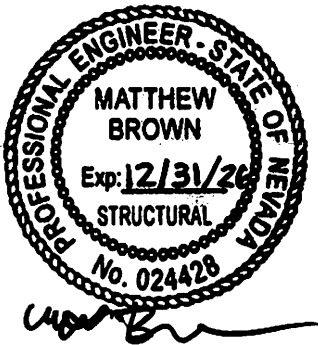


## SEISMIC KIT INSTALL MANUAL FOR NARROW & STANDARD DEPTH CASES



**Applicable case models: -**

• **Narrow Depth Foot Length Cases**

3NDML - 4FT,6FT,8FT,12FT  
 JNRBH - 4FT,6FT,8FT,12FT  
 ON25UM - 4FT,6FT,8FT,12FT  
 ON35UM - 4FT,6FT,8FT,12FT  
 ON3UM - 4FT,6FT,8FT,12FT  
 ON4UM - 4FT,6FT,8FT,12FT  
 ON5DM - 4FT,6FT,8FT,12FT  
 ON5DMHX - 4FT,6FT,8FT,12FT  
 ON5DMX - 4FT,6FT,8FT,12FT  
 ON5DMXA - 4FT,6FT,8FT,12FT  
 ON5UM - 4FT,6FT,8FT,12FT  
 ONHM - 4FT,6FT,8FT,12FT  
 ONHMH - 4FT,6FT,8FT,12FT  
 ONHPH - 4FT,6FT,8FT,12FT  
 ONRB - 4FT,6FT,8FT,12FT  
 ONRBH - 4FT,6FT,8FT,12FT  
 ONRM - 4FT,6FT,8FT,12FT

• **Narrow Depth Door Length Cases**

JNRBH - 2DR,3DR,4DR,5DR  
 JNRZH - 2DR,3DR,4DR,5DR  
 ONRB - 2DR,3DR,4DR,5DR,6DR  
 ONRBH - 2DR,3DR,4DR,5DR,6DR  
 ONRZ - 2DR,3DR,4DR,5DR,6DR  
 ONRZH - 2DR,3DR,4DR,5DR,6DR

• **Standard Depth Door Length Cases**

ORB - 2DR,3DR,4DR,5DR,6DR  
 ORBH - 2DR,3DR,4DR,5DR,6DR  
 ORZ - 2DR,3DR,4DR,5DR,6DR  
 ORZH - 2DR,3DR,4DR,5DR,6DR  
 VRB - 2DR,3DR,4DR,5DR  
 VRBQA - 2DR,3DR,4DR,5DR  
 VRBH - 2DR,3DR,4DR,5DR  
 VRBHQA - 2DR,3DR,4DR,5DR

• **Standard Depth Foot Length Cases**

5DMLH - 4FT,6FT,8FT,12FT  
 6DMLH - 4FT,6FT,8FT,12FT  
 6DMLHQA - 4FT,6FT,8FT,12FT  
 6MLH - 4FT,6FT,8FT,12FT  
 6MLHQA - 4FT,6FT,8FT,12FT  
 O25UM - 4FT,6FT,8FT,12FT  
 O2UM - 4FT,6FT,8FT,12FT  
 O2MZD - 4FT,6FT,8FT,12FT  
 O325UM - 4FT,6FT,8FT,12FT  
 O35UM - 4FT,6FT,8FT,12FT  
 O3UM - 4FT,6FT,8FT,10FT,12FT  
 O4UM - 4FT,6FT,8FT,12FT  
 O5DM - 4FT,6FT,8FT,12FT  
 O5DMA - 4FT,6FT,8FT,12FT  
 O5DMH - 4FT,6FT,8FT,12FT  
 O5DMM - 4FT,6FT,8FT,12FT  
 O5M - 4FT,6FT,8FT,12FT  
 O5MA - 8FT  
 O5MAK - 4FT,6FT,8FT,12FT  
 O5MH - 4FT,6FT,8FT,12FT  
 O5UM - 4FT,6FT,8FT,10FT,12FT  
 OHM - 4FT,6FT,8FT,12FT  
 OHMH - 4FT,6FT,8FT,12FT  
 OHP - 4FT,6FT,8FT,12FT  
 OHPH - 4FT,6FT,8FT,12FT  
 OM - 4FT,6FT,8FT,12FT  
 OMM - 4FT,6FT,8FT,12FT  
 OMZD - 4FT,6FT,8FT,12FT  
 ORB - 4FT,6FT,8FT,12FT  
 ORBH - 4FT,6FT,8FT,12FT  
 ORM - 12FT  
 VRB - 4FT,6FT,8FT,12FT  
 VRBQA - 4FT,6FT,8FT,12FT  
 VRBH - 4FT,6FT,8FT,12FT  
 VRBHQA - 4FT,6FT,8FT,12FT

## **OVERVIEW OF STEPS FOR COMPLETE INSTALLATION STEPS**

1. Look up the job site for Maximum Seismic Value - Ss from [www.seismicmaps.org](http://www.seismicmaps.org)
2. Compare the Ss values with the chart and determine the location and hardware required.
3. Create chalk/laser line and mark drill hole pattern on the floor according to the template and anchors required.
4. Drill holes in the concrete slab as per the pattern and the HILTI requirements and clean the debris.
5. Place the threaded anchor rods in the drilled holes and check if the threads left are between a minimum of 1.250" to a maximum of 1.750" above the ground level. If not, cut the threaded anchor rods to attain the above-mentioned length requirements for each drilled hole.
6. Secure the threaded anchor rods in the drilled holes using epoxy and provide appropriate curing time.
7. Place the rear seismic brackets over the threaded anchor rods and lightly fasten them. Position the case behind rear seismic brackets at the desired location.
8. Drill pilot holes in the rail using appropriate clearance holes present on seismic bracket securing the case and install screws.
9. Once the rear seismic brackets are installed, place the front brackets on the threaded anchor rods on the ground and lightly fasten them.
10. Drill pilot holes in the rail using appropriate clearance holes present on seismic bracket securing the case and install screws.

**The final page of this document is an appendix listing needed parts for the installation:**

### STEP #1

Look up the Job Site value for Maximum considered Earthquake Ground Motion Parameter (for 0.2 sec period):  $S_s = ?$

To check the  $S_s$  factor at a given address go to [www.seismicmaps.org](http://www.seismicmaps.org)

In the “Reference” dropdown, choose “ASCE 7-16”, then enter the address and click “Go”.

You need to choose “Risk Category – II” and “Site Class – D”. The  $S_s$  value is reported at the top of the table that pops up. In this example below the  $S_s = 1.325$

#### Search for Address or Coordinates

Reference: **ASCE 7-16** | Risk Category: II | Site Class: D - Default (See Section 11.4.3)

Project Title (optional): | Address: | Coords: 37.76316681 | -121.54288610 | **Go**

Latitude, Longitude: 37.76316681, -121.54288610 **Print**

Date	8/27/2024, 5:38:27 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
$S_s$	1.325	MCE <sub>R</sub> ground motion. (for 0.2 second period)

### STEP #2

Compare that value with the chart below to determine the store location and hardware required: In the STEP 1 example previously shown ( $S_s=1.325$ ), minimum 4” slab thickness is required. The values in the chart below are maximum  $S_s$  allowable per slab height.

**NOTE:** Minimum 4” thick concrete slab is required if concrete slab thickness is not mentioned.

Minimum Concrete Slab Thickness					
S <sub>s</sub>	Case Model			S <sub>s</sub>	
	Narrow Cases	Standard Cases	VRB Cases		
≤0.4	No seismic brackets required			≤0.4	
≤1.7	Any slab	Any slab	Minimum 5” concrete slab required	≤1.7	
≤1.8	Minimum 5” concrete slab required			≤1.8	
≤1.9				≤1.9	
≤2.0				≤2.0	
≤2.1			Minimum 6” concrete slab required	Minimum 6” concrete slab required	≤2.1
≤2.2	≤2.2				
≤2.3	Minimum 6” concrete slab required			Specialized engineering required	≤2.3
≤2.4					≤2.4
≤2.5	Minimum 6” concrete slab required		Specialized engineering required	≤2.5	
≤2.6				≤2.6	
≤2.7		≤2.7			
≤2.8		Minimum 5” concrete slab required	≤2.8		

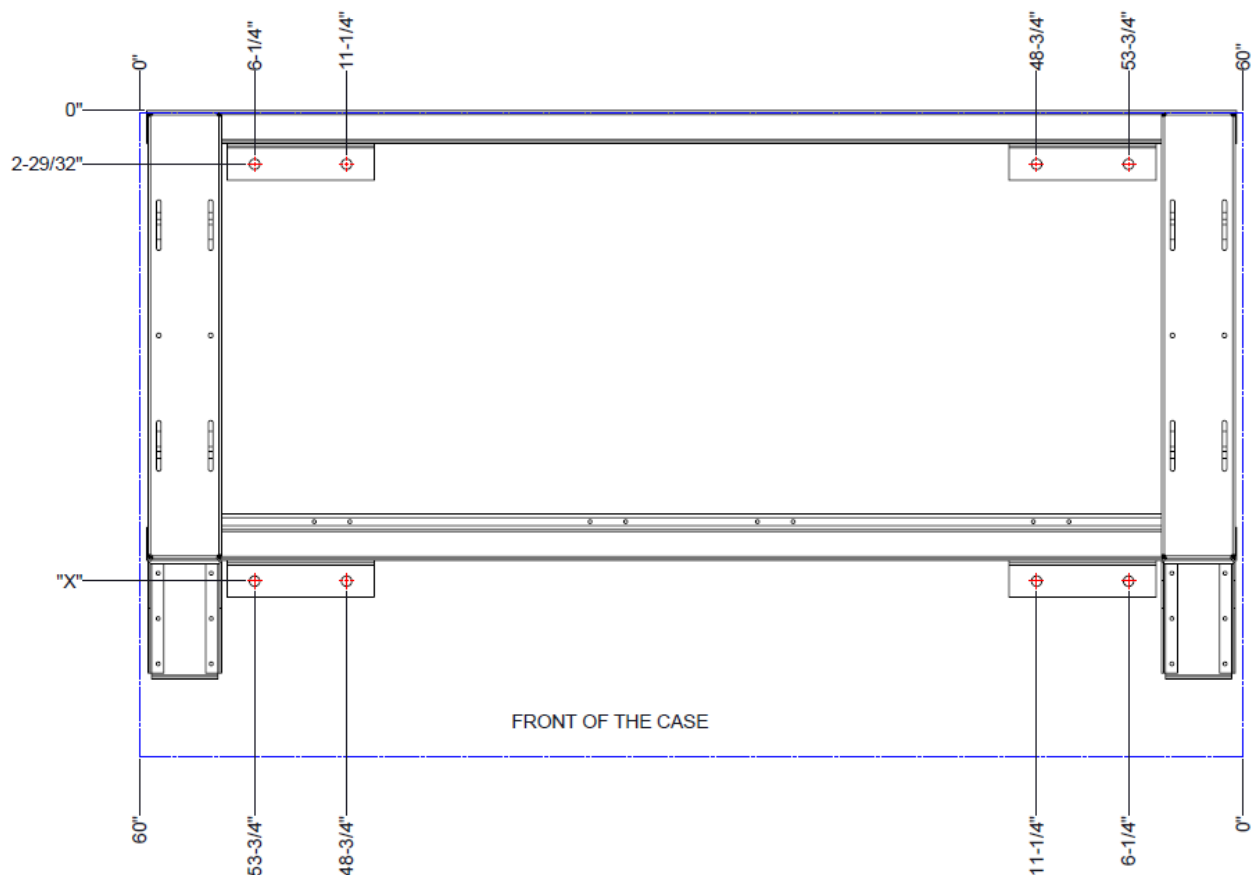
### STEP #3

Create chalk/laser line and mark drill hole pattern on floor according to the template and the anchors required.

#### NOTE:

1. Minimum 4" thick concrete slab is required if concrete slab thickness is not mentioned.
2. The blue dotted line indicates the standard case outline sitting on the base frame without the ends or any other options that might attach to the rear of the case.
3. The rear of the tank is in line with the rear of the base frame.
4. For cases with end panel, each end panel has **1-9/16"** thickness.
5. For cases in a lineup, plan **1-5/8"** thickness for foam-panel partitions and sealant (Caulk, Butyl, etc.) between cases
6. For cases directly bolted together in a line-up, plan **1/8"** thickness for the sealant (Caulk, Butyl, etc.) between case

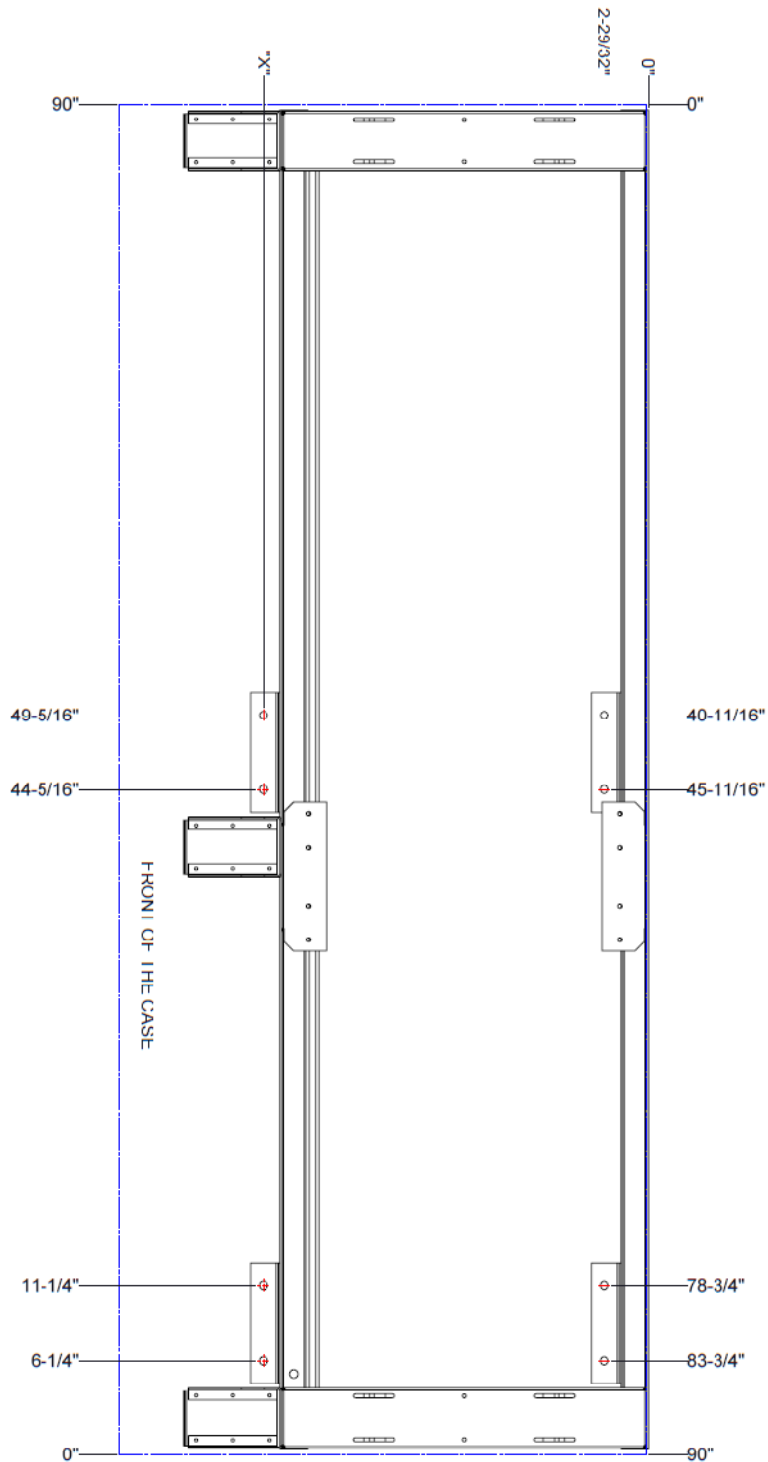
#### ➤ Template for 2DR Narrow depth and Standard depth Cases



Applicable case models –

- "X" = **22-11/16"** FOR ONRB, ONRZ, ONRBH, ONRZH, ONRM, JNRBH, JNRZH
- "X" = **29-15/16"** FOR ORB, ORZ, ORBH, ORZH, VRB, VRBQA, VRBH, VRBHQ

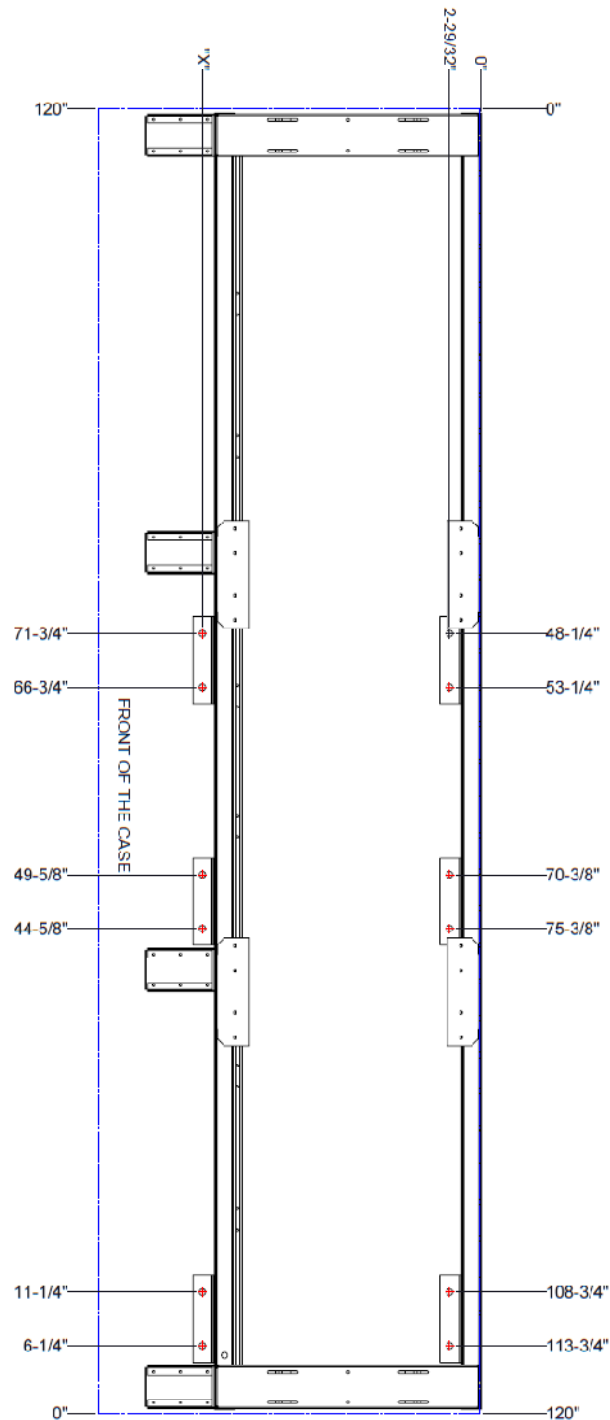
➤ Template for 3DR Narrow depth and Standard depth Cases



Applicable case models –

- "X" = 22-11/16" FOR ONRB, ONRZ, ONRBH, ONRZH, ONRM, JNRBH, JNRZH
- "X" = 29-15/16" FOR ORB, ORZ, ORBH, ORZH, VRB, VRBQA, VRBH, VRBHQ

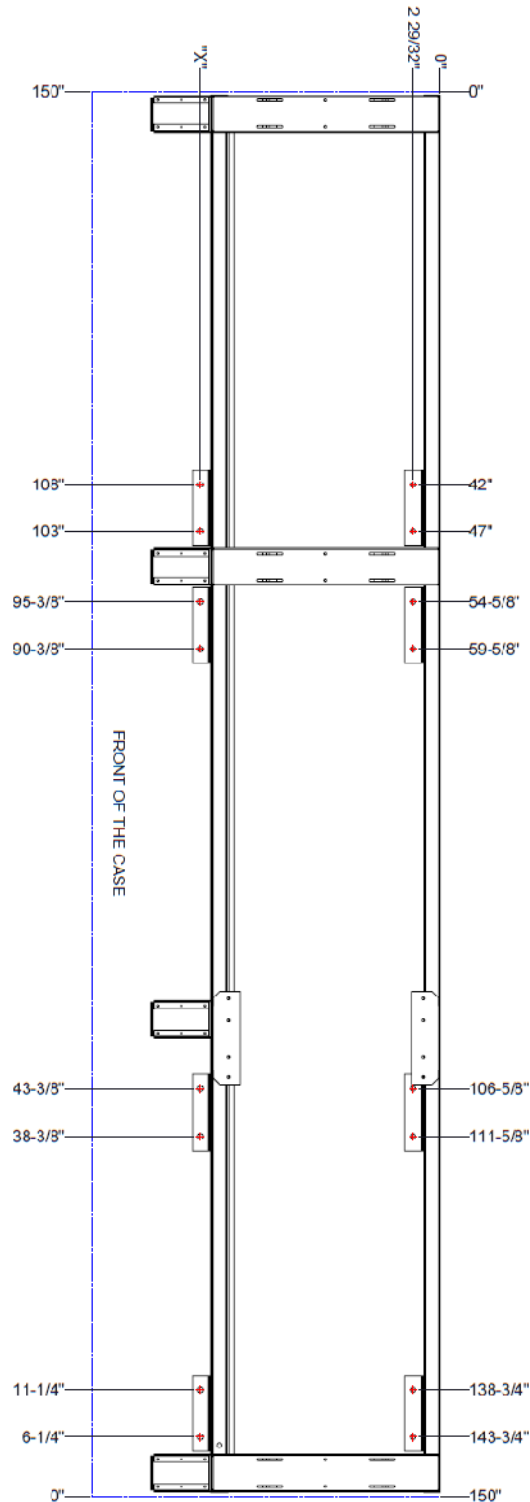
➤ **Template for 4DR Narrow depth and Standard depth Cases**



Applicable case models –

- "X" = **22-11/16"** FOR ONRB, ONRZ, ONRBH, ONRZH, ONRM, JNRBH, JNRZH
- "X" = **29-15/16"** FOR ORB, ORZ, ORBH, ORZH, VRB, VRBQA, VRBH, VRBHQ

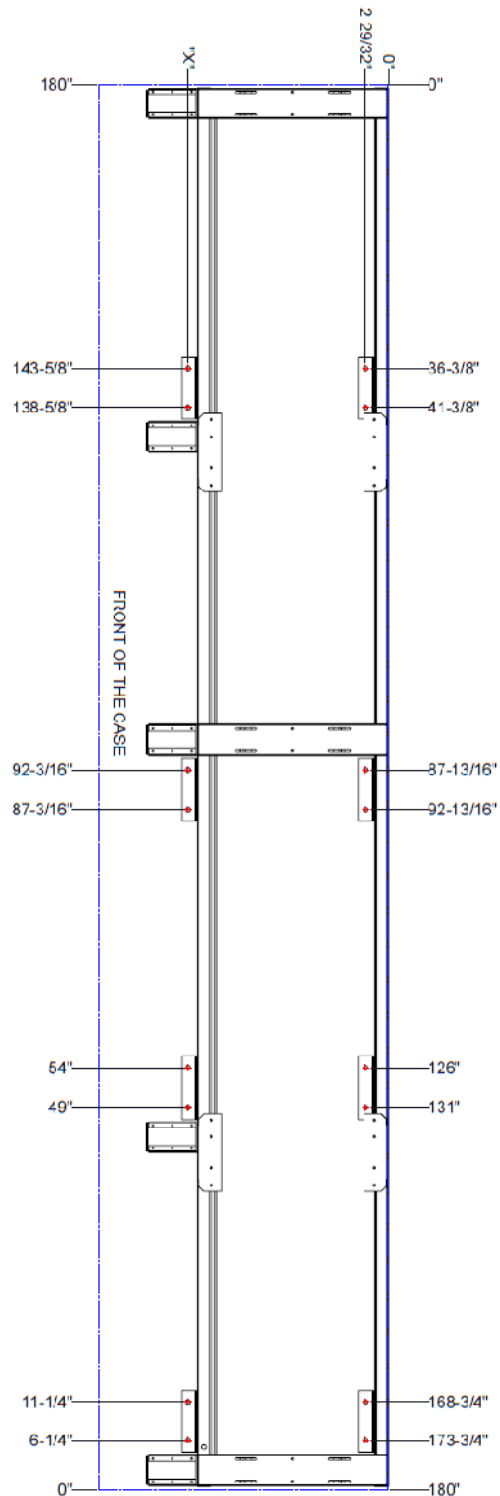
➤ Template for 5DR Narrow depth and Standard depth Cases



Applicable case models –

- "X" = **22-11/16"** FOR ONRB, ONRZ, ONRBH, ONRZH, ONRM, JNRBH, JNRZH
- "X" = **29-15/16"** FOR ORB, ORZ, ORBH, ORZH, VRB, VRBQA, VRBH, VRBHQ

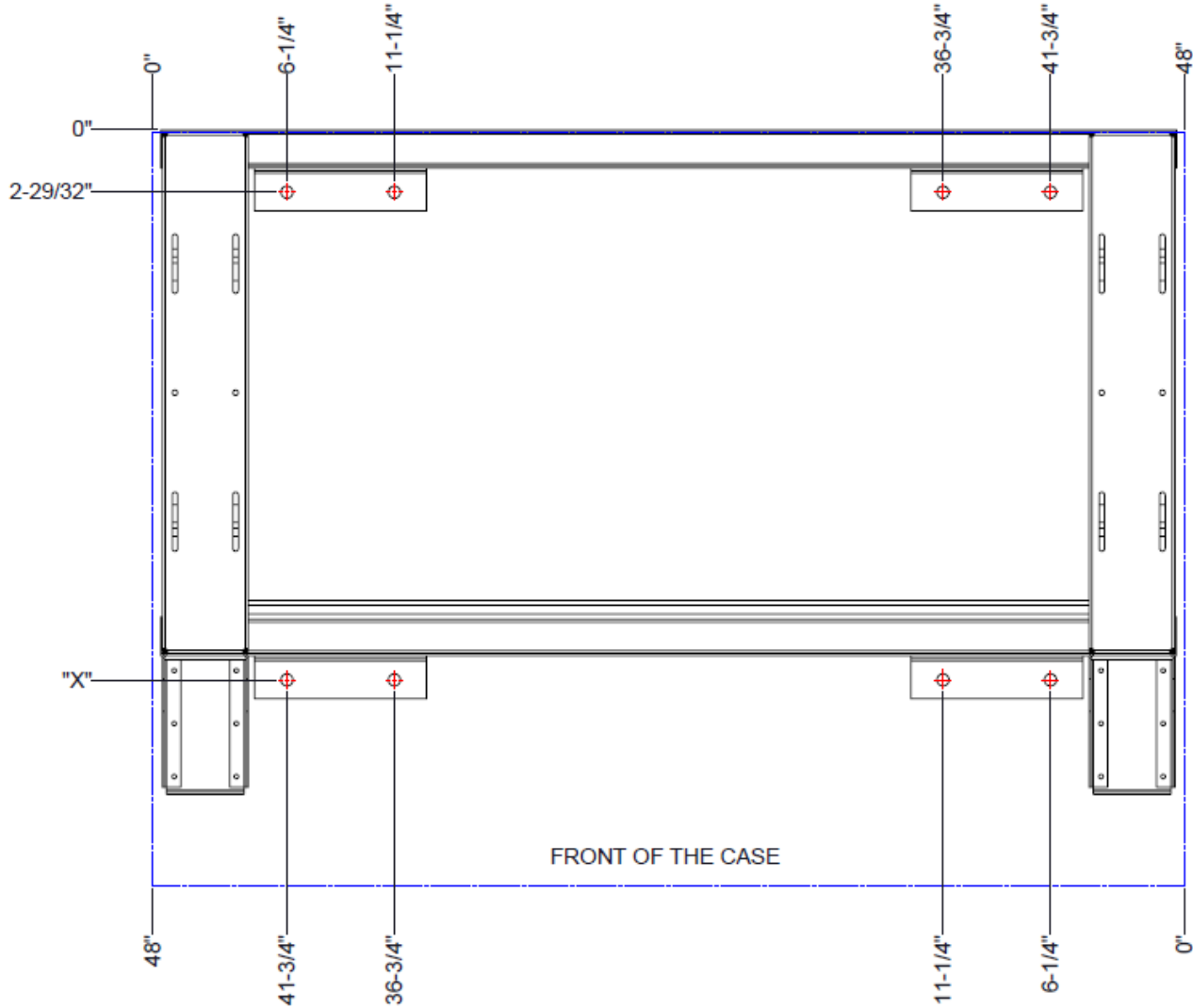
➤ Template for 6DR Narrow depth and Standard depth Cases



Applicable case models –

- "X" = 22-11/16" FOR ONRB, ONRZ, ONRBH, ONRZH, ONRM
- "X" = 29-15/16" FOR ORB, ORZ, ORBH, ORZH

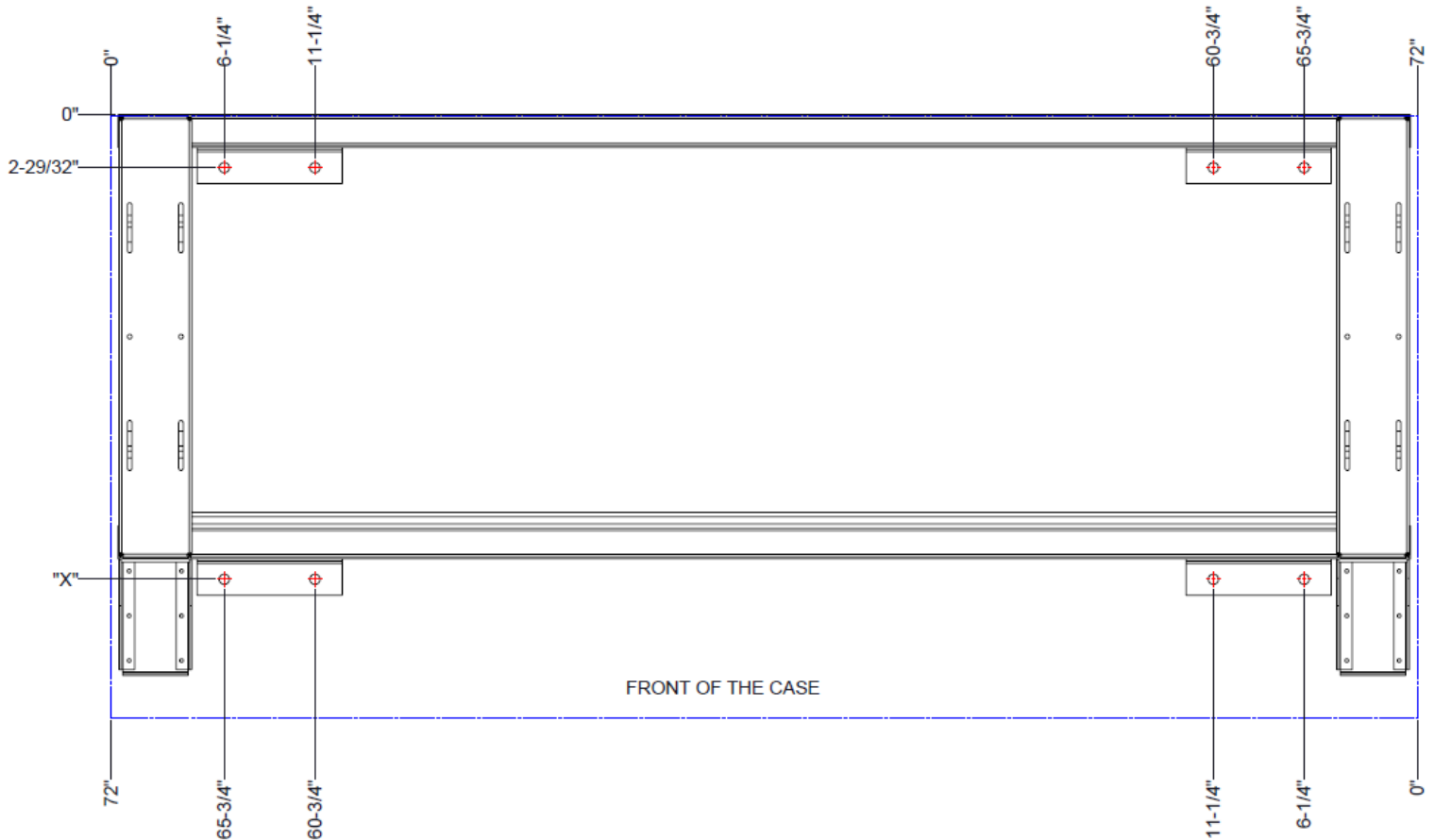
➤ **Template for 4FT Narrow depth and Standard depth Cases**



Applicable case models –

- "X" = **22-11/16"** FOR 3NDML, JNRBH, ON25UM, ON35UM, ON3UM, ON4UM, ON5DM, ON5DMX, ON5DMXA, ON5UM, ONHM, ONHMH, ONHPH, ONRB, ONRBH, ONRM
- "X" = **29-15/16"** FOR 5DMLH, 6DMLH, 6DMLHQA, 6MLH, 6MLHQA, O25UM, O2UM, O2MZD, O325UM, O3UM, O4UM, O5DM, O5DMA, O5DMH, O5DMM, O5M, O5MA, O5MAK, O5MH, O5UM, OHM, OHMH, OHP, OHPH, OM, OMM, OMZD, ORB, ORBH, VRB, VRBQA, VRBH, VRBHQ

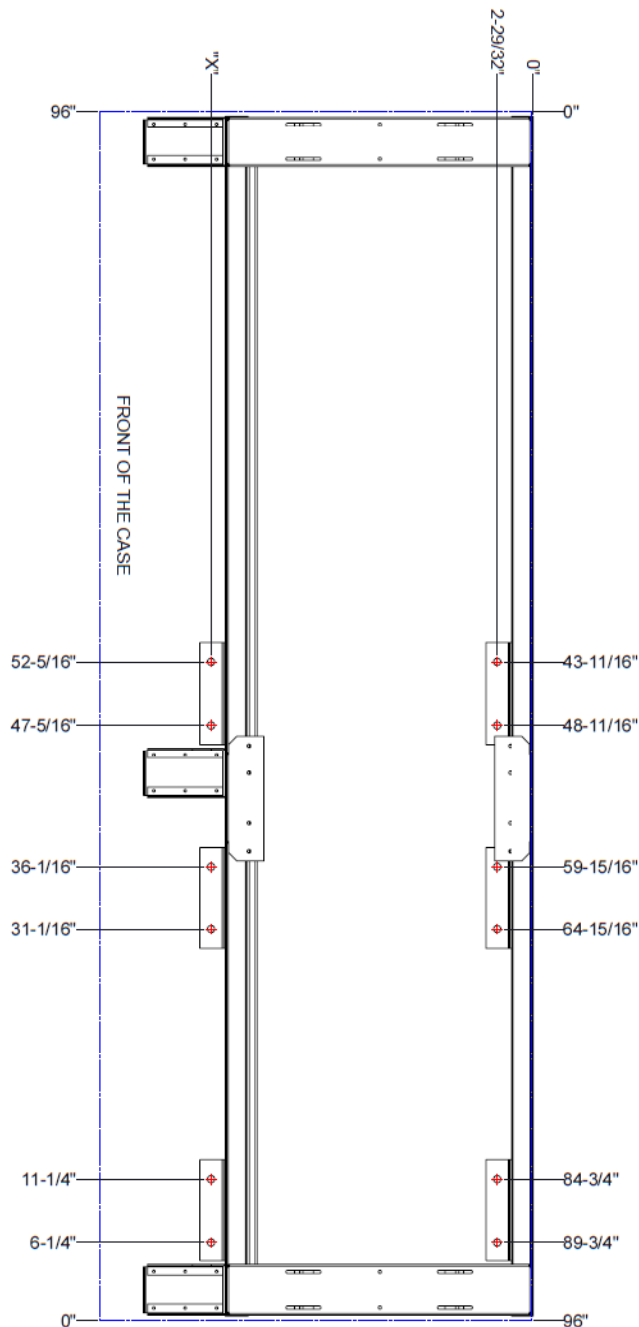
➤ **Template for 6FT Narrow depth and Standard depth Cases**



Applicable case models –

- "X" = **22-11/16"** FOR 3NDML, JNRBH, ON25UM, ON35UM, ON3UM, ON4UM, ON5DM, ON5DMX, ON5DMXA, ON5UM, ONHM, ONHMH, ONHPH, ONRB, ONRBH, ONRM
- "X" = **29-15/16"** FOR 5DMLH, 6DMLH, 6DMLHQA, 6MLH, 6MLHQA, O25UM, O2UM, O2MZD, O325UM, O3UM, O4UM, O5DM, O5DMA, O5DMH, O5DMM, O5M, O5MA, O5MAK, O5MH, O5UM, OHM, OHMH, OHP, OHPH, OM, OMM, OMZD, ORB, ORBH, VRB, VRBQA, VRBH, VRBQA

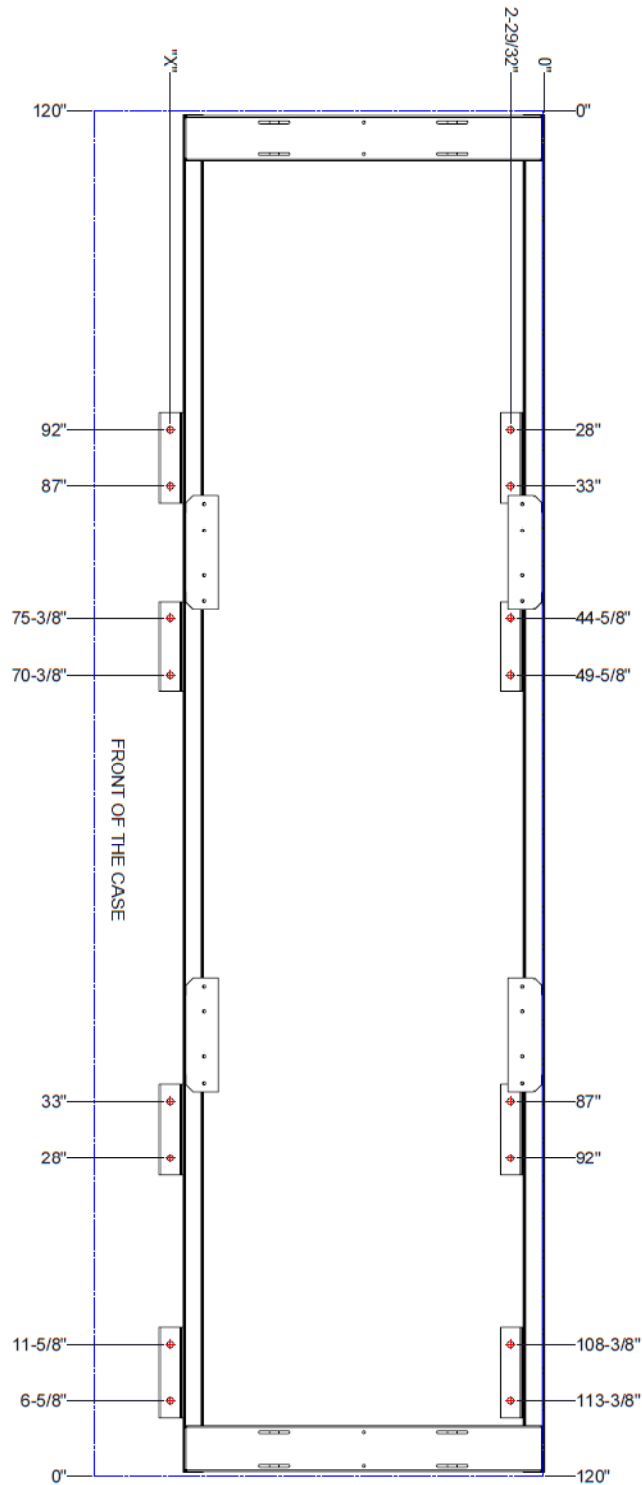
➤ **Template for 8FT Narrow depth and Standard depth Cases**



Applicable case models –

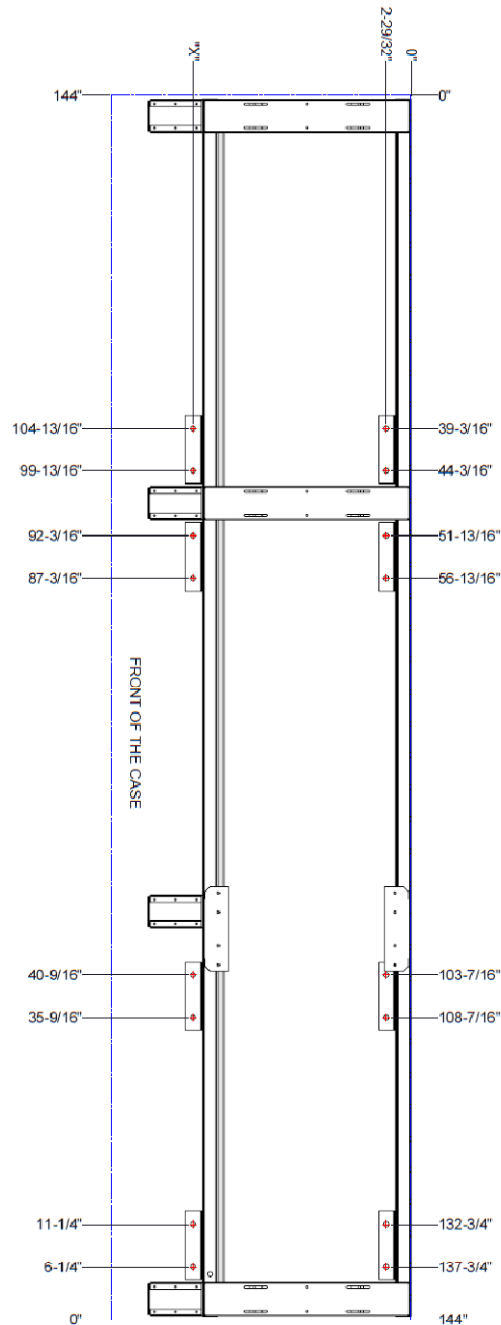
- "X" = **22-11/16"** FOR 3NDML, JNRBH, ON25UM, ON35UM, ON3UM, ON4UM, ON5DM, ON5DMX, ON5DMXA, ON5UM, ONHM, ONHMH, ONHPH, ONRB, ONRBH, ONRM
- "X" = **29-15/16"** FOR 5DMLH, 6DMLH, 6DMLHQA, 6MLH, 6MLHQA, O25UM, O2UM, O2MZD, O325UM, O3UM, O4UM, O5DM, O5DMA, O5DMH, O5DMM, O5M, O5MA, O5MAK, O5MH, O5UM, OHM, OHMH, OHP, OHPH, OM, OMM, OMZD, ORB, ORBH, VRB, VRBQA, VRBH, VRBQA

➤ Template for 10FT Narrow depth and Standard depth Cases



- Applicable case models –
- "X" = **29-15/16"** O3UM, O5UM

➤ Template for 12FT Narrow depth and Standard depth Cases



Applicable case models –

- "X" = **22-11/16"** FOR 3NDML, JNRBH, ON25UM, ON35UM, ON3UM, ON4UM, ON5DM, ON5DMX, ON5DMXA, ON5UM, ONHM, ONHMH, ONHPH, ONRB, ONRBH, ONRM
- "X" = **29-15/16"** FOR 5DMLH, 6DMLH, 6DMLHQA, 6MLH, 6MLHQA, O25UM, O2UM, O2MZD, O325UM, O3UM, O4UM, O5DM, O5DMA, O5DMH, O5DMM, O5M, O5MA, O5MAK, O5MH, O5UM, OHM, OHMH, OHP, OHPH, OM, OMM, OMZD, ORB, ORBH, ORM, VRB, VRBQA, VRBH, VRBHQ

**STEP #4**

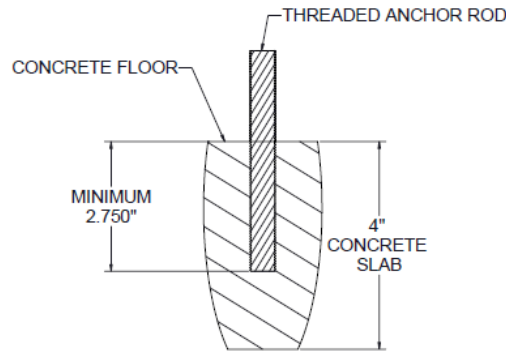
Drill holes in the concrete slab as per the pattern and HILTI requirements and clean the debris. Refer to the epoxy manufacturer’s specifications for the drill diameter needed at [www.hilti.com](http://www.hilti.com). See chart below for drill diameter required. See notes for drill depth and other specifications

Setting information	Symbol	Units	Nominal rod diameter, d						
			3/8	1/2	5/8	3/4	7/8	1	1-1/4
Nominal bit diameter	d <sub>o</sub>	in.	7/16	9/16	3/4	7/8	1	1-1/8	1-3/8

**NOTE:**

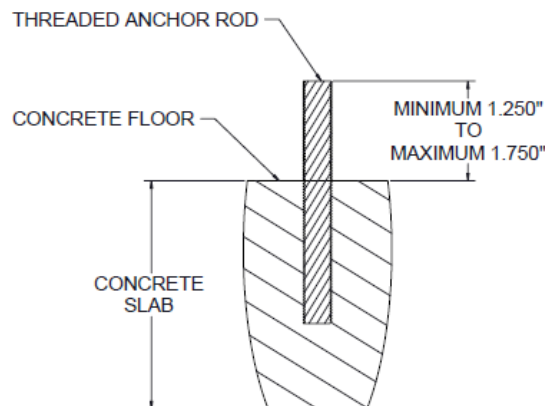
Minimum embedment depth of threaded anchor rods must be maintained with respect to concrete slab thickness as mentioned in table below :

Concrete slab thickness	Minimum embedment of threaded fastener
4"	2.75"
5"	3.75"
>6"	4.75"






**STEP #5**

Place the threaded anchor rod in the drilled holes and check if the length of threads left above the ground level are **between a minimum of 1.250" to a maximum of 1.750"**. If not, cut the threaded anchor rod to attain the above-mentioned length requirements for each drilled hole.



**STEP #6**

Secure the threaded anchor rod in the drilled holes using the epoxy. Refer to manufacturer specifications for the time required for epoxy curing. See the table below to find the adhesive curing time. See the notes below for the other specifications.

[°F]	[°C]	 $t_{work}$	 $t_{cure, ini}$	 $t_{cure, full}$
23	-5	2 h	48 h	168 h
32	0	2 h	24 h	36 h
40	4	2 h	16 h	24 h
50	10	1.5 h	12 h	16 h
60	16	1 h	8 h	16 h
72	22	25 min	4 h	6.5 h
85	29	15 min	2.5 h	5 h
95	35	12 min	2 h	4.5 h
105	41	10 min	2 h	4 h

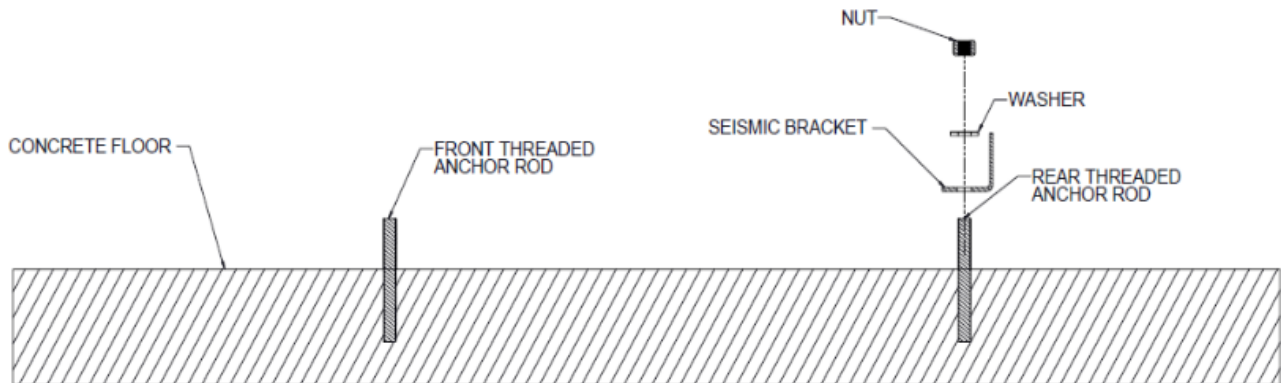
Hilti adhesive cure and working time

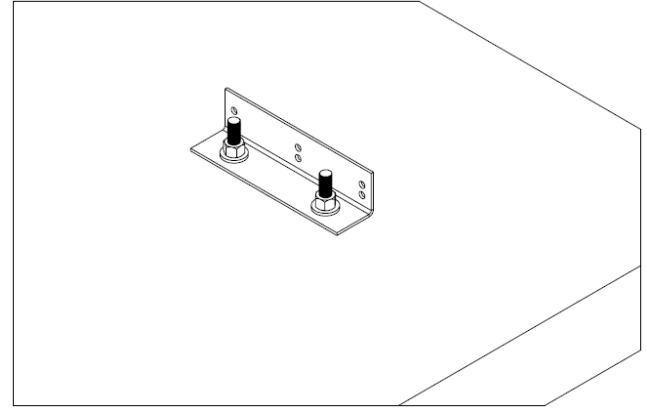
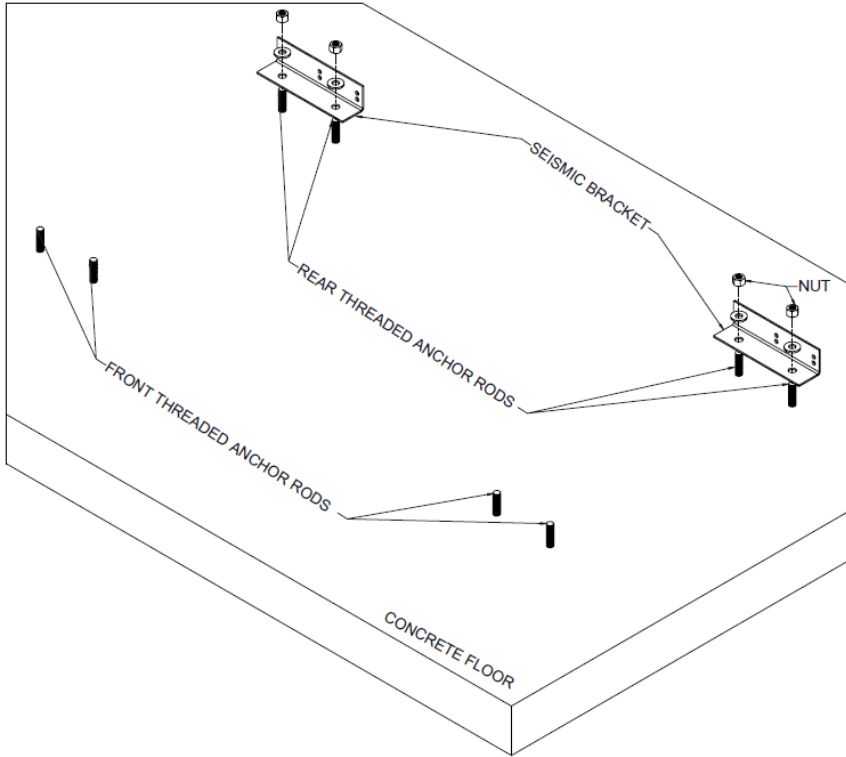
**NOTE:** Floor anchors shall be:

- 2 per bracket 1/2" diameter ASTM A193 Grade B7 threaded anchor rod with Hilti HIT-RE 500 v3 Epoxy
- Minimum embedment into concrete slab per chart "STEP #4" using Hilti HIT-RE 500 v3 Epoxy following HILTI directions.

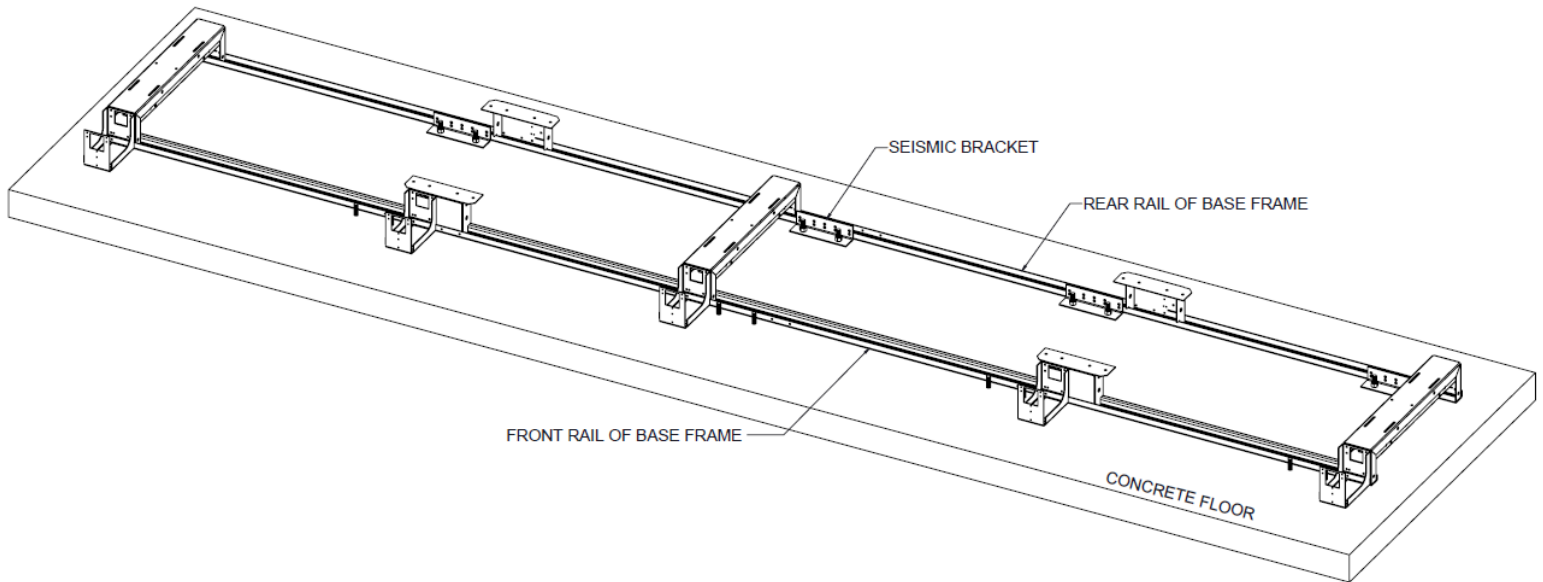
**STEP #7**

Place the rear brackets over the threaded anchor rods on the ground and lightly fasten it using washer and nuts.





Position the case behind the rear brackets at the desired location.



**IMPORTANT:**

**Shim cases level per standard Hillphoenix Install and Operations manual.**

**Shims are used only between the floor and case.**

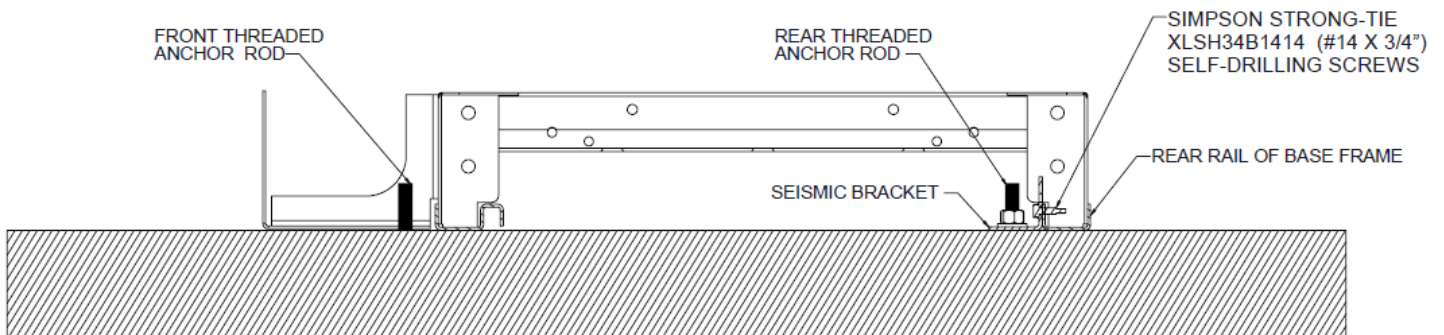
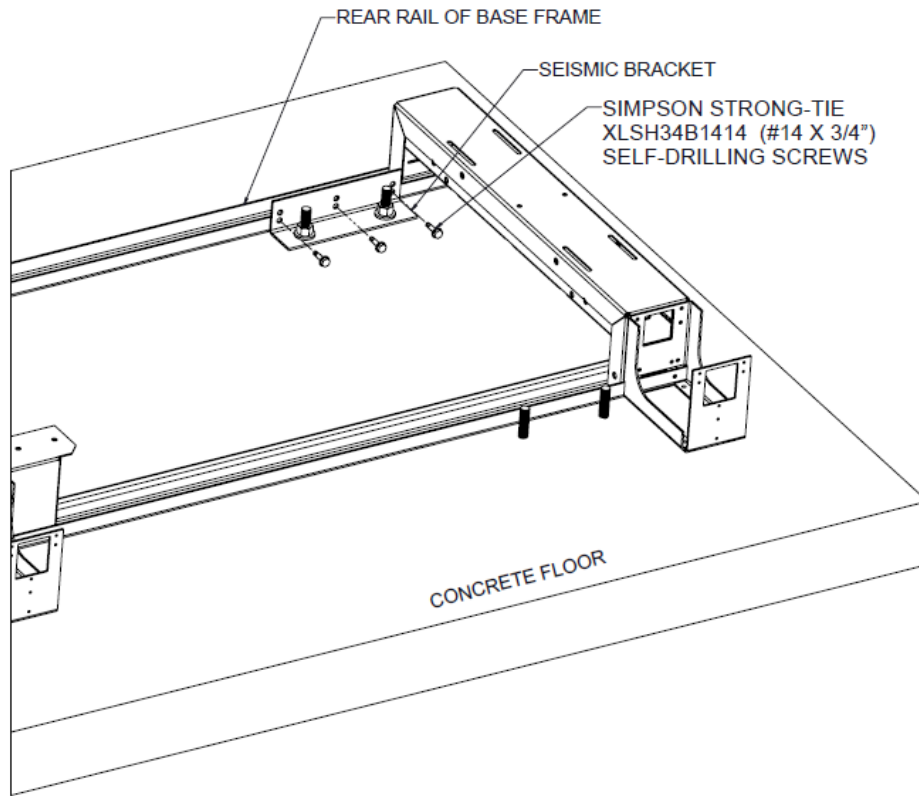
**\*\*\*Do NOT use shims between floor and seismic brackets\*\*\***

**STEP #8**

Pre-drill pilot holes into case rail using appropriate clearance holes present on seismic bracket. Fasten bracket to case rail using 3 Simpson Strong-tie XLSH34B1414 (14 x 3/4") self-drilling screws securing the seismic bracket to the rear base rail.

Height of shims placed	No. of 22G shims	No. of 18G shims	Row of screws used on bracket
0.0" to ≤ 0.46"	16	10	Bottom row of holes
0.46" to 0.9"	32	20	Top row of holes

**NOTE:** Hillphoenix shim thickness can range from 0.030" to 0.050".



**STEP #9**

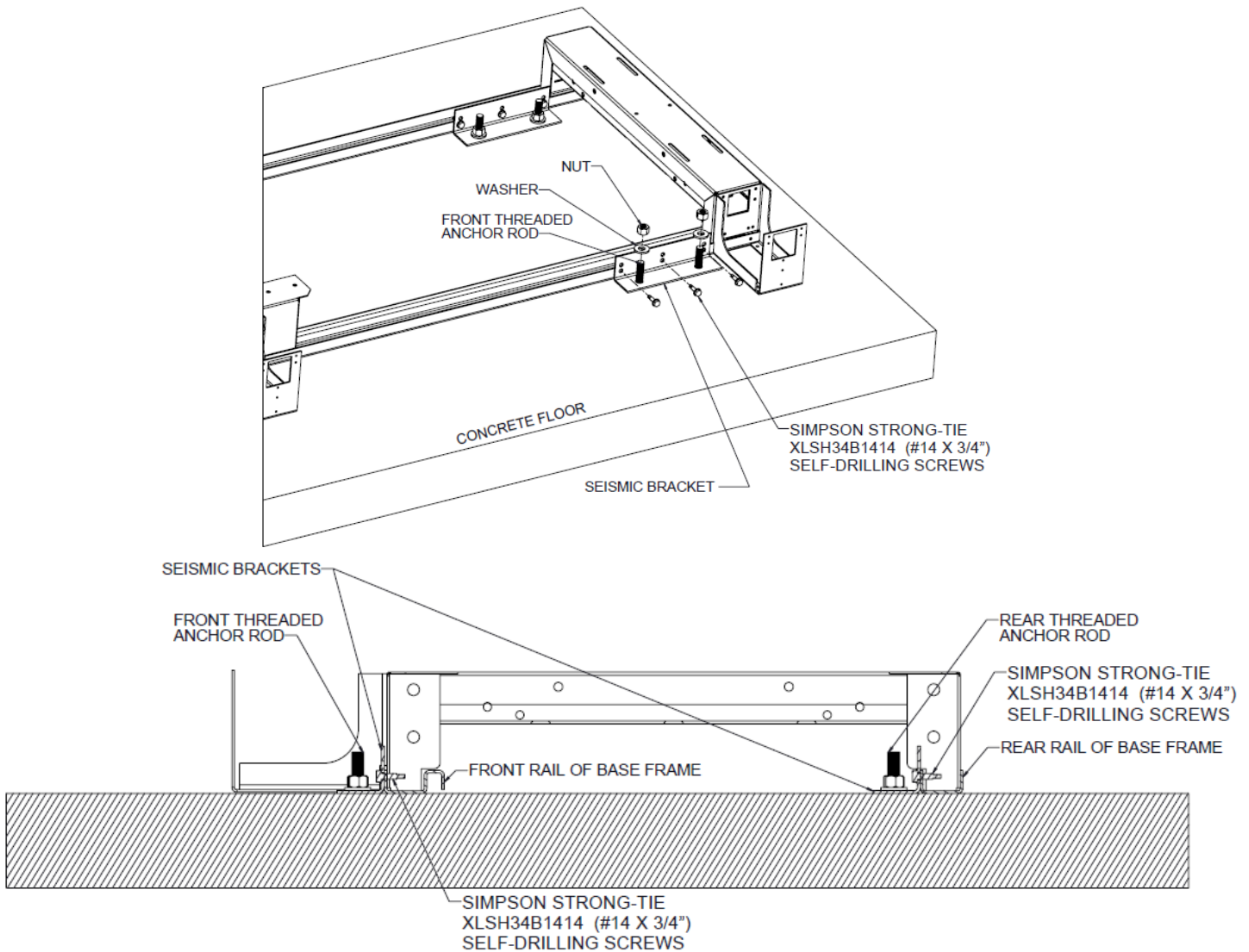
Once the rear seismic brackets are installed to the case, place the front brackets on the HILTI anchors on the ground and lightly fasten it using washer and nuts.

**STEP #10**

Pre-drill pilot holes into case rail using appropriate clearance holes present on seismic bracket. Fasten bracket to case rail using 3 Simpson Strong-tie XLSH34B1414 (14 x 3/4") self-drilling screws securing the seismic bracket to the front base rail.

Height of shims placed	No. of 22G shims	No. of 18G shims	Row of screws used on bracket
0.0" to ≤ 0.46"	16	10	Bottom row of holes
0.46" to 0.9"	32	20	Top row of holes

**NOTE:** Hillphoenix shim thickness can range from 0.030" to 0.050".



End of installation steps

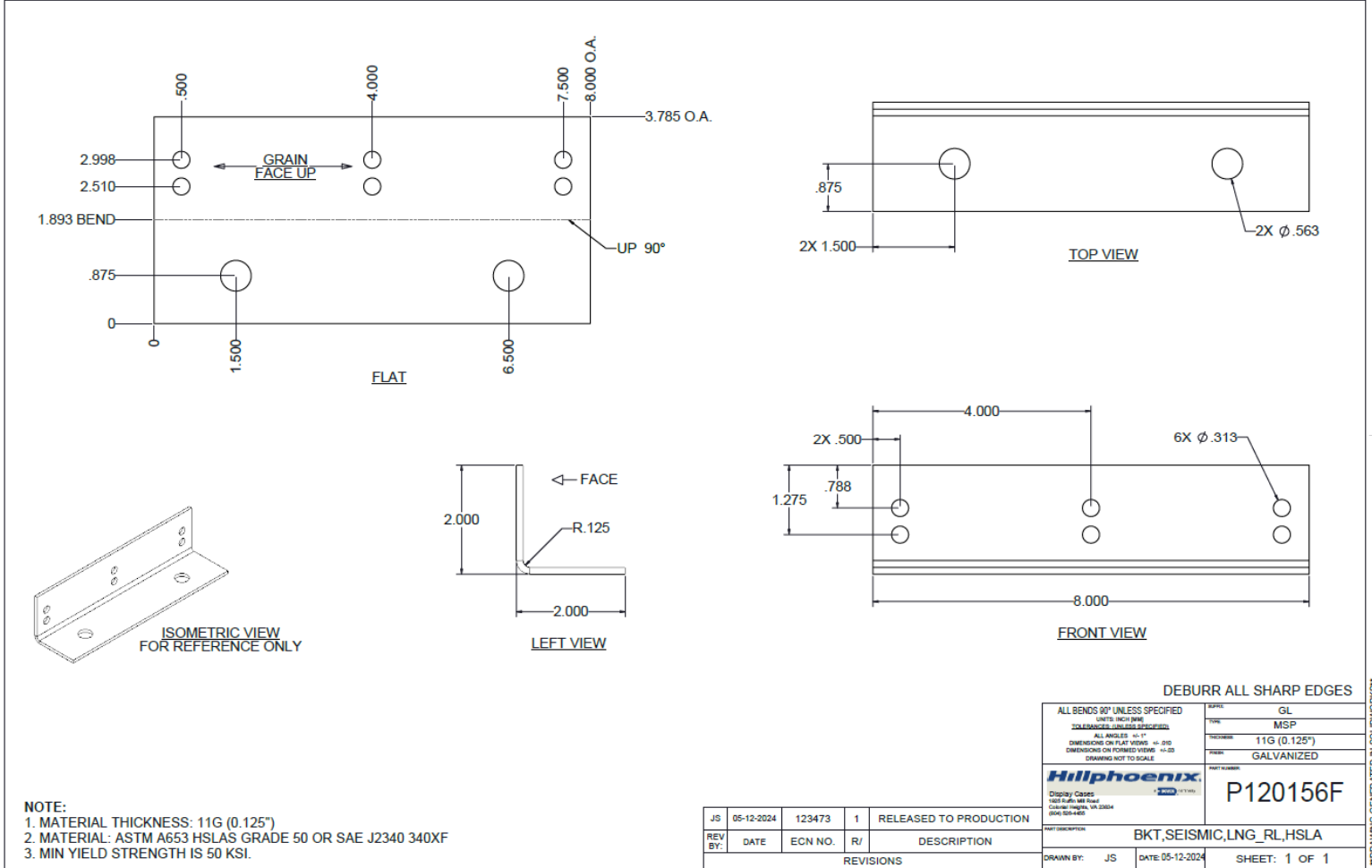
## Appendix

Parts required for Seismic Kit installation are listed below

- Hillphoenix Seismic Bracket Part number – P120156F

PN: P120156F RW: GL-11G (0.125")-MSP-GALVANIZED RV: 1 WC: PB BK: M

I NAME: 10088368 OBJECT: P120156F DATE: 12-18-2024 19:30:03



- Simpson Strong – Tie **XLSH34B1414** (#14 X 3/4") self-drilling screws
  - <https://www.fastenersplus.com/products/strong-tie-xlsh34b1414-rp83-14-x-3-4-large-shouldered-screw-pkg-83?srsId=AfmBOoocG-OclQLLMXgNJSrGbdqYNncmWQyutUfJQVRU8U9lh-nv18u9>
  - [https://connectorsonly.com/xlsh34b1414-rp83-14-34-hex-lg-shouldered-screws-b83-zp.html?srsId=AfmBOopOPI\\_tUFHykxHhSIAmt4ABohKvKvOAYh0NRmBrOvsR9cBZc\\_O3](https://connectorsonly.com/xlsh34b1414-rp83-14-34-hex-lg-shouldered-screws-b83-zp.html?srsId=AfmBOopOPI_tUFHykxHhSIAmt4ABohKvKvOAYh0NRmBrOvsR9cBZc_O3)
- Hilti HIT-RE 500 V3 EPOXY Chemical anchor
  - [https://www.hilti.com/c/CLS\\_FASTENER\\_7135/CLS\\_CHEMICAL\\_ANCHORS\\_7135/r4929903](https://www.hilti.com/c/CLS_FASTENER_7135/CLS_CHEMICAL_ANCHORS_7135/r4929903)
- Hilti anchors
  - HAS-B-105
  - HAS-B-105 HDG