



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

**APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY

APPLICATION #: OSP-0650

OSHPD Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: ThyssenKrupp Manufacturing, Inc.

Manufacturer's Technical Representative: Jason McBride

Mailing Address: 9280 Crestwyn Hills Drive, Memphis, TN 38125

Telephone: (901) 261-1580

Email: jason.mcbride@thyssenkruppelevator.com

Product Information

Product Name: Elevator Equipment

Product Type: Elevator Control Panels

Product Model Number: TAC32T Slimline & TAC32T-72"

General Description: TAC32T Elevator Control Panels

Mounting Description: Rigid, Floor or Wall Mounted

Tested Seismic Enhancements: Seismic enhancements made to the test units and/or modifications required to address anomalies during the tests shall be incorporated into the production units.

Applicant Information

Applicant Company Name: Structural Integrity Associates, Inc.

Contact Person: Galen Reid

Mailing Address: 233 SW Wilson Ave Suite 101, Bend, OR 97702

Telephone: (541) 604-7225

Email: greid@structint.com

Title: Manager, TRU Compliance





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
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California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)

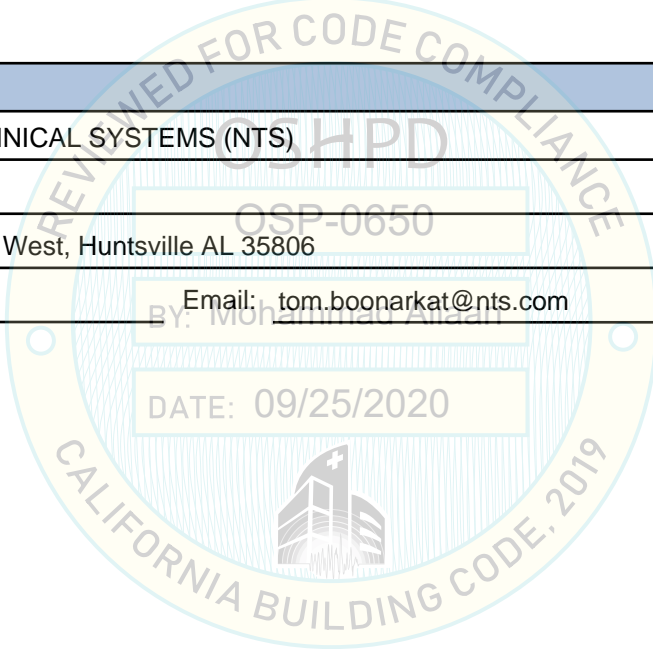
Company Name: STRUCTURAL INTEGRITY ASSOCIATES, INC.
Name: Andrew Coughlin California License Number: S6082
Mailing Address: 1830 Embarcadero, Suite 103, Oakland, CA 94606
Telephone: (510) 379-5319 Email: acoughlin@structint.com

Certification Method

GR-63-Core ICC-ES AC156 IEEE 344 IEEE 693 NEBS 3
 Other (Please Specify): _____

Testing Laboratory

Company Name: NATIONAL TECHNICAL SYSTEMS (NTS)
Contact Person: Tom Boonarkat
Mailing Address: 7800 Highway 20 West, Huntsville AL 35806
Telephone: (256) 716-4520 Email: tom.boonarkat@nts.com





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FACILITIES DEVELOPMENT DIVISION**

Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 1.44 (z/h = 1.0); 0.90 (z/h = 0.0)

SDS (Design spectral response acceleration at short period, g) = 2.0

a_p (Amplification factor) = 1.0

R_p (Response modification factor) = 2.5

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height ratio factor) = 1 and 0

Natural frequencies (Hz) = Varies, See Attached

Overall dimensions and weight = Varies, See Attached

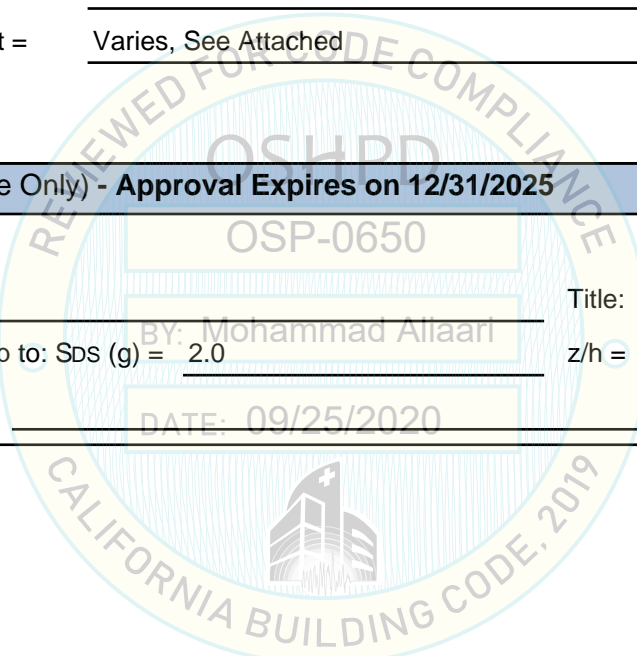
OSHPD Approval (For Office Use Only) - Approval Expires on 12/31/2025

Date: 9/25/2020

Name: Mohammad Aliaari Title: Senior Structural Engineer

Special Seismic Certification Valid Up to: SDS (g) = 2.0 z/h = See Above

Condition of Approval (if applicable): DATE: 09/25/2020



SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1800887-CR-001 R1



Manufacturer: ThyssenKrupp Manufacturing, Inc. Model Line: TAC32T Slimline		Table Description: Electrical Components TAC32T Slimline			TABLE 3	
Building Code: CBC 2019		Seismic Certification Limits:			$S_{DS} = 2.0g \quad z/h = 1.0$ $S_{DS} = 2.0g \quad z/h = 0.0$	
					$I_P = 1.5$	
Component Type	Manufacturer	Model	Description	Notes	UUT	
Line Chokes	MTE	486AD1	3-Phase L1, 25A, 1.2MH, 14 lbs.		Extrap.	
		486AD2	3-Phase L1, 35A, 0.8MH, 16 lbs.		Extrap.	
		486AD7	3-Phase L1, 18A, 1.5MH, 12 lbs.		1	
		486DB001	3-Phase 12A 4.2MH, 18 lbs.		Interp.	
		486DB003	3-Phase 18A 2.5MH, 16 lbs.		Interp.	
		486DB004	3-Phase 25A 1.8 MH, 20 lbs.		Interp.	
		486DB007	3-Phase 45A 1.2 MH, 35 lbs.		Interp.	
		486DB009	3-Phase 55A 0.50 MH, 26 lbs.		Interp.	
		486DB008	3-Phase 55A 0.85 MH, 36, lbs.		2	
Circuit Breakers	Siemens	270AT001	3 pole, 600V, 15A, w/out shunt trip, 2lbs.		Extrap.	
		270AT002	3 pole, 600V, 20A, w/out shunt trip, 2lbs.		Extrap.	
		270AT003	3 pole, 600V, 25A, w/out shunt trip, 2lbs.		Extrap.	
		270AT004	3 pole, 600V, 30A, w/out shunt trip, 2lbs.		Extrap.	
		270AT005	3 pole, 600V, 35A, w/out shunt trip, 2lbs.		Extrap.	
		270AT006	3 pole, 600V, 40A, w/out shunt trip, 2lbs.		Extrap.	
		270AT007	3 pole, 600V, 45A, w/out shunt trip, 2lbs.		Extrap.	
		270AT008	3 pole, 600V, 50A, w/out shunt trip, 2lbs.		1	
		270AT009	3 pole, 600V, 60A, w/out shunt trip, 2lbs.		Interp.	
		270AT010	3 pole, 600V, 70A, w/out shunt trip, 2lbs.		Interp.	
		270AT011	3 pole, 600V, 80A, w/out shunt trip, 2lbs.		Interp.	
		270AT012	3 pole, 600V, 90A, w/out shunt trip, 2lbs.		Interp.	
		270AT013	3 pole, 600V, 100A, w/out shunt trip, 2lbs.		Interp.	
		270AT014	3 pole, 600V, 110A, w/out shunt trip, 2lbs.		Interp.	

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1800887-CR-001 R1



Manufacturer: ThyssenKrupp Manufacturing, Inc.	Table Description: Electrical Components TAC32T Slimline	TABLE 3
Model Line: TAC32T Slimline		

Building Code: CBC 2019	Seismic Certification Limits:	$S_{DS} = 2.0g$ $z/h = 1.0$	$I_p = 1.5$
		$S_{DS} = 2.0g$ $z/h = 0.0$	

Component Type	Manufacturer	Model	Description	Notes	UUT
Circuit Breakers	Siemens	270AT015	3 pole, 600V, 125A, w/out shunt trip, 2lbs.		2
Contactors	Siemens	298BL002	Relay Contactor, 2NC/2NO 115VAC		2
		298AH56	Contactactor, 3 pole, AC		2
		804BF6	Suppressor, Relay contactor, RC 120VAC		2
		690CA3	Power Dependent, 6A, 24VDC		1,2
Relays	Tyco	770BK2	Socket Rail Relay dependent		1,2
		558AX2	Lever extraction relay 1.875		1,2
		804BC1	Suppressor relay socket 110-230 VAC		2
		804BC2	Suppressor relay socket diode DC		1,2
		Finder	690CJ1	Power Dependent, 5A, 115VAC	
	Switches	Eaton	171JA001	Emergency Stop	
Green Drives	Gefran	2109CD001	Drive Assembly, 230V, 80A, 22kW, 75lbs	All drives have identical frames	Extrap.
		2109CD002	Drive Assembly, 230V, 40A, 11kW, 75 lbs.		1
		2109CD004	Drive Assembly, 460V, 40A, 22kW, 75 lbs.		Interp.
		2109CD006	Drive Assembly, 460V, 80A, 45kW, 75 lbs.		2
Fuses	Bussman	409BP20	600V FNQ 3A		1
		409BP23	600V FNQ 4A		2
		409BP24	600V FNQ 5A		Interp.
		409BP25	600V FNQ 6A		Interp.
		409BP28	600V FNQ 8A		Interp.
		409BP30	600V FNQ 10A		Interp.
		409BP31	600V FNQ 12A		1,2
		409BP32	600V FNQ 15A		Interp.

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1800887-CR-001 R1



Manufacturer: ThyssenKrupp Manufacturing, Inc.		Table Description: Electrical Components TAC32T Slimline			TABLE 3
Model Line: TAC32T Slimline					
Building Code: CBC 2019		Seismic Certification Limits:		$I_p = 1.5$	
		$S_{DS} = 2.0g \quad z/h = 1.0$			
		$S_{DS} = 2.0g \quad z/h = 0.0$			
Component Type	Manufacturer	Model	Description	Notes	UUT
Power Supply	Delta	672DE001	AC/DC, 24V, 60W, 0.82 lbs.		1
		672DE002	AC/DC, 24V, 120W, 1.2 lbs.		1,2
		672DE003	AC/DC, 24V, 240W, 2.30 lbs		2
Transit Voltage Suppressors	ABB	804DA003	3-phase LV 240V Delta		1
		804DA004	3-phase HV 480V Delta		2
Transformer	GE	874EV002	.5 kVA, PRI 240/480V, SEC 208V, 14 lbs.		1
		874EV003	.5 kVA, PRI 200/220V, SEC 208V, 14 lbs.		Interp.
		874EV005	.5 kVA, PRI 240V, SEC 120/240V, 13 lbs.		1
		874EV006	.5 kVA, PRI 480V, SEC 120/240V, 15 lbs.		Interp.
		874EW002	.75 kVA, PRI 240/480V, SEC 120/240V, 19 lbs		Interp.
		874EW003	.75 kVA, PRI 200/220V, SEC 120V, 21 lbs.		Interp.
		874EX002	1.0 kVA, PRI 240/480V, SEC 120/240V, 21 lbs		Interp.
		874EX003	1.0 kVA, PRI 200/220V, SEC 120V, 29 lbs.		Interp.
		874EX005	1.0 kVA, PRI 240V, SEC 208V, 20 lbs.		Interp.
		874EY001	1.5 kVA, PRI 208V, SEC 120/240V, 30 lbs.		Interp.
		874EY002	1.5 kVA, PRI 240/480V, SEC 120/240V, 30 lbs		Interp.
		874EY003	1.5 kVA, PRI 200/220V, SEC 120V, 35 lbs.		Interp.
		874FA002	2.0 kVA, PRI 240/480V, SEC 120/240V, 35 lbs		Interp.
		874FB002	3.0 kVA, PRI 240/480, SEC 120/240V, 35 lbs		1,2
UPS	APC	672DA002	1500 VA, 57 lbs	includes bracket	2

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1800887-CR-001 R1



Manufacturer: ThyssenKrupp Manufacturing, Inc.		Table Description: Electrical Components TAC32T-72"			TABLE 4	
Model Line: TAC32T-72"		Building Code: CBC 2019			Seismic Certification Limits:	
		$S_{DS} = 2.0g \quad z/h = 1.0$			$I_P = 1.5$	
		$S_{DS} = 2.0g \quad z/h = 0.0$				
Component Type	Manufacturer	Model	Description	Notes	UUT	
Line Choke	MTE	486DB001	3-Phase 12A 4.2MH, 18 lbs.		Extrap.	
		486DB003	3-Phase 18A 2.5MH, 16 lbs.		Extrap.	
		486DB004	3-Phase 25A 1.8 MH, 20 lbs.		Extrap.	
		486DB007	3-Phase 45A 1.2 MH, 35 lbs.		Extrap.	
		486AR41	3-Phase L1, 100A, 0.3MH, 37 lbs.		Extrap.	
		486AD1	3-Phase L1, 25A, 1.2MH, 14 lbs.		Extrap.	
		486AD2	3-Phase L1, 35A, 0.8MH, 16 lbs.		Extrap.	
		486AD4	3-Phase L1, 55A, 0.5MH, 26 lbs.		Extrap.	
		486AD5	3-Phase L1, 80A, 0.4MH, 33 lbs.		Extrap.	
		486AD7	3-Phase L1, 18A, 1.5MH, 12 lbs.		3	
		486AD9	3-Phase L1, 55A, 0.85MH, 35 lbs.		Interp.	
		486AD10	3-Phase L1, 80A, 0.7MH, 61 lbs.		Interp.	
		486AD11	3-Phase L1, 100A, 0.45MH, 74 lbs.		4	
Circuit Breakers	Siemens	270AT001	3 pole, 600V, 15A, w/out shunt trip, 2 lbs.		Extrap.	
		270AT002	3 pole, 600V, 20A, w/out shunt trip, 2 lbs.		Extrap.	
		270AT003	3 pole, 600V, 25A, w/out shunt trip, 2 lbs.		Extrap.	
		270AT004	3 pole, 600V, 30A, w/out shunt trip, 2 lbs.		Extrap.	
		270AT005	3 pole, 600V, 35A, w/out shunt trip, 2 lbs.		Extrap.	
		270AT006	3 pole, 600V, 40A, w/out shunt trip, 2 lbs.		Extrap.	
		270AT007	3 pole, 600V, 45A, w/out shunt trip, 2 lbs.		Extrap.	
		270AT008	3 pole, 600V, 50A, w/out shunt trip, 2 lbs.		3	
		270AT009	3 pole, 600V, 60A, w/out shunt trip, 2 lbs.		Interp.	
		270AT010	3 pole, 600V, 70A, w/out shunt trip, 2 lbs.		Interp.	

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1800887-CR-001 R1



Manufacturer: ThyssenKrupp Manufacturing, Inc.	Table Description: Electrical Components TAC32T-72"	TABLE 4
Model Line: TAC32T-72"		

Building Code: CBC 2019	Seismic Certification Limits:	$S_{DS} = 2.0g$ $z/h = 1.0$	$I_p = 1.5$
		$S_{DS} = 2.0g$ $z/h = 0.0$	

Component Type	Manufacturer	Model	Description	Notes	UUT
Circuit Breakers	Siemens	270AT011	3 pole, 600V, 80A, w/out shunt trip, 2 lbs.		Interp.
		270AT012	3 pole, 600V, 90A, w/out shunt trip, 2 lbs.		Interp.
		270AT013	3 pole, 600V, 100A, w/out shunt trip, 2 lbs.		Interp.
		270AT014	3 pole, 600V, 110A, w/out shunt trip, 2 lbs.		Interp.
		270AT015	3 pole, 600V, 125A, w/out shunt trip, 2 lbs.		Interp.
		270AT016	3 pole, 600V, 150A, w/out shunt trip, 6.2 lbs.		Interp.
		270AT017	3 pole, 600V, 175A, w/out shunt trip, 6.2 lbs.		Interp.
		270AT018	3 pole, 600V, 200A, w/out shunt trip, 6.2 lbs.		4
Contactor	Siemens	298BF4	Relay Contactor, 4NO/0NC, 120VAC		3
		298BL002	Relay Contactor, 2NC/2NO 115VAC		4
		804BF5	Suppressor, Relay Contractor, RC 120VAC		3
		804BF6	Supressor, Relay Contractor, RC 120VAC		3,4
		298AH56	Contactor, 3 Pole, AC		3,4
Relays	Tyco	690CA3	Relay PWR DPDT 6A 24VDC		3,4
		770BK2	Socket Rail Relay DPDT		3,4
		558AX2	Lever Extraction Relay 1.875		3,4
		804BC2	Supressor Relay Scocke Diode DC		3,4
Switches	Eaton	171JA001	Emergency Stop		3,4
Power Supply	Delta	672DE001	AC/DC, 24V, 60W, 0.82 lbs.		3
		672DE002	AC/DC, 24V, 120W, 1.20 lbs.		3,4
		672DE003	AC/DC, 24V, 240W, 2.30 lbs.		4
Transit Voltage Suppressors	ABB	804DA003	TVS 3-phase LV 240V Delta		3
		804DA004	TVS 3-phase HV 480V Delta		4

TRU Compliance, by Structural Integrity Associates, Inc.
844-TRU-0200 | info@trucompliance.com

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1800887-CR-001 R1



Manufacturer: ThyssenKrupp Manufacturing, Inc.		Table Description: Electrical Components TAC32T-72"		TABLE 4	
Model Line: TAC32T-72"					
Building Code: CBC 2019		Seismic Certification Limits:		$S_{DS} = 2.0g \quad z/h = 1.0$ $S_{DS} = 2.0g \quad z/h = 0.0$	
				$I_p = 1.5$	
Component Type	Manufacturer	Model	Description	Notes	UUT
Fan	Mechatronics Inc.	378AH1	AC 6.000 220CFM		3,4
Transformer	GE	874DA2	1PH .5KVA 60Hz PR240-240/SEC115-115, 12 lbs.		3
		874DA6	1PH .5KVA 50Hz PR200 & 220/SEC115-115, 12 lbs.		Interp.
		874EM002	1PH .5KVA 50/60Hz PR220-240/SEC208, 11 lbs.		Interp.
		874EM003	1PH .5KVA 50/60Hz PR480/SEC208, 13 lbs.		Interp.
		874DB2	1PH .750KVA 60Hz PR240-240/SEC115-115, 16 lbs.		3
		874DC1	1PH .750KVA 50/60Hz PR200 & 220/SEC115-115, 17 lbs.		Interp.
		874DP2	1PH 1.0KVA 60Hz PR240-240/SEC115-115, 19 lbs.		Interp.
		874DW1	1PH 1.0KVA 50/60Hz PR200 & 220/SEC115-115, 27 lbs.		Interp.
		874EN002	1PH 1.0KVA 50/60Hz PR220-240/SEC208, 18 lbs.		3
		874EN003	1PH 1.0KVA 50/60Hz PR480/SEC208, 18 lbs.		4
		874DR2	1PH 1.5KVA 60Hz PR240-240/SEC115-115, 28 lbs.		Interp.
		874DX1	1PH 1.5KVA 50/60Hz PR200 & 220/SEC115-115, 33 lbs.		Interp.
		874DT2	1PH 2.0KVA 60Hz PR240-240/SEC115-115, 33 lbs.		Interp.
		874DV2	1PH 3.0KVA 60Hz PR240-240/SEC115-115, 33 lbs.		3,4
Green Drives	Gefran	2109CD001	Drive Assembly, 230V, 80A, 22kW, 75 lbs.	Same frame size	Extrap.
		2109CD002	Drive Assembly, 230V, 40A, 11kW, 75 lbs.		3
		2109CD004	Drive Assembly, 460V, 40A, 22kW, 75 lbs.		Interp.
		2109CD006	Drive Assembly, 460V, 80A, 45kW, 75 lbs.		4
UPS	APC	672DA002	1500VA, 53 lbs.		4

UNIT UNDER TEST (UUT) SUMMARY SHEET

1800887-CR-001 R1



Manufacturer: ThyssenKrupp Manufacturing, Inc.	UUT 1
Model Line: TAC32T Slimline	
Model Number: 2102BV003-XFMRs Serial Number: BEW566	

Product Construction Summary:
Carbon steel frame with carbon steel skins. Side and front skins 16ga and rear skin 12ga.

Options/Subcomponent Summary:
Line Choke-MTE (486AD7), Circuit Breaker-Siemens (270AT007), Relay-Tyco (690CA3), Relay-Tyco (770BK2), Relay-Tyco (558AX2), Relay-Tyco (804BC1), Switches- Eaton (172JA001), Green Drives- Gefan (2109CD002), Fuses-Bussman (409BP200, Fuses-Bussman (409BP31), Power Supply-Delta (672DE001), Power Supply-Delta (672DE002), Transit Voltage Suppressors-ABB (804DA003), Transformer-GE (874EV002), Transformer-GE (874EV003), Transformer-GE (874FB002)

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
235	8.7	22.8	83.4	N/A	N/A	N/A

UUT Highest Passed Seismic Run Information									
Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)	
CBC 2019	ICC-ES AC156 (2015)	2.0	1.0	1.5	3.2	2.4	1.33	0.53	
		2.0	0.0	1.5					

Test Mounting Details:



UUT 1 was wall mounted - rigid to the fixture with six (6) 1/2" Grade 5 bolts with square channel nuts. Notched tabs were used to mount the PCBs.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.

UUT DEFICIENCY REPORT

1800887-DR-001

1800887-CR-001 R1



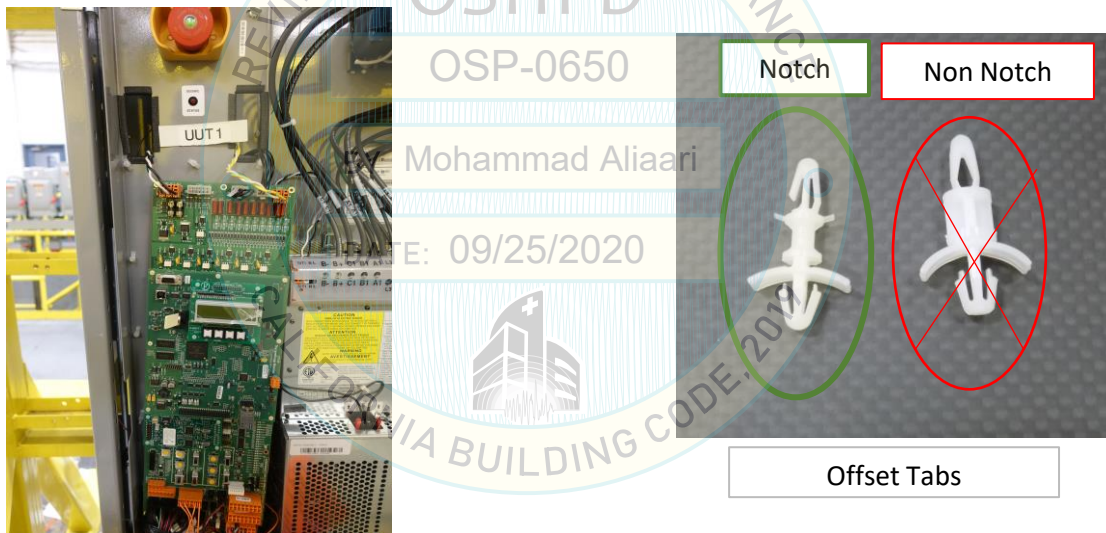
Manufacturer: ThyssenKrupp Manufacturing, Inc.
Model Line: TAC32T Slimline
Model Number: 2102BV003-XFMRs **Serial Number:** BEW566

UUT 1

Requirement:
ICC-ES AC 156 §6.6.1 Structural integrity of the component attachment systems shall be maintained.

Deficiency and Cause:

The bill of material called out the incorrect offset tab, so the units printed circuit board (PCB) were attached the panel wall with a standard (non notched) offset tab rather than the one the client chose for seismic testing. In the photo below, the offset tab with "notch" on the left is tab that should have been used. The offset tab on the right was the one that was installed by the manufacture. The notch at the top of the tab prevents the PCB from coming unattached during a seismic event as shown in the picture on the left.



Corrective Action:

Replace six existing non notched offset tabs with notched offset tabs, three on the top of the PCB and three at the bottom of the PCB. Unit was retested with notched offset tab and successfully passed the retest.

Action to Preclude Recurrence:

Manufacturer will change bill of materials to reflect notched offset tab for seismic applications.

Engineer Creating Report:	Katie Braman	Date:	29-Aug-19
Principal Engineer:	Galen Reid	Date:	29-Aug-19
Client Acceptance:	Jason McBride	Date:	29-Aug-19

UNIT UNDER TEST (UUT) SUMMARY SHEET

1800887-CR-001 R1



Manufacturer: ThyssenKrupp Manufacturing, Inc.	UUT 2
Model Line: TAC32T Slimline	
Model Number: 2102BV003-MAX Serial Number: BEW567	

Product Construction Summary:
Carbon steel frame with carbon steel skins. Side and front skins 16ga and read skin 12ga.

Options/Subcomponent Summary:
Line Chokes-MTE (486DB008), Circuit Breaker-Siemens (270AT015), Contactors-Siemens (298BL002), Contactors-Siemens (298AH56), Contractors-Siemens (804BF6), Relay-Tyco (690CA3), Relay-Tyco (770BK2), Relay-Tyco (558AX2), Relay-Tyco (804BC1), Relay-Tyco (804BC1), Relay-Finder (690CJ1), Switches-Eaton (171JA001), Green Drives-Gefran (2109CD006), Fuses-Bussman (409BP23), Fuses-Bussman (409BP31), Power Supply- Delta (672DE002), Power Supply- Delta (672DE003), Ransit Voltage Suppressors-ABB (804DA004), Transformers-GE (874FB002), UPS-APC (672DA002)

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
336	8.7	22.8	83.4	N/A	N/A	N/A

UUT Highest Passed Seismic Run Information									
Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)	
CBC 2019	ICC-ES AC156 (2015)	2.0	1.0	1.5	3.2	2.4	1.33	0.53	
		2.0	0.0	1.5					

Test Mounting Details:



UUT 1 was wall mounted - rigid to the fixture with six (6) 1/2" Grade 5 bolts with square channel nuts. Notched tabs were used to mount the PCBs.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.

UUT DEFICIENCY REPORT

1800887-DR-002

1800887-CR-001 R1



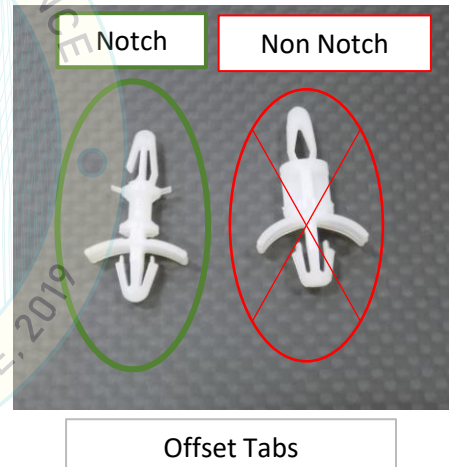
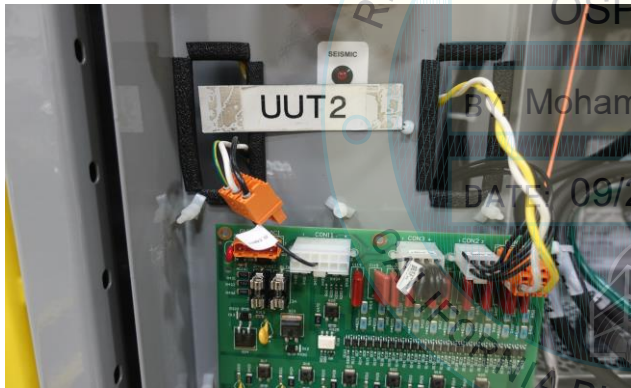
Manufacturer: ThyssenKrupp Manufacturing, Inc.
Model Line: TAC32T Slimline
Model Number: 2102BV003-MAX **Serial Number:** BEW567

UUT 2

Requirement:
 ICC-ES AC 156 §6.6.1 Structural integrity of the component attachment systems shall be maintained.

Deficiency and Cause:

The bill of material called out the incorrect offset tab, so the units printed circuit board (PCB) were attached the panel wall with a standard (non notched) offset tab rather than the one the client chose for seismic testing. In the photo below, the offset tab with "notch" on the left is tab that should have been used. The offset tab on the right was the one that was installed by the manufacture. The notch at the top of the tab prevents the PCB from coming unattached during a seismic event as shown in the picture on the left.



Corrective Action:

Replace six existing non notched offset tabs with notched offset tabs, three on the top of the PCB and three at the bottom of the PCB. Unit was retested with notched offset tab and sucessfully passed the retest.

Action to Preclude Recurrence:

Manufacturer will change bill of materials to reflect notched offset tab for seismic applications.

Engineer Creating Report:	Katie Braman	Date:	29-Aug-19
Principal Engineer:	Galen Reid	Date:	29-Aug-19
Client Acceptance:	Jason McBride	Date:	29-Aug-19

UNIT UNDER TEST (UUT) SUMMARY SHEET

1800887-CR-001 R1



Manufacturer: ThyssenKrupp Manufacturing, Inc.	UUT 3
Model Line: TAC32T-72"	
Model Number: 2102BM003-XFMRs Serial Number: BEW568	

Product Construction Summary:
Carbon steel frame and skins. Front and side skins 16 ga. and rear skin 10 ga.

Options/Subcomponent Summary:
Line Choke-MTE (486AD7), Circuit Breaker-Siemens (270AT008), Contactor-Siemens (298BF4), Contactor-Siemens (804BF5), Contactor-Siemens (804BF6), Contactor-Siemens (298AH56), Relay-Tyco (690CA3), Relay-Tyco (770BK2), Relay-Tyco (770BK2), Relay-Tyco (558AX2), Relay-Tyco (804BC2), Switches-Eaton (171JA001), Power Supply- Delta (672DE001), Power Supply-Delta (672DE002), Transit Voltage Suppressors-ABB (804DA003), Fan-Mechatronics Inc. (378AH1), Transformer-GE (874DA2), Transformer-GE (874DB2), Transformer-GE (874EN002), Transformer-GE (874DV2), Green Drives-Gefan (2109CD002)

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
565	22	30	72	8.65	13.47	>33.3

UUT Highest Passed Seismic Run Information									
Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)	
CBC 2019	ICC-ES AC156 (2015)	2.0	1.0	1.5	3.2	2.4	1.33	0.53	
		2.0	0.0	1.5					

Test Mounting Details:



Unit was base mounted-rigid with six (6) 3/8"-16 grade 2 bolts, washers, and lock washer. Mounting bracket PN: 196BKD001 was used at the front and back of the unit.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

1800887-CR-001 R1



Manufacturer: ThyssenKrupp Manufacturing, Inc.	UUT 4
Model Line: TAC32T-72"	
Model Number: 2102BM003-MAX	
Serial Number: BEW569	

Product Construction Summary:
Carbon steel frame and skins. Front and side skins 16 ga. and rear skin 10 ga.

Options/Subcomponent Summary:
Line Choke-MTE (486AD11), Circuit Breaker-Siemens (270AT0018), Contactor-Siemens (298BL002), Contactor-Siemens (804BF6), Contactor-Siemens (298AH56), Relay-Tyco (690CA3), Relay-Tyco (770BK2), Relay-Tyco (770BK2), Relay-Tyco (558AX2), Relay-Tyco (804BC2), Switches-Eaton (171JA001), Power Supply- Delta (672DE002), Power Supply-Delta (672DE003), Transit Voltage Suppressors-ABB (804DA004), Fan-Mechatronics Inc. (378AH1), Transformer-GE (874EN003), Green Drives -Gefan (2109CD006), UPS-APC (672DA002)

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
727	22	30	72	6.87	11.26	>33.3

UUT Highest Passed Seismic Run Information									
Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)	
CBC 2019	ICC-ES AC156 (2015)	2.0	1.0	1.5	3.2	2.4	1.33	0.53	
		2.0	0.0	1.5					

Test Mounting Details:



Unit was base mounted-rigid with six (6) 3/8"-16 grade 2 bolts, flat washers and lock washer. Mounting bracket PN: 196BKD001 was used at the front and back of the unit.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.