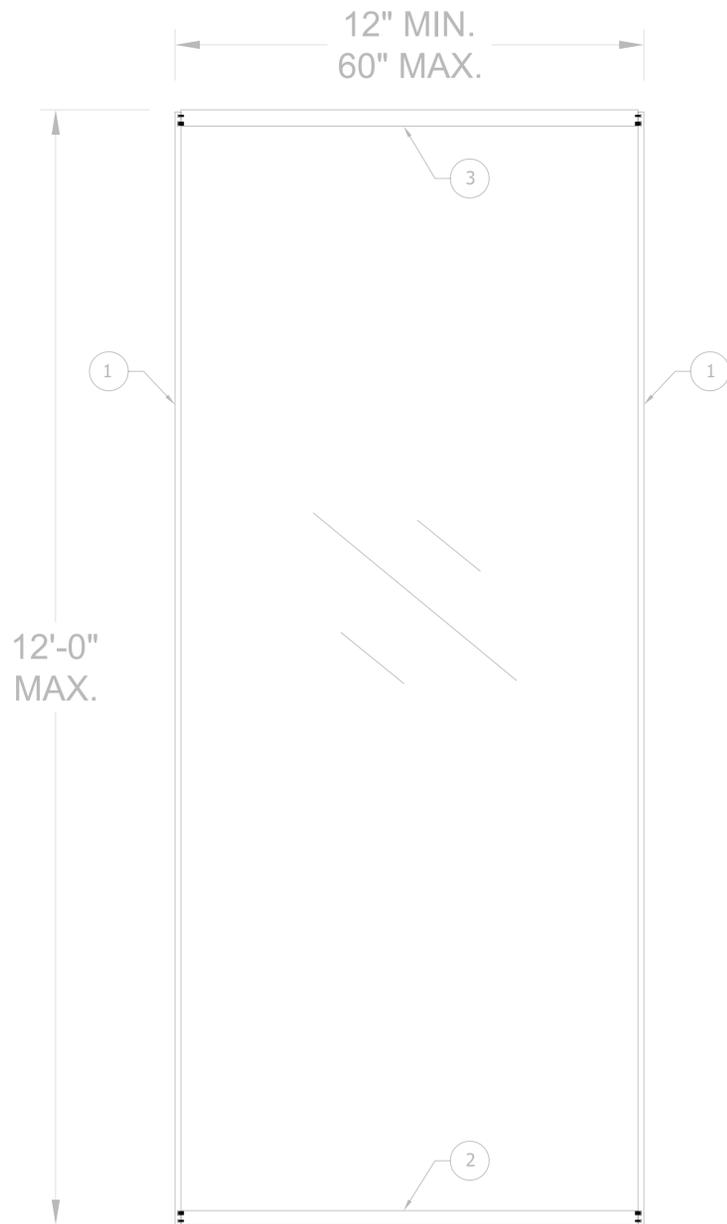
**1 WIRE TIEBACK ATTACHMENT TO WOOD DECK**

SCALE: NTS

MAXIMUM ANCHOR FORCES (ASD):  
V<sub>MAX</sub> = 36 LB LIVE OR SEISMIC (PER SCREW)  
T<sub>MAX</sub> = 72 LB LIVE OR SEISMIC (PER SCREW)







PROFILE TYPE	ITEM #1 VERTICAL	ITEM #2 SILL	ITEM #3 HEADER
CURVILINEAR	DIRTT PART #11006 	DIRTT PART #11889 	DIRTT PART #11005 
	DIRTT PART #11052 	DIRTT PART #11894 	DIRTT PART #11051 
	DIRTT PART #11256 	DIRTT PART #11888 	DIRTT PART #11258 
RECTILINEAR	DIRTT PART #11901 	DIRTT PART #11902 	DIRTT PART #11903 
	DIRTT PART #11268 	DIRTT PART #11893 	DIRTT PART #11270 
	EVIL TWIN		



ITEM #	SECTION TYPE	ITEM NAME	PART #	t (IN)	A (IN <sup>2</sup> )	I <sub>xx</sub> (IN <sup>4</sup> )	I <sub>yy</sub> (IN <sup>4</sup> )	S <sub>xx</sub> (IN <sup>3</sup> )	S <sub>yy</sub> (IN <sup>3</sup> )	J (IN <sup>8</sup> )
CURVILINEAR WALL ASSEMBLY										
1	VERTICAL	WING	11006	0.060	0.559	0.729	0.0240	0.364	0.0608	0.00121
2	SILL (V2)	GERRY	11889	0.080	1.40	2.48	0.388	1.28	0.397	0.0955
3	HEADER	WILLY	11005	0.080	1.39	2.40	0.675	1.24	0.639	0.00356
RECTILINEAR WALL ASSEMBLY										
1	VERTICAL	REX	11052	0.060	0.578	0.857	0.0369	0.428	0.0782	0.000882
2	SILL (V2)	GERRY	11894	0.080	1.51	2.79	0.460	1.46	0.439	0.0883
3	HEADER	LITTLE BOX-WILLY	11051	0.080	1.49	2.66	0.789	1.39	0.688	0.00435
BLADE WALL ASSEMBLY										
1	VERTICAL	BLADE	11256	0.080	0.630	0.900	0.0246	0.450	0.0433	0.00152
2	SILL (V2)	GERRY	11888	0.080	1.36	2.45	0.311	1.26	0.327	0.104
3	HEADER	WILLY	11258	0.080	1.40	2.42	0.571	1.25	0.490	0.00433
SINGLE SIDED WALL ASSEMBLY										
1	VERTICAL	SINGLE SIDED	11901	0.060	0.594	1.03	0.0378	0.466	0.0824	0.00138
2	SILL (V2)	GERRY	11902	0.080	1.42	2.74	0.444	1.40	0.432	0.0922
3	HEADER	WILLY	11903	0.080	1.41	2.70	0.755	1.39	0.681	0.00389
EVIL TWIN (DOUBLE SIDED) WALL ASSEMBLY										
1	VERTICAL	EVIL TWIN	11268	0.060	0.668	1.25	0.0376	0.626	0.0891	0.00197
2	SILL (V2)	GERRY	11893	0.080	1.43	2.79	0.436	1.42	0.427	0.101
3	HEADER	WILLY	11270	0.080	1.44	2.78	0.751	1.41	0.677	0.00410

- NOTES:
- NO EQUIPMENT HANGING FROM WALLS
  - GLASS PANELS TO BE FULLY TEMPERED AND MIN. 1/4" THICK.
  - DEFLECTION OF WALL MEMBERS LESSER OF L/175 OR 3/4" PER 2019 CBC SECTION 2403.3
  - ALL ALUMINUM EXTRUSIONS SHOWN : ASTM 6063-T6
  - ANCHOR LOCATIONS: TOP AND BOTTOM OF WALL (SEE DRAWINGS)

**DIRTT**

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403.723.5000 Fax: 403.723.6644 www.dirtt.net

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**OSHDP PREAPPROVAL OF  
MANUFACTURER'S  
CERTIFICATION (OPM)**

SIGNATURE, SEAL, AND DATE OF ENGINEER



NO.	REVISION/ISSUE	DATE
1		
2		
3		

CLIENT:  
CLIENT ADDRESS:  
CLIENT CONTACT:

DIRTT ENGINEERING PROJECT NUMBER:  
**2006024**  
SHEET NAME: **GLASS WALL  
FRAME SECTION  
PROPERTIES**

PAGE:  
**A1**  
SCALE: SCALE AS NOTED DATE: 4/9/2021 DRAWN BY: TJD

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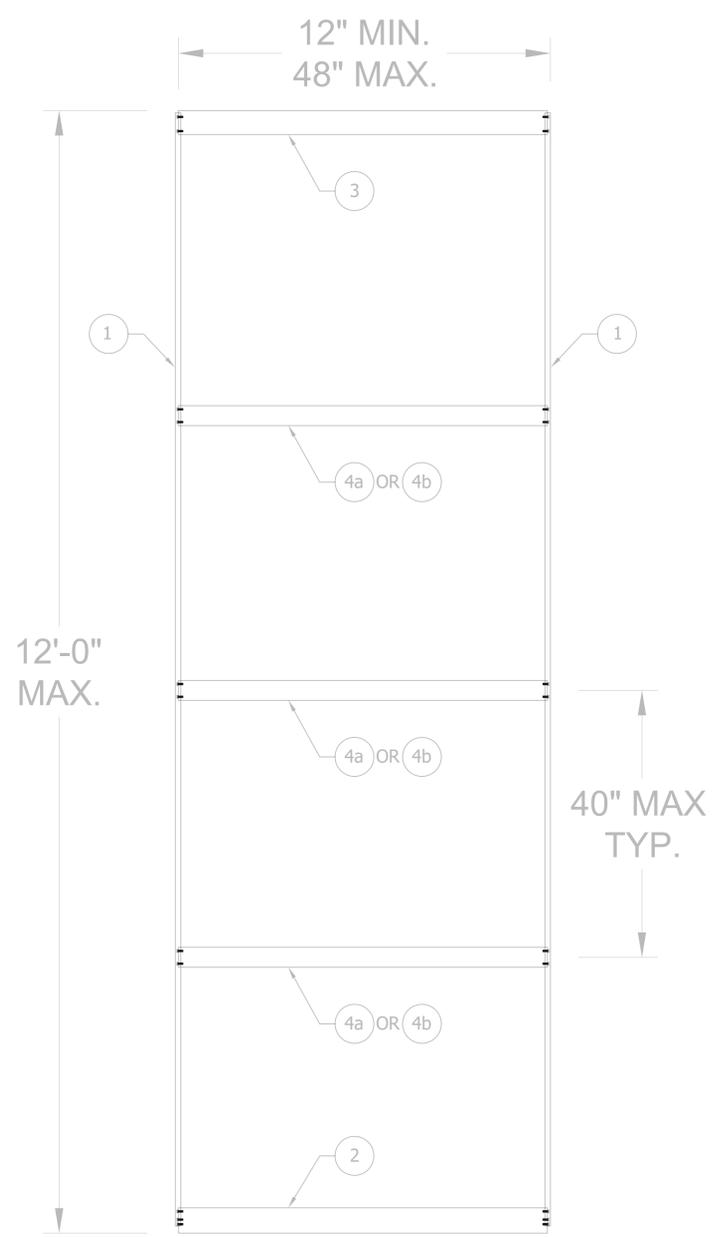


NO.	REVISION/ISSUE	DATE
1		
2		
3		

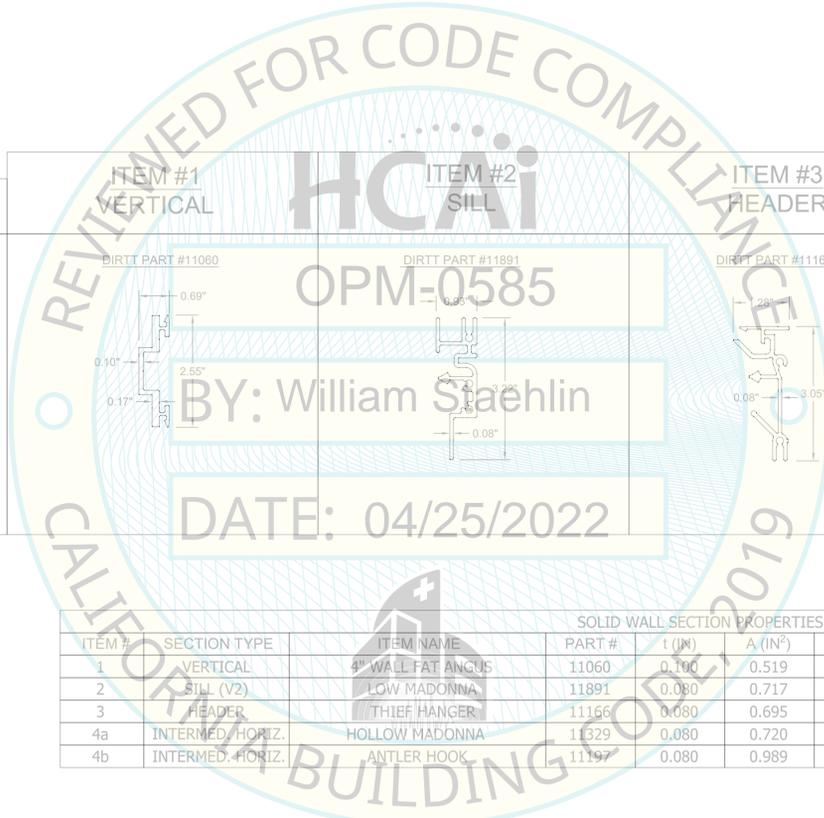
CLIENT:  
CLIENT ADDRESS:  
CLIENT CONTACT:

DIRTT ENGINEERING PROJECT NUMBER:  
2006024  
SHEET NAME: SOLID WALL FRAME SECTION PROPERTIES

PAGE:  
**A2**  
SCALE AS NOTED DATE: 4/9/2021 DRAWN BY: TJD

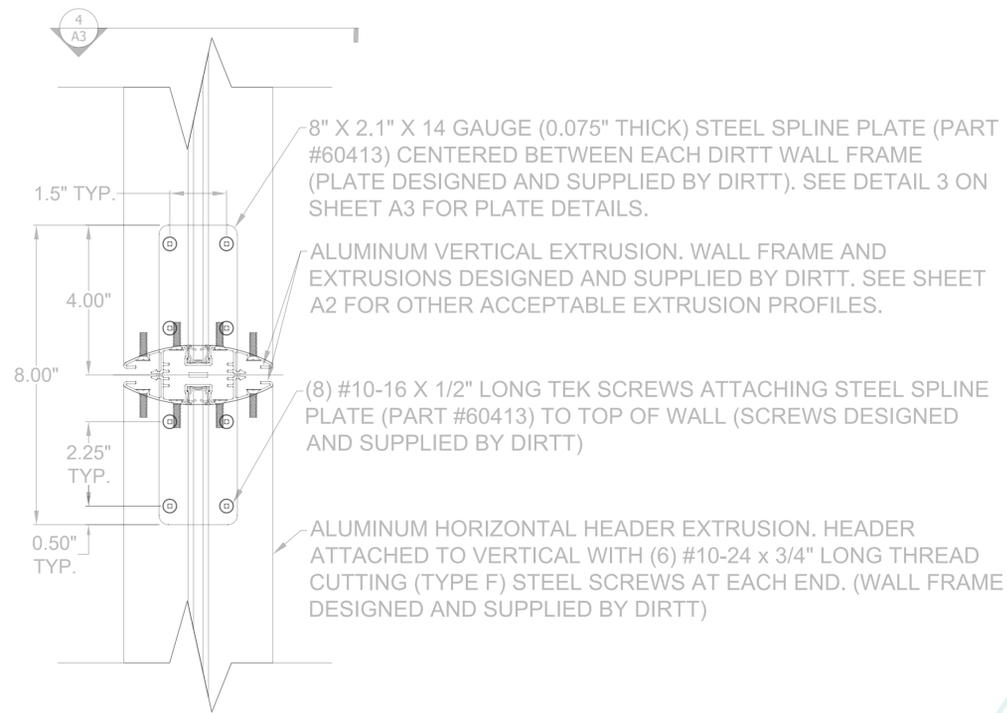


PROFILE TYPE	ITEM #1 VERTICAL	ITEM #2 SILL	ITEM #3 HEADER	ITEM #4a INTERMED. HORIZONTAL	ITEM #4b INTERMED. HORIZONTAL
SOLID WALL	DIRTT PART #11060 	DIRTT PART #11891 	DIRTT PART #11166 	DIRTT PART #11329 	DIRTT PART #11197 

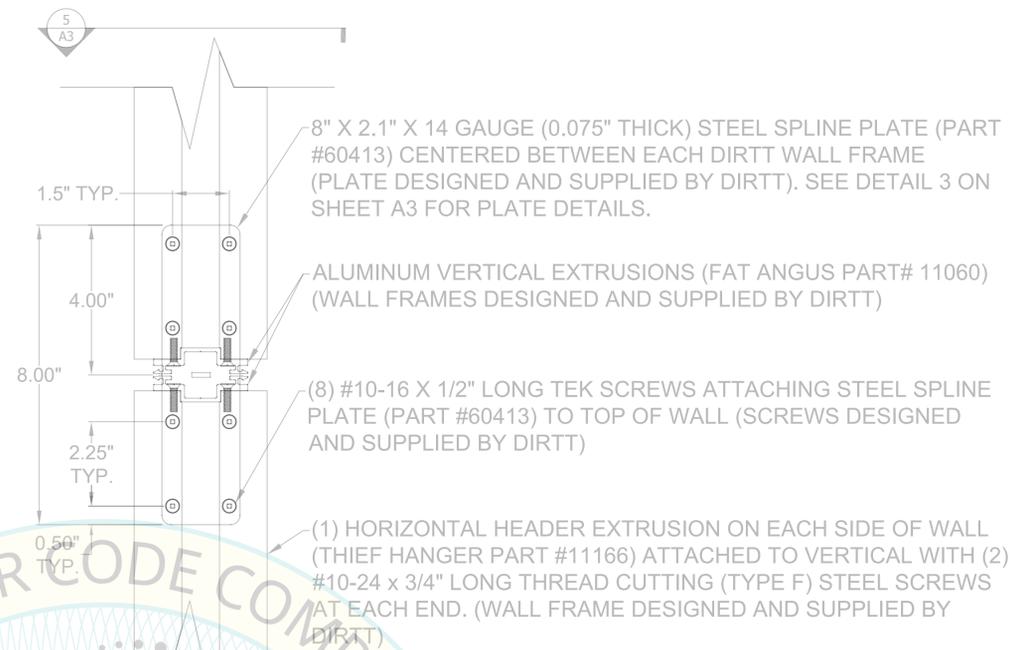


SOLID WALL SECTION PROPERTIES										
ITEM #	SECTION TYPE	ITEM NAME	PART #	t (IN)	A (IN <sup>2</sup> )	I <sub>xx</sub> (IN <sup>4</sup> )	I <sub>yy</sub> (IN <sup>4</sup> )	S <sub>xx</sub> (IN <sup>3</sup> )	S <sub>yy</sub> (IN <sup>3</sup> )	J (IN <sup>4</sup> )
1	VERTICAL	4" WALL FAT ANGUS	11060	0.100	0.519	0.330	0.0190	0.259	0.0549	0.00270
2	VERTICAL	LOW MADONNA	11891	0.080	0.717	0.467	0.0530	0.240	0.0927	0.00249
3	HEADER	THIEF HANGER	11166	0.080	0.695	0.610	0.056	0.342	0.0679	0.00209
4a	INTERMED. HORIZ.	HOLLOW MADONNA	11329	0.080	0.720	0.453	0.0772	0.357	0.154	0.101
4b	INTERMED. HORIZ.	ANTLER HOOK	11197	0.080	0.989	1.68	0.100	0.676	0.118	0.00373

- NOTES:
- DEFLECTION OF WALL MEMBERS LIMITED TO L/120
  - ALL ALUMINUM EXTRUSIONS SHOWN : ASTM 6063-T6
  - ANCHOR LOCATIONS: TOP AND BOTTOM OF WALL (SEE DRAWINGS)



**1**  
A3  
GLASS WALL HEADER SPLICE DETAIL (PLAN)  
SCALE: NTS



**2**  
A3  
SOLID WALL HEADER SPLICE DETAIL (PLAN)  
SCALE: NTS

**REVIEWED FOR CODE COMPLIANCE**

**HCAI**

OPM-0585

BY: William Staehlin

DATE: 04/25/2022

CALIFORNIA BUILDING CODE, 2019

ASTM A1008 CS TYPE B  
FY = 33 KSI

1/2" X 1/8" THRU-SLOT CENTERED ABOUT PLATE

0.075"

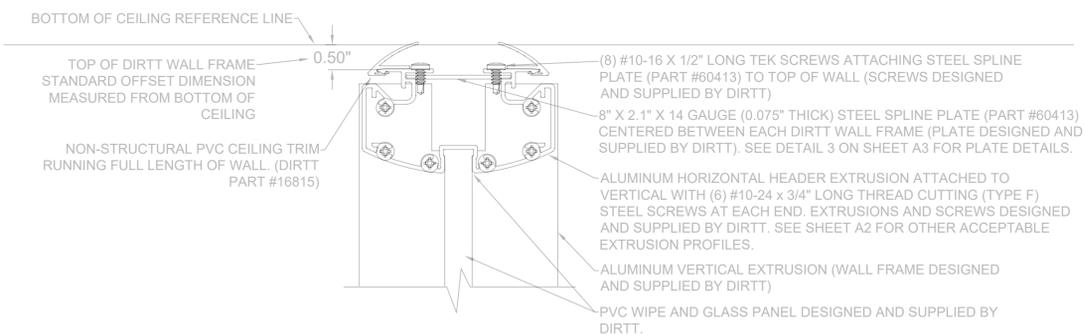
2.40"

8.00"

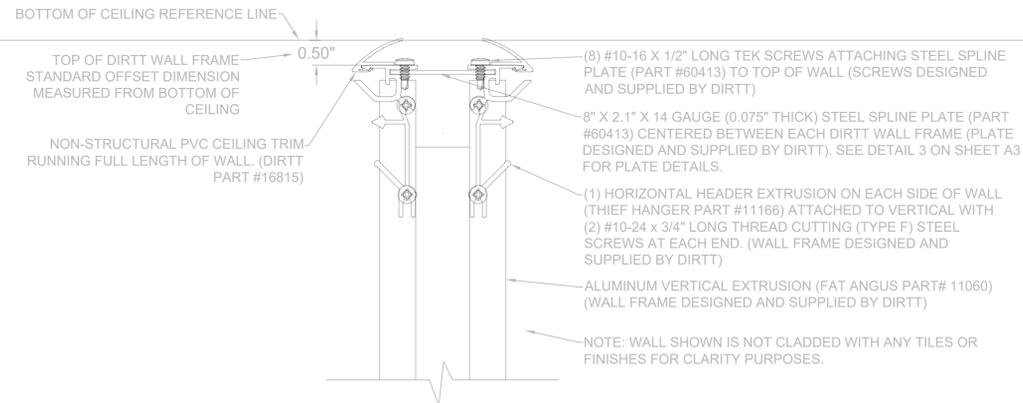
TOP OF WALL SPLICE PLATE  
PN 60413

NOTES:  
1. DETAILS ON SHEET A3 ONLY APPLY WHEN TOP OF WALL STUD OR WIRE TIEBACKS ARE UTILIZED.  
2. GLASS AND SOLID WALL FRAMES MAY ALSO EXIST ADJACENT TO ANOTHER (NOT SHOWN HERE) AND UTILIZE STEEL SPLICE PLATE PN 60413 TO ATTACH THE WALL FRAME HEADER MEMBERS TOGETHER.

**3**  
A3  
TOP OF WALL SPLINE PLATE PART #60413  
SCALE: NTS



**4**  
A3  
GLASS WALL HEADER SPLICE DETAIL (SECTION)  
SCALE: NTS



**5**  
A3  
SOLID WALL HEADER SPLICE DETAIL (SECTION)  
SCALE: NTS

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2		
3		

CLIENT:  
CLIENT ADDRESS:  
CLIENT CONTACT:

DIRTT ENGINEERING PROJECT NUMBER:  
**2006024**  
SHEET NAME:  
**TOP OF WALL DETAILS (TIEBACKS ONLY)**

PAGE:  
**A3**  
SCALE: SCALE AS NOTED DATE: 4/9/2021 DRAWN BY: TJD