



**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION  
FACILITIES DEVELOPMENT DIVISION**

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

OFFICE USE ONLY

**APPLICATION #: OSP-0590**

**HCAI Special Seismic Certification Preapproval (OSP)**

Type:  New  Renewal

**Manufacturer Information**

Manufacturer: Frank M. Booth, Inc.

Manufacturer's Technical Representative: Jack Brassington

Mailing Address: 4220 Douglas Blvd., Granite Bay, CA 95746

Telephone: (916) 784-0707

Email: JackB@frankbooth.com

**Product Information**

Product Name: Industrial Control Panels

Product Type: HVAC Control Panels

Product Model Number: See Certified Product Table attached

General Description: Temperature control panels consisting of controller, transformers, power supply, relays, switches, fans, manual overrides, and network connectivity parts.

Mounting Description: Wall mounted-rigid & isolated; may be wall mounted on equipment or vertical supports., -

Tested Seismic Enhancements: None

**Applicant Information**

Applicant Company Name: TRU Compliance, by Structural Integrity Associates, Inc.

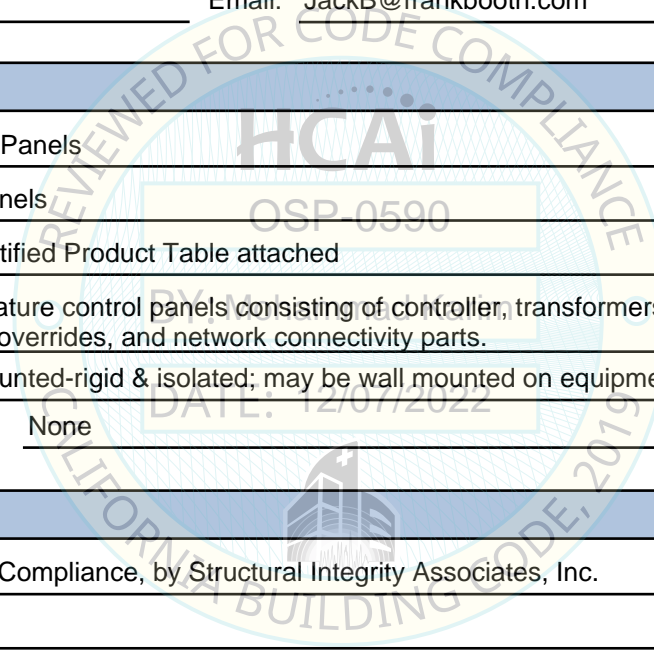
Contact Person: Katie Braman

Mailing Address: 5215 Hellyer Ave. Suite 210, San Jose, CA 95138

Telephone: (844) 878-0200

Email: kbraman@structint.com

Title: Program Manager





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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: 5215 Hellyer Ave, Suite 101, San Jose, CA 951381025  
Telephone: (415) 635-8461 Email: acoughlin@structint.com

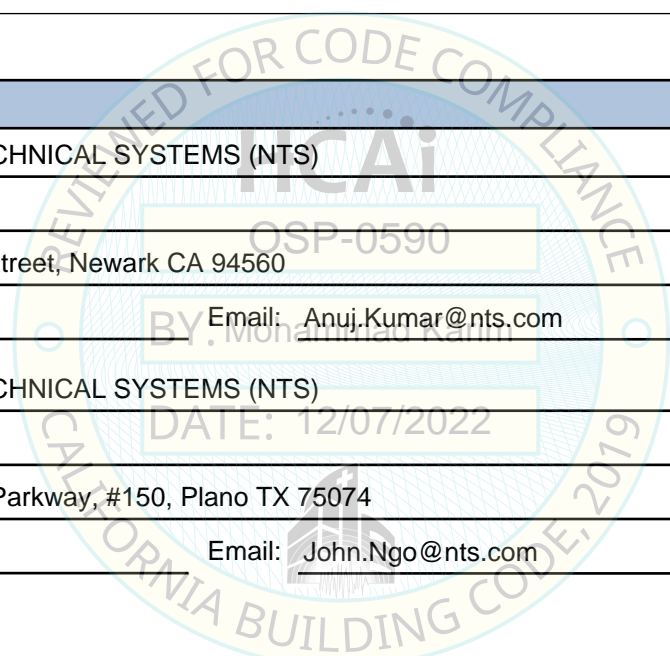
Certification Method

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: Anuj Kumar  
Mailing Address: 38995 Cherry Street, Newark CA 94560  
Telephone: (510) 578-3500 Email: Anuj.Kumar@nts.com

Company Name: NATIONAL TECHNICAL SYSTEMS (NTS)  
Contact Person: John Ngo  
Mailing Address: 1701 E. Plano Parkway, #150, Plano TX 75074  
Telephone: (972) 509-2566 Email: John.Ngo@nts.com



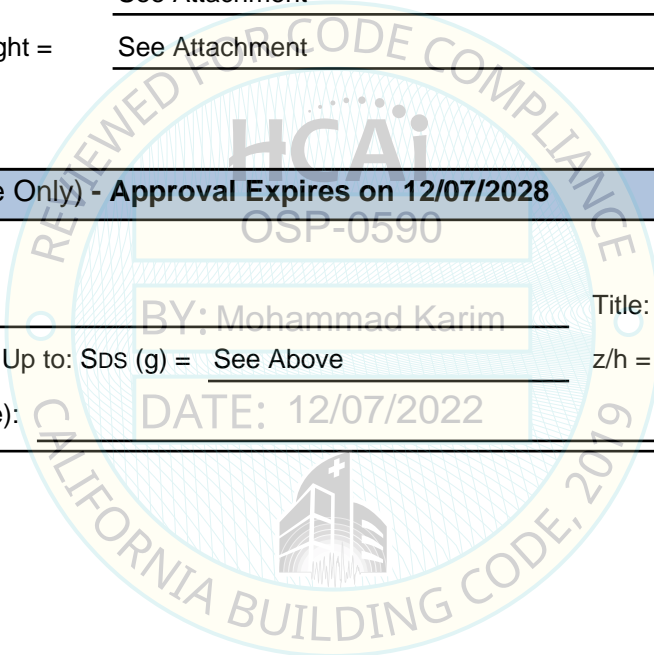


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**Seismic Parameters**

|  |   |
|--|---|
| Design Basis of Equipment or Components ( $F_p/W_p$ ) =          | 1.50 (rigid) & 4.50 (isolated) at $SDS = 2.00$ , $z/h = 1$ ; 1.13 (rigid) & 1.88 (isolated) at $SDS = 2.50$ , $z/h = 0$ |
| SDS (Design spectral response acceleration at short period, g) = | 2.00 ( $z/h = 1$ ), 2.50 ( $z/h = 0$ )  |
| $a_p$ (Amplification factor) =                                   | 2.5 (rigid and isolated)  |
| $R_p$ (Response modification factor) =                           | 6.0 (rigid), 2.0 (isolated)   |
| $\Omega_0$ (System overstrength factor) =                        | 2.0   |
| $I_p$ (Importance factor) =                                      | 1.5   |
| $z/h$ (Height ratio factor) =                                    | 1 and 0   |
| Natural frequencies (Hz) =                                       | See Attachment  |
| Overall dimensions and weight =                                  | See Attachment  |

| <b>HCAI Approval (For Office Use Only) - Approval Expires on 12/07/2028</b> |                            |         |                                      |
|---|----------------------------|---------|--------------------------------------|
| Date:   | <u>12/7/2022</u>           |         |                                      |
| Name:   | <u>Mohammad Karim</u>      | Title:  | <u>Supervisor, Health Facilities</u> |
| Special Seismic Certification Valid Up to:                                  | <u>SDS (g) = See Above</u> | $z/h =$ | <u>See Above</u>                     |
| Condition of Approval (if applicable):                                      | <u>DATE: 12/07/2022</u>    |         |                                      |



# SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

1801528-CR-001-R2



| <b>Manufacturer:</b> Frank M Booth   |        |                                      |       |        |                              | <b>TABLE 1</b> |         |
|--|--------|--------------------------------------|-------|--------|------------------------------|----------------|---------|
| <b>Model Line:</b> System Control Panels   |        |                                      |       |        |                              |                |         |
| <b>Certified Product Construction Summary:</b><br>NEMA 3R, 14 gauge carbon steel enclosure   |        |                                      |       |        |                              |                |         |
| <b>Certified Options Summary:</b>  |        |                                      |       |        |                              |                |         |
| <b>Mounting Configuration:</b><br>Wall mounted - rigid<br>Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested. |        |                                      |       |        |                              |                |         |
| <b>Building Code: CBC 2022</b>   |        | <b>Seismic Certification Limits:</b> |       |        | $S_{DS} = 2.0 g$ $z/h = 1.0$ | $I_p = 1.5$    |         |
|  |        |                                      |       |        | $S_{DS} = 2.5 g$ $z/h = 0.0$ |                |         |
| Model Line   | Model  | Dimensions (in)                      |       |        | Weight (lb)                  | Notes          | UUT     |
|  |        | Depth                                | Width | Height |                              |                |         |
| System Control Panels  | FMB-1  | 6.0                                  | 12.0  | 16.0   | 26                           |                | Extrap. |
|  | FMB-2  | 6.0                                  | 16.0  | 16.0   | 27                           |                | Extrap. |
|  | FMB-3  | 6.0                                  | 18.0  | 18.0   | 34                           |                | Extrap. |
|  | FMB-4  | 6.0                                  | 16.0  | 20.0   | 33                           |                | Extrap. |
|  | FMB-5  | 8.0                                  | 20.0  | 20.0   | 55                           |                | Extrap. |
|  | FMB-6  | 8.0                                  | 20.0  | 24.0   | 66                           |                | Extrap. |
|  | FMB-7  | 8.5                                  | 23.5  | 24.0   | 81                           |                | 1       |
|  | FMB-8  | 8.0                                  | 24.0  | 30.0   | 98                           |                | Interp. |
|  | FMB-9  | 10.0                                 | 18.0  | 18.0   | 54                           |                | Interp. |
|  | FMB-10 | 8.0                                  | 30.0  | 30.0   | 115                          |                | Interp. |
|  | FMB-11 | 10.0                                 | 24.0  | 24.0   | 89                           |                | Interp. |
|  | FMB-12 | 10.0                                 | 24.0  | 30.0   | 107                          |                | Interp. |
|  | FMB-13 | 10.0                                 | 36.0  | 36.0   | 186                          |                | Interp. |
|  | FMB-14 | 12.0                                 | 30.0  | 30.0   | 150                          |                | Interp. |
|  | FMB-15 | 12.0                                 | 24.0  | 36.0   | 138                          |                | Interp. |
|  | FMB-16 | 12.0                                 | 30.0  | 36.0   | 165                          |                | Interp. |
|  | FMB-17 | 12.0                                 | 30.0  | 42.0   | 189                          |                | Interp. |
|  | FMB-18 | 12.0                                 | 36.0  | 36.0   | 191                          |                | Interp. |
|  | FMB-19 | 12.0                                 | 36.0  | 42.0   | 218                          |                | Interp. |
|  | FMB-20 | 12.0                                 | 36.0  | 48.0   | 244                          |                | Interp. |
|  | FMB-21 | 12.5                                 | 35.0  | 60.0   | 296                          |                | 2       |
|  |        |                                      |       |        |                              |                |         |
|  |        |                                      |       |        |                              |                |         |
|  |        |                                      |       |        |                              |                |         |

# SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

1801528-CR-001-R2



| <b>Manufacturer:</b> Frank M Booth  |        |                 |       |        |             | <b>TABLE 2</b>   |             |
|---|--------|-----------------|-------|--------|-------------|--|-------------|
| <b>Model Line:</b> System Control Panels  |        |                 |       |        |             |  |             |
| <b>Certified Product Construction Summary:</b><br>NEMA 3R, 14 gauge carbon steel enclosure  |        |                 |       |        |             |  |             |
| <b>Certified Options Summary:</b>   |        |                 |       |        |             |  |             |
| <b>Mounting Configuration:</b><br>Wall mounted - isolated<br>Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested. |        |                 |       |        |             |  |             |
| <b>Building Code: CBC 2022</b>  |        |                 |       |        |             | <b>Seismic Certification Limits:</b><br>$S_{DS} = 2.0 g$ $z/h = 1.0$<br>$S_{DS} = 2.5 g$ $z/h = 0.0$ | $I_p = 1.5$ |
| Model Line  | Model  | Dimensions (in) |       |        | Weight (lb) | Notes  | UUT         |
|   |        | Depth           | Width | Height |             |  |             |
| System Control Panels   | FMB-1  | 6.0             | 12.0  | 16.0   | 26          |  | Extrap.     |
|   | FMB-2  | 6.0             | 16.0  | 16.0   | 27          |  | Extrap.     |
|   | FMB-3  | 6.0             | 18.0  | 18.0   | 34          |  | Extrap.     |
|   | FMB-4  | 6.0             | 16.0  | 20.0   | 33          |  | Extrap.     |
|   | FMB-5  | 8.0             | 20.0  | 20.0   | 55          |  | Extrap.     |
|   | FMB-6  | 8.0             | 20.0  | 24.0   | 66          |  | Extrap.     |
|   | FMB-7  | 8.5             | 23.5  | 24.0   | 81          |  | 3           |
|   | FMB-8  | 8.0             | 24.0  | 30.0   | 98          |  | Interp.     |
|   | FMB-9  | 10.0            | 18.0  | 18.0   | 54          |  | Interp.     |
|   | FMB-10 | 8.0             | 30.0  | 30.0   | 115         |  | Interp.     |
|   | FMB-11 | 10.0            | 24.0  | 24.0   | 89          |  | Interp.     |
|   | FMB-12 | 10.0            | 24.0  | 30.0   | 107         |  | Interp.     |
|   | FMB-13 | 10.0            | 36.0  | 36.0   | 186         |  | Interp.     |
|   | FMB-14 | 12.0            | 30.0  | 30.0   | 150         |  | Interp.     |
|   | FMB-15 | 12.0            | 24.0  | 36.0   | 138         |  | Interp.     |
|   | FMB-16 | 12.0            | 30.0  | 36.0   | 165         |  | Interp.     |
|   | FMB-17 | 12.0            | 30.0  | 42.0   | 189         |  | Interp.     |
|   | FMB-18 | 12.0            | 36.0  | 36.0   | 191         |  | Interp.     |
|   | FMB-19 | 12.0            | 36.0  | 42.0   | 218         |  | Interp.     |
|   | FMB-20 | 12.0            | 36.0  | 48.0   | 244         |  | Interp.     |
|   | FMB-21 | 12.5            | 35.0  | 60.0   | 296         |  | 4           |
|   |        |                 |       |        |             |  |             |
|   |        |                 |       |        |             |  |             |
|   |        |                 |       |        |             |  |             |

# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1801528-CR-001-R2



| <b>Manufacturer:</b> Frank M Booth<br><b>Model Line:</b> System Control Panels |  | <b>Table Description:</b> Panels, Back Plates, Hood |  |       | <b>TABLE 3</b>   |  |
|--|--|---|--|-------|--|--|
| <b>Building Code:</b> CBC 2022   |  | <b>Seismic Certification Limits:</b>                |  |       | $S_{DS} = 2.0g \quad z/h = 1.0$<br>$S_{DS} = 2.5g \quad z/h = 0.0$ |  |
|  |  |   |  |       | $I_p = 1.5$  |  |
| Component Type   | Manufacturer                                   | Model   | Description                                    | Notes | UUT  |  |
| NEMA 3R Enclosure  | Hoffman  | A16R126HCR  | 16"x 12"x 6", 14 ga carbon steel, 14.6 lbs.    |       | Extrap.  |  |
|  |  | A16R166HCR  | 16"x 16"x 6", 14 ga. carbon steel, 14.9 lbs.   |       | Extrap.  |  |
|  |  | A18R186HCR  | 18"x 18"x 6", 14 ga. carbon steel, 18.9lbs.    |       | Extrap.  |  |
|  |  | A20R166HCR  | 20"x 16"x 6", 14 ga. carbon steel, 18.6 lbs.   |       | Extrap.  |  |
|  |  | A20R208HCR  | 20"x 20"x 8", 14 ga. carbon steel, 30.8 lbs.   |       | Extrap.  |  |
|  |  | A24R208HCR  | 24"x 20"x 8", 14 ga. carbon steel, 36.8 lbs.   |       | Extrap.  |  |
|  |  | A24R248HCR  | 24"x 24"x 8", 14 ga. carbon steel, 43.9 lbs.   |       | 1, 3   |  |
|  |  | A30R248HCR  | 30"x 24"x 8", 14 ga. carbon steel, 54.6 lbs.   |       | Interp.  |  |
|  |  | A18R1810HCR   | 18"x 18"x 10", 14 ga. carbon steel, 30.6 lbs.  |       | Interp.  |  |
|  |  | A30R308HCR  | 30"x 30"x 8", 14 ga. carbon steel, 67.6 lbs.   |       | Interp.  |  |
|  |  | A24R2410HCR   | 24"x 24"x 10", 14 ga. carbon steel, 53.8 lbs.  |       | Interp.  |  |
|  |  | A30R2410HCR   | 30"x 24"x 10", 14 ga. carbon steel, 66.9 lbs.  |       | Interp.  |  |
|  |  | A36R3610HCR   | 36"x 36"x 10", 14 ga. carbon steel, 119.8 lbs. |       | Interp.  |  |
|  |  | A30R3012HCR   | 30"x 30"x 12", 14 ga. carbon steel, 99.4 lbs.  |       | Interp.  |  |
|  |  | A36R2412HCR   | 36"x 24"x 12", 14 ga. carbon steel, 94.9 lbs.  |       | Interp.  |  |
|  |  | A36R3012HCR   | 36"x 30"x 12", 14 ga. carbon steel, 118.1 lbs. |       | Interp.  |  |
|  |  | A42R3012HCR   | 42"x 30"x 12", 14 ga. carbon steel, 137.0 lbs. |       | Interp.  |  |
|  |  | A36R3612HCR   | 36"x 36"x 12", 14 ga. carbon steel, 140.2 lbs. |       | Interp.  |  |
|  |  | A42R3612HCR   | 42"x 36"x 12", 14 ga. carbon steel, 162.8 lbs. |       | Interp.  |  |
|  |  | A48R3612HCR   | 48"x 36"x 12", 14 ga. carbon steel, 185.1 lbs. |       | Interp.  |  |
| A60R3612HCR  | 60"x 36"x 12", 14 ga. carbon steel, 230.3 lbs. |   | 2, 4   |       |  |  |
| Hood   | Hammond  | RH20000LG   | 7.8"x 10.4"x 2.17", carbon steel, 3.7 lbs.     |       | 1, 3   |  |

# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

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|  |   |                |
|--|---|----------------|
| <b>Manufacturer:</b> Frank M Booth       | <b>Table Description:</b> Panels, Back Plates, Hood | <b>TABLE 3</b> |
| <b>Model Line:</b> System Control Panels |   |                |

|                                |                                      |                             |             |
|--------------------------------|--------------------------------------|-----------------------------|-------------|
| <b>Building Code:</b> CBC 2022 | <b>Seismic Certification Limits:</b> | $S_{DS} = 2.0g$ $z/h = 1.0$ | $I_p = 1.5$ |
|                                |                                      | $S_{DS} = 2.5g$ $z/h = 0.0$ |             |

| Component Type | Manufacturer | Model  | Description                              | Notes | UUT     |
|----------------|--------------|--------|--|-------|---------|
| Back Plates    | Hoffman      | A16P12 | 13"x 9", 12 ga. carbon steel, 3.7 lbs.   |       | Extrap. |
|                |              | A16P16 | 13"x 13", 12 ga. carbon steel, 5.3 lbs.  |       | Extrap. |
|                |              | A18P18 | 15"x 15", 12 ga. carbon steel, 7.1 lbs.  |       | Extrap. |
|                |              | A20P16 | 17"x 13", 12 ga. carbon steel, 7 lbs.    |       | Extrap. |
|                |              | A20P20 | 17"x 17", 12 ga. carbon steel, 9.1 lbs.  |       | Extrap. |
|                |              | A24P20 | 21"x 17", 12 ga. carbon steel, 11.2 lbs. |       | Extrap. |
|                |              | A24P24 | 21"x 21", 12 ga. carbon steel, 13.9 lbs. |       | 1, 2    |
|                |              | A30P24 | 27"x 21", 12 ga. carbon steel, 17.9 lbs. |       | Interp. |
|                |              | A30P30 | 27"x 27", 12 ga. carbon steel, 22.9 lbs. |       | Interp. |
|                |              | A36P24 | 33"x 21", 12 ga. carbon steel, 21.8 lbs. |       | Interp. |
|                |              | A36P30 | 33"x 27", 12 ga. carbon steel, 28 lbs.   |       | Interp. |
|                |              | A36P36 | 33"x 33", 12 ga. carbon steel, 34.3 lbs. |       | Interp. |
|                |              | A42P30 | 39"x 27", 12 ga. carbon steel, 33.1 lbs. |       | Interp. |
|                |              | A42P36 | 39"x 33", 12 ga. carbon steel, 40.5 lbs. |       | Interp. |
|                |              | A48P36 | 45"x 33", 12 ga. carbon steel, 46.7 lbs. |       | Interp. |
|                |              | A60P36 | 57"x 33", 12 ga. carbon steel, 59.2 lbs. |       | 2, 4    |
|                |              |        |  |       |         |
|                |              |        |  |       |         |
|                |              |        |  |       |         |
|                |              |        |  |       |         |
|                |              |        |  |       |         |

# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1801528-CR-001-R2



| <b>Manufacturer:</b> Frank M Booth<br><b>Model Line:</b> System Control Panels |                    | <b>Table Description:</b> Electrical Subcomponents |  |  | <b>TABLE 4</b>   |  |
|--|--------------------|--|--|--|--|--|
| <b>Building Code:</b> CBC 2022   |                    | <b>Seismic Certification Limits:</b>               |  |  | $S_{DS} = 2.0g$ $z/h = 1.0$<br>$S_{DS} = 2.5g$ $z/h = 0.0$ |  |
|  |                    |  |  |  | $I_p = 1.5$  |  |
| Component Type   | Manufacturer       | Model  | Description                                      | Notes  | UUT  |  |
| Transformers   | Functional Devices | TR100VA001   | Single Hub 120/24VAC 96VA, Cu Windings, 3.4 lbs. | US in Model number denotes where component was manufactured, identical to TR100VA001 | 1, 2, 3, 4   |  |
|  |                    | TR100VA001US                                       | Single Hub 120/24VAC 96VA, Cu Windings, 3.4 lbs. |  | Interp.  |  |
|  |                    | TR100VA002   | Dual Hub 120/24VAC 96VA, Cu Windings, 4.13lbs    |  | 2, 4   |  |
| Relays   | Functional Devices | RIBAN24G   | 10 AMP Control Relay                             |  | 2, 4   |  |
|  |                    | RIBU1C   | Power Switching Relay                            |  | 2, 4   |  |
|  |                    | RH1B-UL  | 24 VAC Illuminated Single Pole C-Form Relay      |  | 1, 2, 3, 4   |  |
|  | IDEC               | RH2B-UL  | 24 VAC Illuminated Double Pole C-Form Relay      |  | 2, 4   |  |
|  |                    | RH3B-UL  | 24 VAC Illuminated Three Pole C-Form Relay       |  | 2, 4   |  |
|  |                    | RH4B-UL  | 24 VAC Illuminated Four Pole C-Form Relay        |  | 2, 4   |  |
| Relay Sockets  | IDEC               | SH1B-05  | Socket Single Pole                               |  | 1, 2, 3, 4   |  |
|  |                    | SH2B-05  | Socket Double Pole                               |  | 2, 4   |  |
|  |                    | SH3B-05  | Socket Three Pole                                |  | 2, 4   |  |
|  |                    | SH4B-05  | Socket Four Pole                                 |  | 2, 4   |  |
| Fuse Holder  | BUSS               | HRK  | Fuse Holder                                      |  | 2, 4   |  |
| Controller   | Siemens            | JACE-8000  | IoT Controller                                   |  | 1, 3   |  |
| Communication Module   | Siemens            | TNM-8000   | Two isolated RS 485 ports                        |  | 2, 4   |  |
| Module (I/O)   | Siemens            | 588-692  | Remote IO MODULE NRIO 16                         |  | 2, 4   |  |
|  |                    | IO-R-16  | Remote I/O, 3.25"x 4.5"x 2.4"                    |  | 2, 4   |  |
|  |                    | IO-R-34  | Remote I/O, 6.8"x 4.5"x 2.4"                     |  | 2, 4   |  |
|  |                    | PPM-2U22.BPF                                       | BACnet Input / Output Module                     |  | 2, 4   |  |
|  |                    | MSTP_PPM   | BACnet Input / Output Module                     |  | 2, 4   |  |



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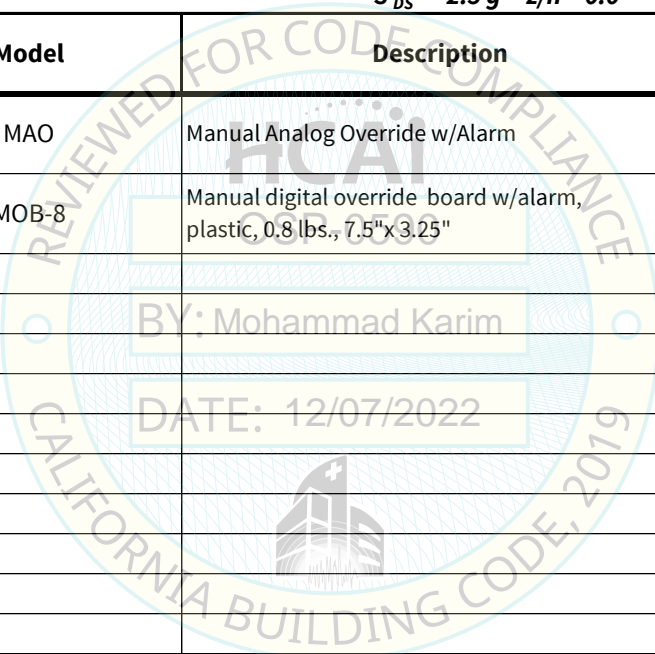
| <b>Manufacturer:</b> Frank M Booth<br><b>Model Line:</b> System Control Panels |                       | <b>Table Description:</b> Electrical Subcomponents |   |                  | <b>TABLE 4</b>   |  |
|--|-----------------------|--|---|------------------|--|--|
| <b>Building Code:</b> CBC 2022   |                       | <b>Seismic Certification Limits:</b>               |   |                  | $S_{DS} = 2.0g \quad z/h = 1.0$<br>$S_{DS} = 2.5g \quad z/h = 0.0$ |  |
|  |                       |  |   |                  | $I_p = 1.5$  |  |
| Component Type   | Manufacturer          | Model  | Description                             | Notes            | UUT  |  |
| Power Supply Module  | Siemens               | 588-679  | NPB-PWR-UN Power Supply Module          |                  | 1, 3   |  |
|  |                       | 588-678 NPB-PWR                                    | Power Supply Module                     |                  | 2, 4   |  |
| Power Supply   | Kele                  | DCP-1.5-W  | 24 VAC to 24 VDC Power Supply           |                  | 1, 3   |  |
| Port Expander  | Siemens               | NPB-8000-2X-485                                    | RS-485 Port Expander                    |                  | 1, 3   |  |
| Grounding Block  | Phoenix Contact       | 3046223  | Grounding Block                         |                  | 1, 2, 3, 4   |  |
| Terminal Block   | Phoenix Contact       | 3118203  | Fuse Terminal Block                     |                  | 1, 2, 3, 4   |  |
|  |                       | 3046139  | Disconnecting Terminal Block            |                  | 1, 3   |  |
| Fan  | EBM PAPST             | 4314/2U  | 24 VDC Fan                              |                  | 1, 3   |  |
| Circuit Breaker  | Phoenix Contact       | 712194   | 1 Amp Thermal CB                        |                  | 1, 2, 3, 4   |  |
|  |                       | 712314   | 10 Amp Thermal Circuit Breaker          |                  | 1, 2, 3, 4   |  |
| Power Receptacle   | Leviton               | GFNT1-W  | 15 Amp 115 V GFI Receptacle             |                  | 1, 3   |  |
| Switches   | IDEC                  | ABW-110  | Momentary Pushbutton Switch             |                  | 2, 4   |  |
|  |                       | LA1B-M1C5-B  | Momentary Pushbutton Switch             |                  | 2, 4   |  |
|  |                       | ASW-220  | Two Position Selector Switch            |                  | 2, 4   |  |
|  |                       | LA1S-2C6   | Two Position Selector Switch            |                  | 2, 4   |  |
|  |                       | APW199D-G-24V                                      | 24 VAC LED Pilot Light                  | Indicating Light | 2, 4   |  |
|  |                       | LA1P-1C04-R  | 24 VAC LED Pilot Light                  | Indicating Light | 2, 4   |  |
|  |                       | LA1L-M1C54-R                                       | 24 VAC Illuminated Momentary Switch     |                  | 2, 4   |  |
|  | Veris                 | PAS03  | Dry Differential Switch                 |                  | 2, 4   |  |
|  |                       | PX3ULX05   | Digital Pressure Transducer (Dry Media) | Transducer       | 2, 4   |  |
|  | Dwyer                 | 1910-10  | Pressure Switch                         |                  | 2, 4   |  |
| Ethernet Switch  | Contemporary Controls | EIBA5-100T/R                                       | 5-Port Unmanaged Switch                 |                  | 1, 3   |  |

# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1801528-CR-001-R2



| <b>Manufacturer:</b> Frank M Booth<br><b>Model Line:</b> System Control Panels |              | <b>Table Description:</b> Electrical Subcomponents |   |       | <b>TABLE 4</b>   |  |
|--|--------------|--|---|-------|--|--|
| <b>Building Code:</b> CBC 2022   |              | <b>Seismic Certification Limits:</b>               |   |       | $S_{DS} = 2.0g \quad z/h = 1.0$<br>$S_{DS} = 2.5g \quad z/h = 0.0$ |  |
|  |              |  |   |       | $I_p = 1.5$  |  |
| Component Type   | Manufacturer | Model  | Description   | Notes | UUT  |  |
| Manual Override  | ACI          | MAO  | Manual Analog Override w/Alarm  |       | 1, 3   |  |
|  | Kele         | MOB-8  | Manual digital override board w/alarm, plastic, 0.8 lbs., 7.5"x 3.25" |       | 2, 4   |  |
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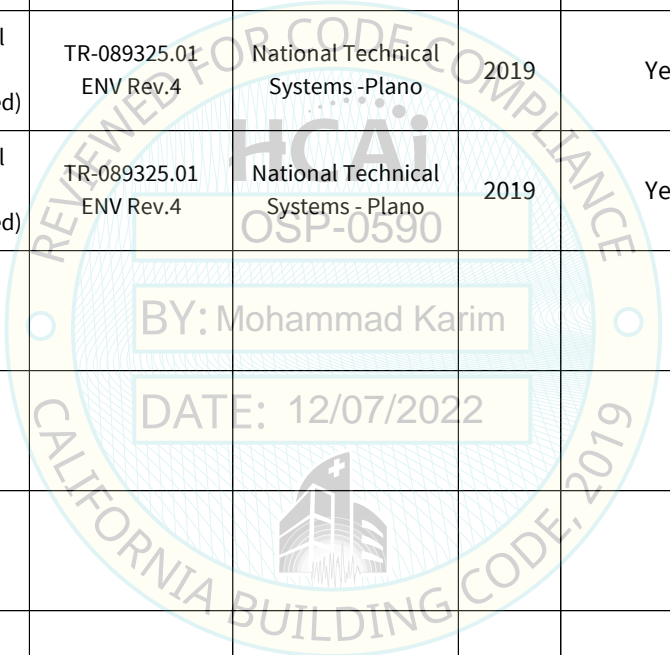
# UNIT UNDER TEST (UUT) SUMMARY SHEET

1801528-CR-001-R2



**Manufacturer:** Frank M Booth  
**Model Line:** System Control Panels

| UUT | Unit Description (Mounting)                                 | Report Number             | Testing Lab                                       | Year Tested | ISO 17025 Accredited? | S <sub>DS</sub> | z/h        | I <sub>p</sub> |
|-----|---|---------------------------|---|-------------|-----------------------|-----------------|------------|----------------|
| 1   | System Control Panel<br>FMB-7<br>(Wall Mounted - Rigid)     | TR-089325.01<br>ENV Rev.4 | National Technical<br>Systems - Silicon<br>Valley | 2019        | Yes                   | 2.0<br>2.5      | 1.0<br>0.0 | 1.5            |
| 2   | System Control Panel<br>FMB-21<br>(Wall Mounted - Rigid)    | TR-089325.01<br>ENV Rev.4 | National Technical<br>Systems - Silicon<br>Valley | 2019        | Yes                   | 2.0<br>2.5      | 1.0<br>0.0 | 1.5            |
| 3   | System Control Panel<br>FMB-7<br>(Wall Mounted - Isolated)  | TR-089325.01<br>ENV Rev.4 | National Technical<br>Systems -Plano              | 2019        | Yes                   | 2.0<br>2.5      | 1.0<br>0.0 | 1.5            |
| 4   | System Control Panel<br>FMB-21<br>(Wall Mounted - Isolated) | TR-089325.01<br>ENV Rev.4 | National Technical<br>Systems - Plano             | 2019        | Yes                   | 2.0<br>2.5      | 1.0<br>0.0 | 1.5            |
|     |   |                           |   |             |                       |                 |            |                |
|     |   |                           |   |             |                       |                 |            |                |
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**Notes:**

# UNIT UNDER TEST (UUT) SUMMARY SHEET

1801528-CR-001-R2



|  |              |
|--|--------------|
| <b>Manufacturer:</b> Frank M Booth                   | <b>UUT 1</b> |
| <b>Model Line:</b> System Control Panels             |              |
| <b>Model Number:</b> FMB-7 <b>Serial Number:</b> N/A |              |

**Product Construction Summary:**  
14 ga. carbon steel enclosure, 12 ga. carbon steel back panel

**Options/Subcomponent Summary:**  
**NEMA 3R Enclosure:** Hoffman (A24R248HCR); **Back Plates:** Hoffman (A24P24); **Hood:** Hammond (RH20000LG);  
**Transformer:** Functional Devices (TR100VA001); **Relays:** IDEC (RH1B-UL); **Relay Socket:** IDEC (SH1B-05);  
**Controller:** Siemens (JACE-8000); **Module (I/O):** Siemens (588-692); **Power Supply Module:** Siemens (588-679);  
**Power Supply:** Kele (DCP-1.5-W0); **Port Expander:** Siemens (NPB-8000-2X-485); **Grounding Block:** Phoenix Contact (3046223);  
**Terminal Block:** Phoenix Contact (3118203, 3046139); **Fan:** EBM PAPST (4314/2U); **Manual Override:** ACI (MAO);  
**Circuit Breaker:** Phoenix Contact (0712194, 0712314); **Power Receptacle:** Leviton (GFNT1-W);  
**Ethernet Switch:** Contemporary Controls (EIBA5-100T/R)

**UUT Properties**

| Weight (lb) | Dimension (in) |       |        | Lowest Natural Frequency (Hz) |           |          |
|-------------|----------------|-------|--------|-------------------------------|-----------|----------|
|             | Depth          | Width | Height | Front-Back                    | Side-Side | Vertical |
| 81          | 8.5            | 23.5  | 24.0   | N/A                           | N/A       | N/A      |

**UUT Highest Passed Seismic Run Information**

| Building Code | Test Criteria       | S <sub>DS</sub> (g) | z/h | I <sub>p</sub> | A <sub>FLX-H</sub> (g) | A <sub>RIG-H</sub> (g) | A <sub>FLX-V</sub> (g) | A <sub>RIG-V</sub> (g) |
|---------------|---------------------|---------------------|-----|----------------|------------------------|------------------------|------------------------|------------------------|
| CBC 2022      | ICC-ES AC156 (2010) | 2.0                 | 1.0 | 1.5            | 3.20                   | 2.40                   | 1.67                   | 0.67                   |
|               |                     | 2.5                 | 0.0 |                |                        |                        |                        |                        |

**Test Mounting Details:** (Test Report: TR-089325.01 ENV Rev.4)



UUT1 was wall mounted - rigid to a 4ft x 4ft steel frame fixture using four (4) 5/16" x 2" zinc plated hex head lag bolts (ungraded) and washers.

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



1801528-CR-001-R2

|   |              |
|---|--------------|
| <b>Manufacturer:</b> Frank M Booth                    | <b>UUT 2</b> |
| <b>Model Line:</b> System Control Panels              |              |
| <b>Model Number:</b> FMB-21 <b>Serial Number:</b> N/A |              |

**Product Construction Summary:**  
14 ga. carbon steel enclosure, 12 ga. carbon steel back panel

**Options/Subcomponent Summary:**  
**NEMA 3R Enclosure:** Hoffman (A60R3612HCR); **Back Plates:** Hoffman (A24P24, A60P36);  
**Transformer:** Functional Devices (TR100VA001, TR100VA002); **Fuse Holder:** BUSS (HRK);  
**Relays:** Functional Devices (RIBAN24G, RIBU1C) & IDEC (RH1B-UL, RH2B-UL, RH3B-UL, RH4B-UL);  
**Relay Socket:** IDEC (SH1B-05, SH2B-05, SH3B-05, SH4B-05); **Communication Module:** Siemens (TNM-8000);  
**Module (I/O):** Siemens (IO-R-16, IO-R-34, PPM-2U22.BPF, MSTP\_PPM); **Power Supply Module:** Siemens (588-678 NPB-PWR);  
**Grounding Block:** Phoenix Contact (3046223); **Terminal Block:** Phoenix Contact (3118203); **Manual Override:** Kele (MOB-8);  
**Circuit Breaker:** Phoenix Contact (0712194, 0712314); **Switches:** Veris (PAS03, PX3ULX05) & Dwyer (1910-10) & IDEC (ABW-110, LA1B-M1C5-B, ASW-220, LA1S-2C6, APW199D-G-24V, LA1P-1C04-R, LA1L-M1C54-R)

**UUT Properties**

| Weight (lb) | Dimension (in) |       |        | Lowest Natural Frequency (Hz) |           |          |
|-------------|----------------|-------|--------|-------------------------------|-----------|----------|
|             | Depth          | Width | Height | Front-Back                    | Side-Side | Vertical |
| 296         | 12.5           | 35.0  | 60.0   | N/A                           | N/A       | N/A      |

**UUT Highest Passed Seismic Run Information**

| Building Code | Test Criteria       | S <sub>DS</sub> (g) | z/h | I <sub>p</sub> | A <sub>FLX-H</sub> (g) | A <sub>RIG-H</sub> (g) | A <sub>FLX-V</sub> (g) | A <sub>RIG-V</sub> (g) |
|---------------|---------------------|---------------------|-----|----------------|------------------------|------------------------|------------------------|------------------------|
| CBC 2022      | ICC-ES AC156 (2010) | 2.0                 | 1.0 | 1.5            | 3.20                   | 2.40                   | 1.67                   | 0.67                   |
|               |                     | 2.5                 | 0.0 |                |                        |                        |                        |                        |

**Test Mounting Details:** (Test Report: TR-089325.01 ENV Rev.4)



UUT2 was wall mounted - rigid to a 4ft x 4ft steel frame fixture using six (6) 5/16" x 2" zinc plated hex head lag bolts (ungraded) and washers.  
 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

1801528-CR-001-R2



|  |              |
|--|--------------|
| <b>Manufacturer:</b> Frank M Booth       | <b>UUT 3</b> |
| <b>Model Line:</b> System Control Panels |              |
| <b>Model Number:</b> FMB-7               |              |
| <b>Serial Number:</b> N/A                |              |

**Product Construction Summary:**  
14 ga. carbon steel enclosure, 12 ga. carbon steel back panel

**Options/Subcomponent Summary:**  
**NEMA 3R Enclosure:** Hoffman (A24R248HCR); **Hood:** Hammond (RH20000LG); **Transformer:** Functional Devices (TR100VA001);  
**Relays:** IDEC (RH1B-UL); **Relay Socket:** IDEC (SH1B-05); **Controller:** Siemens (JACE-8000); **Module (I/O):** Siemens (588-692);  
**Power Supply Module:** Siemens (588-679); **Power Supply:** Kele (DCP-1.5-W0); **Port Expander:** Siemens (NPB-8000-2X-485);  
**Grounding Block:** Phoenix Contact (3046223); **Terminal Block:** Phoenix Contact (3118203, 3046139); **Fan:** EBM PAPST (4314/2U);  
**Manual Override:** ACI (MAO); **Circuit Breaker:** Phoenix Contact (0712194, 0712314); **Power Receptacle:** Leviton (GFNT1-W);  
**Ethernet Switch:** Contemporary Controls (EIBA5-100T/R)

**UUT Properties**

| Weight (lb) | Dimension (in) |       |        | Lowest Natural Frequency (Hz) |           |          |
|-------------|----------------|-------|--------|-------------------------------|-----------|----------|
|             | Depth          | Width | Height | Front-Back                    | Side-Side | Vertical |
| 81          | 8.5            | 23.5  | 24.0   | N/A                           | N/A       | N/A      |

**UUT Highest Passed Seismic Run Information**

| Building Code | Test Criteria       | S <sub>DS</sub> (g) | z/h | I <sub>p</sub> | A <sub>FLX-H</sub> (g) | A <sub>RIG-H</sub> (g) | A <sub>FLX-V</sub> (g) | A <sub>RIG-V</sub> (g) |
|---------------|---------------------|---------------------|-----|----------------|------------------------|------------------------|------------------------|------------------------|
| CBC 2022      | ICC-ES AC156 (2010) | 2.0                 | 1.0 | 1.5            | 3.20                   | 2.40                   | 1.67                   | 0.67                   |
|               |                     | 2.5                 | 0.0 |                |                        |                        |                        |                        |

**Test Mounting Details:** (Test Report: TR-089325.01 ENV Rev.4)



UUT3 was wall mounted - isolated to a 4ft x 4ft steel frame fixture using four (4) 5/16" x 2" zinc plated hex head lag bolts (ungraded) and washers. Fixture was mounted to VibraSystem SMRT123 and SMRT124 with 1/2" Grade 5 bolts. 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

1801528-CR-001-R2



|   |              |
|---|--------------|
| <b>Manufacturer:</b> Frank M Booth                    | <b>UUT 4</b> |
| <b>Model Line:</b> System Control Panels              |              |
| <b>Model Number:</b> FMB-21 <b>Serial Number:</b> N/A |              |

**Product Construction Summary:**  
14 ga. carbon steel enclosure, 12 ga. carbon steel back panel

**Options/Subcomponent Summary:**  
**NEMA 3R Enclosure:** Hoffman (A60R3612HCR); **Back Plates:** Hoffman (A60P36);  
**Transformer:** Functional Devices (TR100VA001, TR100VA002); **Fuse Holder:** BUSS (HRK);  
**Relays:** Functional Devices (RIBAN24G, RIBU1C) & IDEC (RH1B-UL, RH2B-UL, RH3B-UL, RH4B-UL);  
**Relay Socket:** IDEC (SH1B-05, SH2B-05, SH3B-05, SH4B-05); **Communication Module:** Siemens (TNM-8000);  
**Module (I/O):** Siemens (IO-R-16, IO-R-34, PPM-2U22.BPF, MSTP\_PPM); **Power Supply Module:** Siemens (588-678 NPB-PWR);  
**Grounding Block:** Phoenix Contact (3046223); **Terminal Block:** Phoenix Contact (3118203); **Manual Override:** Kele (MOB-8);  
**Circuit Breaker:** Phoenix Contact (0712194, 0712314); **Switches:** Veris (PAS03, PX3ULX05) & Dwyer (1910-10) & IDEC (ABW-110, LA1B-M1C5-B, ASW-220, LA1S-2C6, APW199D-G-24V, LA1P-1C04-R, LA1L-M1C54-R)

**UUT Properties**

| Weight (lb) | Dimension (in) |       |        | Lowest Natural Frequency (Hz) |           |          |
|-------------|----------------|-------|--------|-------------------------------|-----------|----------|
|             | Depth          | Width | Height | Front-Back                    | Side-Side | Vertical |
| 296         | 12.5           | 35.0  | 60.0   | N/A                           | N/A       | N/A      |

**UUT Highest Passed Seismic Run Information**

| Building Code | Test Criteria       | S <sub>DS</sub> (g) | z/h | I <sub>p</sub> | A <sub>FLX-H</sub> (g) | A <sub>RIG-H</sub> (g) | A <sub>FLX-V</sub> (g) | A <sub>RIG-V</sub> (g) |
|---------------|---------------------|---------------------|-----|----------------|------------------------|------------------------|------------------------|------------------------|
| CBC 2022      | ICC-ES AC156 (2010) | 2.0                 | 1.0 | 1.5            | 3.20                   | 2.40                   | 1.67                   | 0.67                   |
|               |                     | 2.5                 | 0.0 |                |                        |                        |                        |                        |

**Test Mounting Details:** (Test Report: TR-089325.01 ENV Rev.4)



UUT4 was wall mounted - isolated to a 4ft x 4ft steel frame fixture using six (6) 5/16" x 2" zinc plated hex head lag bolts (ungraded) and washers. Fixture was mounted to VibraSystem SMRT123 and SMRT124 with 1/2" Grade 5 bolts. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.