0N0K0195 - 002

# FACTORY ORDER FORM HEADER

| CONTRACT DETAILS | |
|---|---|
| Project Name:<br>**Stanford CHW Capacity Improvements - Chi** | Customer Name:<br>**ACCO** |
| Executing Branch:<br>**N0K - Santa Rosa/ San Francisco, CA Common Branch** | Customer Base PO #:<br>**110798 and 446522 12/18/2020** |
| Job Location:<br>**506 OAK RD**<br>**STANFORD, CA 943054506 USA** | |

| ORDER DETAILS | |
|---|---|
| Contract-Order Number: **0N0K0195 - 002** | Description: **YK MaxE Chiller - CH-1016** |
| Order Placed Date: **06/30/2020** | Fabrication Status: **Released** |
| Revision Number: **007** | Revision Date: **08/30/2021** |
| Liquidated Damages: **No** | Liquidated Damages Comments: **null** |

**LINE DETAILS**

| Line # | Change Order # | PO # | Earliest Cust.Req. Ship Date | Requested Delivery Date | Description | Shipping Address | Ship Via | Freight |
|---|---|---|---|---|---|---|---|---|
| 01 | 001 | 110798<br>12/16/2020 | 09/24/2021 | | Base Unit/Access. - YKWEW5K7-DKHS (293) | David W<br>3300 Busch Road<br>PLEASANTON CA 94566 | Best Way | EXW - FOB Shipping Point |
| **ASAP: Y**<br>**SHIPPING INSTRUCTIONS:** Please coordinate arrival 48 hours in advance. Contact: David W (510 772 8010). Secondary: Blayne Davis (510 809 6725) | | | | | | | | |
| 02 | 000 | 110798 and 446522<br>12/18/2020 | 09/24/2021 | | Factory Test - (1195) | David W<br>3300 Busch Road<br>PLEASANTON CA 94566<br>David W<br>Blayne Davis | Best Way | EXW - FOB Shipping Point |
| **ASAP: Y**<br>**SHIPPING INSTRUCTIONS:** Please coordinate arrival 48 hours in advance. Contact: David W (510 772 8010). Secondary: Blayne Davis (510 809 6725). | | | | | | | | |
| 03 | 001 | 110798<br>12/16/2020 | 09/24/2021 | | Start up/PCAT - Santa Rosa/San Francisco, CA Common | David W<br>3300 Busch Road<br>PLEASANTON CA 94566<br>David W<br>Blayne Davis | Best Way | EXW - FOB Shipping Point |
| **ASAP: Y**<br>**SHIPPING INSTRUCTIONS:** Please coordinate arrival 48 hours in advance. Contact: David W (510 772 8010). Secondary: Blayne Davis (510 809 6725). | | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 04 | 004 | 110798 and<br>446522<br>12/18/2020 | 09/24/2021 | | Delayed Startup - 12 Months (8004) | David W<br>3300 Busch Road<br>PLEASANTON CA 94566 | Best Way | EXW - FOB Shipping Point |
| **ASAP: Y**<br>**SHIPPING INSTRUCTIONS:** Please coordinate arrival 48 hours in advance. Contact: David W (510 772 8010). Secondary: Blayne Davis (510 809 6725). | | | | | | | | |
| 05 | 000 | 110798 and<br>446522<br>12/18/2020 | 09/24/2021 | | Entire Unit Warranty - 66 Month Parts and Labor (8562) | David W<br>3300 Busch Road<br>PLEASANTON CA 94566<br>David W<br>Blayne Davis | Best Way | EXW - FOB Shipping Point |
| **ASAP: Y**<br>**SHIPPING INSTRUCTIONS:** Please coordinate arrival 48 hours in advance. Contact: David W (510 772 8010). Secondary: Blayne Davis (510 809 6725). | | | | | | | | |
| 06 | 000 | 110798 and<br>446522<br>12/18/2020 | 09/24/2021 | | Refrigerant Warranty - 66 Month (8582) | David W<br>3300 Busch Road<br>PLEASANTON CA 94566<br>David W<br>Blayne Davis | Best Way | EXW - FOB Shipping Point |
| **ASAP: Y**<br>**SHIPPING INSTRUCTIONS:** Please coordinate arrival 48 hours in advance. Contact: David W (510 772 8010). Secondary: Blayne Davis (510 809 6725). | | | | | | | | |
| 07 | 001 | 110798<br>12/16/2020 | 09/24/2021 | | Field Commissioning of Smart Chiller Equip Board - (7251) | David W<br>3300 Busch Road<br>PLEASANTON CA 94566<br>David W<br>Blayne Davis | Best Way | EXW - FOB Shipping Point |
| **ASAP: Y**<br>**SHIPPING INSTRUCTIONS:** Please coordinate arrival 48 hours in advance. Contact: David W (510 772 8010). Secondary: Blayne Davis (510 809 6725). | | | | | | | | |

**Project:**
**Unit Tag:**
**Engineer:**
**Customer:**

**Rating Program:** LTC v1_193.idd
**Software Version:** YW 20.02
**Date:** 06/24/20 13:04:01

## FACTORY TEST - FIELD REPORT

| Unit Specifications | | | | |
|---|---|---|---|---|
| **Model** | YKWEW5K7-DKH | | **Gear Code** | MU |
| **Rated Net Capacity (Tons)** | 3000 | | **Specified Net Capacity (Tons)** | 3000 |
| **NPLV.IP (kW/Ton.R)** | 0.4720 | | **Refrigerant Type/Charge (lb)** | R-134a/4592 |
| **Full Load (kW/Ton.R)** | 0.5521 | | **A-Weighted SPL (dBA)** | 85.5 |
| **Input Power (kW)** | 1656 | | **Max Motor Load (kW)** | 1748 |
| **Voltage / Hz (Input)** | 4160 / 60.0 | | **Oil Cooler** | Refrig clr |
| | | | **Condenser Gas Inlet Type** | Diffuser |
| **Job FLA (Amps)** | 259 | | **OptiSound Control** | Y |
| | | | **Isolation Valve** | Y |
| **LRA (Amps)** | 1772 | | **Variable Orifice** | VALVE:5 |
| **Min Circuit Ampacity** | 324 | | **Starter Type** | None |
| **Max Circuit Breaker Amps** | 500 | | **Starter Model** | N/A |
| **Heat Rejection Capacity (MBtu/h)** | 41.31 | | | |

| Factory Test: Design Conditions | | | |
|---|---|---|---|
| **Evap Fouling (hr-ft²-°F/Btu)** | 0.000100 | | |
| **Cond Fouling (hr-ft²-°F/Btu)** | 0.000250 | | |
| **Point Type** | **Design** | **Partload** | |
| **% Load (%)** | 100 | 100.00 | 50.00 |
| **Net Capacity (Tons)** | 3000 | 3000 | 1500 |
| **Evap Flow (gpm)** | 5100 | 5100 | 5100 |
| **Evap EFT (°F)** | 56.07 | 56.07 | 49.03 |
| **Evap LFT (°F)** | 42.00 | 42.00 | 42.00 |
| **Cond Flow (gpm)** | 6630 | 6630 | 6630 |
| **Cond EFT (°F)** | 80.00 | 80.00 | 65.00 |
| **Cond LFT (°F)** | 92.51 | 92.51 | 71.09 |
| **Input Power (kW)** | 1656 | 1656 | 678.5 |
| **Primary Job Input Current (Amps)** | 259 | 258 | 105 |
| **System Efficiency (kW/Ton.R)** | 0.5521 | 0.5521 | 0.4523 |

# ORDER SPECIAL QUOTE SUMMARY

| Unit Tag | Quantity | Capacity (TR) |
|---|---|---|
| CH-1016 | 1 | 3,000.0 |

| Unit PIN |
|---|
| YKWEW5K7-DKHSMUYXE5VVD3000552472CAARS1MLFXXW00XK1MLFXXW00XXXXXXAXXAUNXXXXXXSMXYXXXXXAXXJFXX22WXXFX1KXEXXSXXXXX |

| SQ Drawings | | | |
|---|---|---|---|
| Unit Drawing | None | Electrical Drawing | None |

| PIN Location(s) | SQ Number | SQ Weight (lbs) | Expiration Date | AE Approved |
|---|---|---|---|---|
| | SQ20-117921-001 | 0.0 | 10/15/2021 00:00:00 | Yes |
| | SQ20-117921-002 | 0.0 | 10/15/2021 00:00:00 | Yes |
| | SQ20-117921-003 | 0.0 | 10/15/2021 00:00:00 | Yes |
| | SQ20-117921-004 | 0.0 | 10/15/2021 00:00:00 | Yes |
| | SQ20-117921-005 | 0.0 | 10/15/2021 00:00:00 | Yes |
| | SQ20-117921-006 | 0.0 | 10/15/2021 00:00:00 | Yes |
| | SQ20-117921-008 | 0.0 | 10/15/2021 00:00:00 | Yes |
| | SQ20-117921-009 | 0.0 | 10/15/2021 00:00:00 | Yes |
| | SQ20-117921-012 | 0.0 | 10/15/2021 00:00:00 | Yes |
| | SQ20-117921-013 | 0.0 | 10/15/2021 00:00:00 | Yes |
| | SQ20-117921-014 | 0.0 | 10/15/2021 00:00:00 | Yes |
| | SQ20-117921-016 | 0.0 | 10/15/2021 00:00:00 | Yes |
| | SQ20-117921-017 | 0.0 | 10/15/2021 00:00:00 | Yes |
| | SQ20-117921-018 | 0.0 | 10/15/2021 00:00:00 | Yes |
| | SQ20-117921-019 | 0.0 | 10/15/2021 00:00:00 | Yes |

| PIN Location(s) | SQ Number | SQ Resolution | MLP/Unit |
|---|---|---|---|
| | SQ20-117921-001 | Price adder to standard motor pricing (___4160__ V - 3 phase - __60__ hz) found in YorkWorks. Pricing to provide: ___2250_____ HP ____4160____ V - 3 phase - __60__ hz ____WPI____ Enclosure D-flange List any other options specified – some examples are shown below: Motor Monitoring Board Anti-friction Bearings with grease lubrication 2nos Bearing RTD 6nos Winding RTD 115V Space Heater Service Factor – 1.04 Class F insulation 105C temp rise by resistance D-flange mounting Method of starting : VSD Insulated NDE Bearing Shaft grounding ring Oversized Box to Accommodate (3) 5kV 4/0 cables Manufactured per JCI's C-143 requirements Providing SKFCMSS2100 vibration sensors (accelerometers) for A/F ball bearings. Optional Adder (not included in the SQ price): Complete Engineering Test per Method F (performed in Round Rock, TX) : $63,675 MLP for non-witnessed testing per motor Noise Test, $0 for non-witnessed testing ($0 with a purchase of a Complete Test) Vibration Test, $0 for non-witnessed testing ($0 with a purchase of a Complete Test). Comments to Section 23 05 10.01 Motors >> 2.4C Motors will have a fabricated steel frame. Cast Iron is not available in this rating. >> 2.4 F4. Exception to oil lubrication. Motor will come with A/F ball bearings and grease lubrication on both ends. >> 2.4J4. Method B testing (dynamometer) is not available in Round Rock. A Complete Test per IEEE-112, Method F (Dual Frequency) Test will be performed instead. >> Bentley Nevada can't be offered with A/F ball bearings, standard acceloremeters are provided. Note: Chiller will not be UL listed. Motor Manufacturer: _____TECO_____ Motor Delivery: ___26___ weeks Pricing based on a quantity of ___3___ chillers. Notes : 1) Some special motors/features might require longer motor which may disallow Marine waterboxes on the motor-end and VSD may need to ship-loose due to covering the chain-lift point. Please check with us if you have Marine water box at motor end. 2) Cable entry to the motor terminal box shall be from bottom. Alaa Attia 289 6816562 | 153466.98 |

# ORDER SPECIAL QUOTE SUMMARY

| Unit Tag | Quantity | Capacity (TR) |
|---|---|---|
| CH-1016 | 1 | 3,000.0 |

| Unit PIN | | | |
|---|---|---|---|
| YKWEW5K7-DKHSMUYXE5VVD3000552472CAARS1MLFXXW00XK1MLFXXW00XXXXXXAXXAUNXXXXXXSMXYXXXXXAXXJFXX22WXXFX1KXEXXSXXXXX | | | |
| | SQ20-117921-002 | MLP price to provide prime coat + 2coats of finisjh paint on the chiller. Similar to SQ12-001777 in the previous order. Specs not reviewed, standard components certified by JCI quoted. Please note, all YK wiring harnes, insulation are Ddyin/primed in Caribbean blue - exact color match can not be guaranteed. Munsell code for the paint needs to be submitted subject to availability. Munsell code 41073-R1 as per the previous order. Alaa Attia 289 6816562 | 30686.39 |
| | SQ20-117921-003 | ***HINGES are now available in Yorkworks. It is cheaper to select HINGES in YW*** Pricing to provide DAVITS on Both ends of an evaporator water box and both ends of a condenser water box. * Davits will increase the width of the chiller from what is shown on the YorkWorks drawing. Pricing is based on a quantity of (4) chillers, order must include (4) chillers for the SQ price to be valid. Alaa Attia 289 6816562 | 96692.50 |
| | SQ20-117921-004 | MLP add to provide weld neck style flanges in lieu of the standard flanges for water box arrangement for W evaporator and W condenser. Price is based on Qty. (4) chillers. Alaa Attia 289 6816562 | 15483.42 |
| | SQ20-117921-005 | MLP add to provide a valved and capped test port upstream of all relief valves similar to SQ012-001777 in the previous order. Alaa Attia 289 6816562 | 43821.00 |
| | SQ20-117921-006 | ****Pricing based on a quantity of (4) chiller(s)**** ****Price is per unit**** Price adder to standard neoprene pad pricing found in YorkWorks Pricing includes: Seismic (non-standard) neoprene pads Seismic Certification of Compliance Center of gravity Seismic calculations Mounting brackets ****Pricing is based on the following assumptions:**** Required seismic code is OSHPD Site class is (X) (NOT GIVEN FROM FIELD SALES) Importance factor is (1.5) (NOT GIVEN FROM FIELD SALES) (8) pads per chiller The chillers are located on [grade/floor # (X) of (X)] For units mounted on grade, JCI recommends anchor bolts with neoprene pads All anchoring hardware design & installation shall be responsibility of installation contractor. OSP seismic certification is not available for units exceeds 110,000 lbs of operating weight. Final unit weight can not be confirmed till the unit design/engineering is completed. This price is based on standard OSP certification, no site specific certification is provided. Quoted MLP includes seismic modifications on chiller only and does not include any remote mounted items like starters, drives etc. Please submit separate SQ request for any remote items. This SQ will extend the standard lead time on the unit. Please contact customer service for revised lead times. Field must submit "Seismic Request Form" along with the order. Alaa Attia 289 6816562 Anchor bolts must be FIELD SUPPLIED | 40974.80 |
| | SQ20-117921-008 | ***$1,000.00 MLP PER UNIT - PER MILESTONE REQUEST - PER CHILLER*** Pricing to provide ONE INITIAL Milestone report upon receipt of clean released for manufacturing order. Pricing to provide ONE INITIAL Milestone report per chiller. Additional milestone reports may be handled with a sales order revision to reflect additional charges of $1,000.00 MLP per report. Milestone Content Example: 1. ENGINEERING COMPLETED - 10/1 2. DRAFTING COMPLETED - 10/1 3. SHELLS DUE - 11/21 4. TUBE SHEETS DUE - 11/21 5. BOMS/ROUTERS/DRAWING RELEASED TO THE SHOP - 11/17 6. ASSEMBLY STARTED - 11/24 7. SHELL FITUP - 12/1 8. SHELLS WELD OUT DUE COMPLETION - 12/4 9. REFRIGERANT TEST SHELL AND TUBES - 12/11 10. WATER BOXES WELD OUT DUE COMPLETION - 12/18 11. COMPRESSOR DUE - 12/20 12. OPTIVIEW CONTROL PANEL DUE - 12/25 13. FINAL ASSEMBLY TO START - 12/26 14. PIPING SYSTEM TO START - 12/27 15. WIRING TO START - 12/30 16. QUALITY CONTROL TESTS - 1/1 17. FINAL ASSEMBLY | 1000.00 |

# ORDER SPECIAL QUOTE SUMMARY

| Unit Tag | Quantity | Capacity (TR) |
|---|---|---|
| CH-1016 | 1 | 3,000.0 |

| Unit PIN | | | |
|---|---|---|---|
| YKWEW5K7-DKHSMUYXE5VVD3000552472CAARS1MLFXXW00XK1MLFXXW00XXXXXXAXXAUNXXXXXXSMXYXXXXXAXXJFXX22WXXFX1KXEXXSXXXXX | | | |
| | | COMPLETE - 1/5 18. CUSTOMER WITNESS TESTS - 1/6 19. FINAL PAINT - 1/6 20. FINAL INSPECTION - 1/7 21. SHIP PREPARATION - 1/8 22. SHIP CHILLERS - 1/9 Alaa Attia 289 6816562 | |
| | SQ20-117921-009 | Zero cost to provide a review copy of factory test forms 2 days prior to factory test. This is for engineer and owner review and confirmation of test points prior to arriving for the test. Alaa Attia 289 6816562 | 0 |
| | SQ20-117921-012 | MLP add to provide 18" condenser nozzles in lieu of the standard 20" diameter connection. The nozzles need to be 150 lb raised face flanges to match the existing stanford chillers. Price is based on Qty. (4) chillers. Alaa Attia 289 6816562 | 6308.60 |
| | SQ20-117921-013 | MLP deduct representing 10% discount on the chiller only as approved by Nick Staub. Alaa Attia 289 6816562 | -206036.00 |
| | SQ20-117921-014 | Zero cost MLP to perform a zero tolerance performance test in the facttory as per the attached ZT rating report. Alaa Attia 289 6816562 | 0 |
| | SQ20-117921-016 | Zero cost SQ to update update the seismic calculations/certificate of SQ20-117921-006 to reflect Sds = 1.33 instead of 1.25. Note: The revised documentations had been already provided and no action is required, this SQ is to track the changes. Alaa Attia 289 6816562 | 0 |
| | SQ20-117921-017 | MLP add to revise the seismic plate size and quantity to match the original chillers order and as per the attached drawings. Alaa Attia 289 6816562 | 8285.09 |
| | SQ20-117921-018 | | 0 |
| | SQ20-117921-019 | MLP for GPS tracker. MLP is per chiller. Kal Tuwati (717-676-5807) | 500.00 |

# FOF Revision

| Project Name | MLP Effective Date | Contract - Order No. | Order Rev. No. |
|---|---|---|---|
| **KL20019 - Stanford CUP** | **Dec. 15, 2020** | **0N0K0195-002** | **07** |

| Unit Tag | Model No. | Gear Code | Stock Unit | Capacity (tons) | Refrigerant | NPLV | ASHRAE |
|---|---|---|---|---|---|---|---|
| **CH-1016** | **YKWEW5K7-DKHS** | **MU** | **N** | **3000** | **R-134a(4592lb)** | **0.4720** | **2004, 2007, 2010, 2013, 2015, 2016** |

PIN

YKWEW5K7-DKHSMUYXE5VVD3000552472CAARS1MLFXXW00XK1MLFXXW00XXXXXXAXXAUNXXXXXXSMXYXXXXXAXXJFXX22WXXFX1KXEXXSXXXXX

| Basic Model | Extended Model | Evaporator Heat Exchanger | Condenser Heat Exchanger |
|---|---|---|---|

YKWEW5K7-DKHSMUYXE5VVD3000552472CAARS1MLFXXW00XK1MLFXXW

5 10 15 20 25 30 35 40 45 50 55

| Condenser Heat Exchanger (Cont) | Unit Options | Motor Options | Power Options | Doc & Testing Options | Ship Options | Warranty Options | Misc Options |
|---|---|---|---|---|---|---|---|

00XXXXXXAXXAUNXXXXXXSMXYXXXXXAXXJFXX22WXXFX1KXEXXSXXXXX

60 65 70 75 80 85 90 95 100 105 110

| | EFT (°F) | LFT (°F) | Flow (gpm) | PD (ft H2O) | Fluid Type | Pass | FF | DWP (psig) | Nozzle | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | In | Out |
| Evap. | **56.07** | **42.00** | **5100** | **35.9** | **WATER** | **2** | **0.000100** | **150** | **L** | **L** |
| Cond. | **80.00** | **92.51** | **6630** | **23.0** | **WATER** | **2** | **0.000250** | **150** | **L** | **L** |

- Power: **4160/3/60.0**
- Motor kW: **1656**
- Motor HP: **2136**
- Motor FLA/LRA: **259/1772**
- Motor Voltage: **4160/3/60.0**
- Oil Pump Volts: **460V**
- Oil Pump FLA: **3.60**

- Oper.Wt. (lb): **99896**
- Min Circ. Ampacity (amps): **324**
- Job KW:
- Job FLA:
- Max Fuse/Breaker: **500**
- OptiSound Cntrl: **YES**
- Orifice Size: **V5**

| | | |
|---|---|---|
| Ship Wt (lb): **80257** | | |
| FLA Coeff A: **2.9279** | FLA Coeff B: **0.5321** | FLA Coeff C: **0.6059** |
| Refrigerant (R-134a) Wt. (lb): **4592** | | |
| Evap Saturation(°F): **41.37** | Cond Saturation(°F): **95.81** | Comp Discharge(°F): **108.73** |

| Last Retrieved (mm/dd/yyyy) | Lead Time (weeks) | Lead Time Valid (mm/dd/yyyy) | Lead Time Version |
|---|---|---|---|
| | **Please contact Customer Service to get Lead Time data.** | | |

**Changes:** YorkWorksVersion

**Additional Notes:** Suborder Revised - Base Unit/Access. - YKWEW5K7-DKHS (293)

| Line # | Equipment Description | Qty. | MLP |
|---|---|---|---|
| **01** | **Base Unit/Access. - YKWEW5K7-DKHS (293)** | | |
| | Base Chiller Model No.: YKWEW5K7-DKHS (293) | | |
| | Shell/Compressor Package: WEW5 Shells w/ K7 Compressor | 1 | 1247388 |
| | OptiSound Control | 1 | N/C |
| **CHG** | **MLP Subtotal** | | **1892094.00** |

Currency: United States Dollars

| Line # | Equipment Description | | Qty. | MLP |
|---|---|---|---|---|
| 01 | **Base Unit/Access. - YKWEW5K7-DKHS (293)** | | | |
| | Motor Package & Options | | | |
| | Medium Voltage Motor Package (60 Hz): DK | | 1 | 292194 |
| | Motor Special Quote # SQ20-117921-001: | | | |
| | Price adder to standard motor pricing (__4160__ V - 3 phase - __60__ hz) found in YorkWorks. Pricing to provide: __2250____ HP ___4160___ V - 3 phase - __60__ hz ___WPI___ Enclosure D-flange List any other options specified – some examples are shown below: Motor Monitoring Board Anti-friction Bearings with grease lubrication 2nos Bearing RTD 6nos Winding RTD 115V Space Heater | Service Factor – 1.04 Class F insulation | 1 | 153467 |
| | 105C temp rise by resistance D-flange mounting Method of starting : VSD Insulated NDE Bearing Shaft grounding ring Oversized Box to Accommodate (3) 5kV 4/0 cables Manufactured per JCI' s C-143 requirements Providing SKFCMSS2100 vibration sensors (accelerometers) for A/F ball bearings. | Optional Adder (not included in the SQ | | |
| | price): Complete Engineering Test per Method F (performed in Round Rock, TX) : $63,675 MLP for non-witnessed testing per motor Noise Test, $0 for non-witnessed testing ($0 with a purchase of a Complete Test) Vibration Test, $0 for non-witnessed testing ($0 with a purchase of a Complete Test). | Comments to Section 23 05 10.01 Motors >> 2.4C | | |
| | Motors will have a fabricated steel frame. Cast Iron is not available in this rating. >> 2.4 F4. Exception to oil lubrication. Motor will come with A/F ball bearings and grease lubrication on both ends. >> 2.4J4. Method B testing (dynamometer) is not available in Round Rock. A Complete Test per IEEE-112, Method F (Dual Frequency) Test will be performed instead. >> Bentley Nevada can't be offered with A/F ball bearings, standard acceloremeters are provided. | Note: Chiller will not be UL listed. | | |
| | Motor Manufacturer: _____TECO_____ Motor Delivery: ___26___ weeks Pricing based on a quantity of ___3___ chillers. Notes : 1) Some special motors/features might require longer motor which may disallow Marine waterboxes on the motor-end and VSD may need to ship-loose due to covering the chain-lift point. Please check with us | | | |
| CHG | | **MLP Subtotal** | | **1892094.00** |

Currency: United States Dollars

| Line # | Equipment Description | Qty. | MLP |
|---|---|---|---|
| 01 | **Base Unit/Access. - YKWEW5K7-DKHS (293)** | | |
| | if you have Marine water box at motor end. 2) Cable entry | | |
| | to the motor terminal box shall be from bottom. Alaa | | |
| | Attia 289 6816562 | | |
| | Evaporator Design & Options | | |
| | Evaporator Marine Water Box (2 Pass, 150 PSIG DWP) | 1 | 30731 |
| | Evaporator Tube No.: 372 (0.028" Enhanced Copper) | 1 | 15630 |
| | Evaporator Water Connection Flange (18") | 1 | 5023 |
| | 150# class RF (raised-face) ANSI B16.5 | | |
| | Condenser Design & Options | | |
| | Condenser Marine Water Box (2 Pass, 150 PSIG DWP) | 1 | 17300 |
| | Condenser Gas Inlet Diffuser | 1 | 8192 |
| | Condenser Tube No.: 268 (CSL 0.035" Enhanced Copper) | 1 | 45568 |
| | Condenser Water Connection Flange (20") | 1 | 4585 |
| | 150# class RF (raised-face) ANSI B16.5 | | |
| | Other Options | | |
| | NEMA 1 Control Panel and Wiring, 40-110 Ambient | 1 | N/C |
| | Neoprene Isolation Pad | 1 | N/C |
| | ASHRAE Standard 90.1 Compliance Label | | |
| | Isolation Valves | 1 | 3921 |
| | General Arrangement Drawing | 1 | 8067 |
| | QC Documents | 1 | 1837 |
| | Form 2 Shipment (Refrigerant shipped separately) | 1 | 1616 |
| | Long Term Storage Preparation | 1 | 15192 |
| | Complete Chiller Wrapping | 1 | 1520 |
| | Factory Mounted Smart Chiller Equip Board Only | 1 | 2147 |
| | The Factory Mounted and Field Commissioned Smart Equipment ONLY option: | | |
| | INCLUDES COSTS FOR: | | |
| | - BACnet/ModBus/N2 Gateway for Connection to Customer's BAS | | |
| | DOES NOT INCLUDE: | | |
| | - Wiring for Connection to Customer's BAS | | |
| | - Internet Cloud Connected Access Point | | |
| | - 24/7 ROC Alarm/Alert Monitoring | | |
| | - Remote Scheduled Service Visits (SSVs) | | |
| | - Hosting and Cellular Modem Wireless Charges | | |
| | Unit Special Quote # SQ20-117921-002: | | |
| | MLP price to provide prime coat + 2coats of finisjh paint on | 1 | 30686 |
| | the chiller. Similar to SQ12-001777 in the previous order. | | |
| **CHG** | **MLP Subtotal** | | **1892094.00** |

Currency: United States Dollars

| Line # | Equipment Description | Qty. | MLP |
|---|---|---|---|
| 01 | **Base Unit/Access. - YKWEW5K7-DKHS (293)**<br>Specs not reviewed, standard components certified by JCI quoted. Please note, all YK wiring harnes, insulation are Ddyin/primed in Caribbean blue - exact color match can not be guaranteed. Munsell code for the paint needs to be submitted subject to availability. Munsell code 41073-R1 as per the previous order. Alaa Attia 289 6816562 | | |
| | Unit Special Quote # SQ20-117921-003:<br>***HINGES are now available in Yorkworks. It is cheaper to select HINGES in YW*** Pricing to provide DAVITS on Both ends of an evaporator water box and both ends of a condenser water box. * Davits will increase the width of the chiller from what is shown on the YorkWorks drawing. Pricing is based on a quantity of (4) chillers, order must include (4) chillers for the SQ price to be valid. Alaa Attia 289 6816562 | 1 | 96693 |
| | Unit Special Quote # SQ20-117921-004:<br>MLP add to provide weld neck style flanges in lieu of the standard flanges for water box arrangement for W evaporator and W condenser. Price is based on Qty. (4) chillers. Alaa Attia 289 6816562 | 1 | 15483 |
| | Unit Special Quote # SQ20-117921-005:<br>MLP add to provide a valved and capped test port upstream of all relief valves similar to SQ012-001777 in the previous order. Alaa Attia 289 6816562 | 1 | 43821 |
| | Unit Special Quote # SQ20-117921-006:<br>****Pricing based on a quantity of (4) chiller(s)**** ****Price is per unit**** Price adder to standard neoprene pad pricing found in YorkWorks Pricing includes: Seismic (non-standard) neoprene pads Seismic Certification of Compliance Center of gravity Seismic calculations Mounting brackets ****Pricing is based on the following assumptions:**** Required seismic code is OSHPD Site class is (X) (NOT GIVEN FROM FIELD SALES) Importance factor is (1.5) (NOT GIVEN FROM FIELD SALES) (8) pads per chiller The chillers are located on [grade/floor # (X) of (X)] For units mounted on grade, JCI recommends anchor bolts with neoprene pads All anchoring hardware design & installation shall be responsibility of installation contractor. OSP seismic certification is not available for units exceeds 110,000 lbs | 1 | 40975 |
| CHG | | **MLP Subtotal** | **1892094.00** |

Currency: United States Dollars

| Line # | Equipment Description | Qty. | MLP |
|---|---|---|---|
| 01 | **Base Unit/Access. - YKWEW5K7-DKHS (293)** | | |
| | of operating weight. Final unit weight can not be confirmed till the unit design/engineering is completed. This price is based on standard OSP certification, no site specific certification is provided. Quoted MLP includes seismic modifications on chiller only and does not include any remote mounted items like starters, drives etc. Please submit separate SQ request for any remote items. This SQ will extend the standard lead time on the unit. Please contact customer service for revised lead times. Field must submit "Seismic Request Form" along with the order. Alaa Attia 289 6816562 Anchor bolts must be FIELD SUPPLIED | | |
| | Unit Special Quote # SQ20-117921-008: | | |
| | ***$1,000.00 MLP PER UNIT - PER MILESTONE REQUEST - PER CHILLER*** Pricing to provide ONE INITIAL Milestone report upon receipt of clean released for manufacturing order. Pricing to provide ONE INITIAL Milestone report per chiller. Additional milestone reports may be handled with a sales order revision to reflect additional charges of $1,000.00 MLP per report. Milestone Content Example: 1. ENGINEERING COMPLETED - 10/1 2. DRAFTING COMPLETED - 10/1 3. SHELLS DUE - 11/21 4. TUBE SHEETS DUE - 11/21 5. BOMS/ROUTERS/DRAWING RELEASED TO THE SHOP - 11/17 6. ASSEMBLY STARTED - 11/24 7. SHELL FITUP - 12/1 8. SHELLS WELD OUT DUE COMPLETION - 12/4 9. REFRIGERANT TEST SHELL AND TUBES - 12/11 10. WATER BOXES WELD OUT DUE COMPLETION - 12/18 11. COMPRESSOR DUE - 12/20 12. OPTIVIEW CONTROL PANEL DUE - 12/25 13. FINAL ASSEMBLY TO START - 12/26 14. PIPING SYSTEM TO START - 12/27 15. WIRING TO START - 12/30 16. QUALITY CONTROL TESTS - 1/1 17. FINAL ASSEMBLY COMPLETE - 1/5 18. CUSTOMER WITNESS TESTS - 1/6 19. FINAL PAINT - 1/6 20. FINAL INSPECTION - 1/7 21. SHIP PREPARATION - 1/8 22. SHIP CHILLERS - 1/9 Alaa Attia 289 6816562 | 1 | 1000 |
| | Unit Special Quote # SQ20-117921-009: | | |
| | Zero cost to provide a review copy of factory test forms 2 days prior to factory test. This is for engineer and owner review and confirmation of test points prior to arriving for the test. Alaa Attia 289 6816562 | 1 | N/C |
| | Unit Special Quote # SQ20-117921-012: | | |
| | MLP add to provide 18" condenser nozzles in lieu of the | 1 | 6309 |
| **CHG** | | **MLP Subtotal** | **1892094.00** |

Currency: United States Dollars

| Line # | Equipment Description | | Qty. | MLP |
|---|---|---|---|---|
| 01 | **Base Unit/Access. - YKWEW5K7-DKHS (293)** | | | |
| | standard 20" diameter connection. The nozzles need to be | | | |
| | 150 lb raised face flanges to match the existing stanford | | | |
| | chillers. | Price is based on Qty. (4) chillers. Alaa | | |
| | Attia 289 6816562 | | | |
| | Unit Special Quote # SQ20-117921-013: | | | |
| | MLP deduct representing 10% discount on the chiller only as | | 1 | (206036) |
| | approved by Nick Staub. Alaa Attia 289 6816562 | | | |
| | Unit Special Quote # SQ20-117921-014: | | | |
| | Zero cost MLP to perform a zero tolerance performance test | | 1 | N/C |
| | in the facttory as per the attached ZT rating report. | | | |
| | Alaa Attia 289 6816562 | | | |
| | Unit Special Quote # SQ20-117921-016: | | | |
| | Zero cost SQ to update update the seismic | | 1 | N/C |
| | calculations/certificate of SQ20-117921-006 to reflect Sds = | | | |
| | 1.33 instead of 1.25. Note: The revised | | | |
| | documentations had been already provided and no action is | | | |
| | required, this SQ is to track the changes. Alaa Attia 289 | | | |
| | 6816562 | | | |
| | Unit Special Quote # SQ20-117921-017: | | | |
| | MLP add to revise the seismic plate size and quantity to | | 1 | 8285 |
| | match the original chillers order and as per the attached | | | |
| | drawings. Alaa Attia 289 6816562 | | | |
| | Unit Special Quote # SQ20-117921-018: | | | |
| | Request: Please update expiration dates of all SQs. | | 1 | N/C |
| ADD | Unit Special Quote # SQ20-117921-019: | | | |
| ADD | MLP for GPS tracker. MLP is per chiller. Kal Tuwati | | 1 | 500 |
| ADD | (717-676-5807) | | | |
| CHG | | **MLP Subtotal** | | **1892094.00** |
| 02 | **Factory Test - (1195)** | | | |
| | Factory Test - Full Load with 1 Part Load test point(s) | | 1 | 13875 |
| | Including 2 Sound Tests | | | |
| | Note: Factory Test will be customer witnessed. | | | |
| | Note: Performance test reports were requested in English units of measure. | | | |
| | | **MLP Subtotal** | | **13875.00** |
| 03 | **Start up/PCAT - Santa Rosa/San Francisco, CA Common Branch - N0K in 2020 (7253)** | | | |
| | Startup [3 day(s)] to occur during 2020 in Santa Rosa/San Francisco, CA Common Branch - N0K, Tier 13 | | 1 | 6588 |
| | | **MLP Subtotal** | | **6588.00** |
| 04 | **Delayed Startup - 12 Months (8004)** | | | |
| | Note: Inspect unit on a monthly basis. Customer is | | | |
| | responsible for interim monthly inspections. Customer to | | | |
| | | **MLP Subtotal** | | **6506.00** |

Currency: United States Dollars

| | | | |
|---|---|---|---|
| 04 | **Delayed Startup - 12 Months (8004)**<br>notify York if "out of bounds". Monthly Inspection<br>Sheet - Customer submission of log sheet. | | |
| | | **MLP Subtotal** | **6506.00** |
| 05 | **Entire Unit Warranty - 66 Month Parts and Labor (8562)**<br>66 Month (2-5 Year) Parts and Labor<br>Extended Warranty Does Not Include Starter | 1 | 23940 |
| | | **MLP Subtotal** | **23940.00** |
| 06 | **Refrigerant Warranty - 66 Month (8582)**<br>66 Month (5 Year) | 1 | 1500 |
| | | **MLP Subtotal** | **1500.00** |
| 07 | **Field Commissioning of Smart Chiller Equip Board - (7251)**<br>Service Labor | 1 | 878 |
| | | **MLP Subtotal** | **878.00** |

Currency: United States Dollars

| PIN | | | |
|---|---|---|---|
| YKWEW5K7-DKHSMUYXE5VVD3000552472CAARS1MLFXXW00XK1MLFXXW00XXXXXXAXXAUNXXXXXXSMXYXXXXXAXXJFXX22WXXFX1KXEXXSXXXXX | | | |
| Basic Model | Extended Model | Evaporator Heat Exchanger | Condenser Heat Exchanger |
| YKWEW5K7-DKHSMUYXE5VVD3000552472CAARS1MLFXXW00XK1MLFXXW | | | |
| 5 10 15 20 25 30 35 40 45 50 55 | | | |
| Condenser Heat Exchanger (Cont) | Unit Options | Motor Options | Power Options | Doc & Testing Options | Ship Options | Warranty Options | Misc Options |
| 00XXXXXXAXXAUNXXXXXXSMXYXXXXXAXXJFXX22WXXFX1KXEXXSXXXXX | | | | | | | |
| 60 65 70 75 80 85 90 95 100 105 110 | | | | | | | |

Currency: United States Dollars

# YK CHILLER Factory Order Form

| Project Name | MLP Effective Date | Contract - Order No. | Order Rev. No. |
|---|---|---|---|
| **KL20019 - Stanford CUP** | **Dec. 15, 2020** | **0N0K0195-002** | **07** |

| Unit Tag | Model No. | Gear Code | Stock Unit | Capacity (tons) | Refrigerant | NPLV | ASHRAE |
|---|---|---|---|---|---|---|---|
| **CH-1016** | **YKWEW5K7-DKHS** | **MU** | **N** | **3000** | **R-134a(4592lb)** | **0.4720** | **2004, 2007, 2010, 2013, 2015, 2016** |

PIN

YKWEW5K7-DKHSMUYXE5VVD3000552472CAARS1MLFXXW00XK1MLFXXW00XXXXXXAXXAUNXXXXXXSMXYXXXXXAXXJFXX22WXXFX1KXEXXSXXXXX

| Basic Model | Extended Model | Evaporator Heat Exchanger | Condenser Heat Exchanger |
|---|---|---|---|

YKWEW5K7-DKHSMUYXE5VVD3000552472CAARS1MLFXXW00XK1MLFXXW

5 10 15 20 25 30 35 40 45 50 55

| Condenser Heat Exchanger (Cont) | Unit Options | Motor Options | Power Options | Doc & Testing Options | Ship Options | Warranty Options | Misc Options |
|---|---|---|---|---|---|---|---|

00XXXXXXAXXAUNXXXXXXSMXYXXXXXAXXJFXX22WXXFX1KXEXXSXXXXX

60 65 70 75 80 85 90 95 100 105 110

| | EFT (°F) | LFT (°F) | Flow (gpm) | PD (ft H2O) | Fluid Type | Pass | FF | DWP (psig) | Nozzle | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | In | Out |
| Evap. | **56.07** | **42.00** | **5100** | **35.9** | **WATER** | **2** | **0.000100** | **150** | **L** | **L** |
| Cond. | **80.00** | **92.51** | **6630** | **23.0** | **WATER** | **2** | **0.000250** | **150** | **L** | **L** |

- Power: **4160/3/60.0**
- Motor kW: **1656**
- Motor HP: **2136**
- Motor FLA/LRA: **259/1772**
- Motor Voltage: **4160/3/60.0**
- Oil Pump Volts: **460V**
- Oil Pump FLA: **3.60**

- Oper.Wt. (lb): **99896**
- Min Circ. Ampacity (amps): **324**
- Job KW:
- Job FLA:
- Max Fuse/Breaker: **500**
- OptiSound Cntrl: **YES**
- Orifice Size: **V5**

| | | |
|---|---|---|
| Ship Wt (lb): **80257** | | |
| FLA Coeff A: **2.9279** | FLA Coeff B: **0.5321** | FLA Coeff C: **0.6059** |
| Refrigerant (R-134a) Wt. (lb): **4592** | | |
| Evap Saturation(°F): **41.37** | Cond Saturation(°F): **95.81** | Comp Discharge(°F): **108.73** |

| Last Retrieved (mm/dd/yyyy) | Lead Time (weeks) | Lead Time Valid (mm/dd/yyyy) | Lead Time Version |
|---|---|---|---|
| | **Please contact Customer Service to get Lead Time data.** | | |

| Line # | Equipment Description | Qty. | MLP |
|---|---|---|---|
| **01** | **Base Unit/Access. - YKWEW5K7-DKHS (293)** | | |
| | Base Chiller Model No.: YKWEW5K7-DKHS (293) | | |
| | Shell/Compressor Package: WEW5 Shells w/ K7 Compressor | 1 | 1247388 |
| | OptiSound Control | 1 | N/C |
| | Motor Package & Options | | |
| | Medium Voltage Motor Package (60 Hz): DK | 1 | 292194 |
| | Motor Special Quote # SQ20-117921-001: | | |
| | **MLP Subtotal** | | **1892094.00** |

Currency: United States Dollars

| Line # | Equipment Description | Qty. | MLP |
|---|---|---|---|
| 01 | **Base Unit/Access. - YKWEW5K7-DKHS (293)** | | |
| | Price adder to standard motor pricing (__4160__ V - 3 phase - __60__ hz) found in YorkWorks. Pricing to provide: __2250____ HP ___4160___ V - 3 phase - __60__ hz ___WPI___ Enclosure D-flange List any other options specified – some examples are shown below: Motor Monitoring Board Anti-friction Bearings with grease lubrication 2nos Bearing RTD 6nos Winding RTD 115V Space Heater 105C temp rise by resistance D-flange mounting Method of starting : VSD Insulated NDE Bearing Shaft grounding ring Oversized Box to Accommodate (3) 5kV 4/0 cables Manufactured per JCI' s C-143 requirements Providing SKFCMSS2100 vibration sensors (accelerometers) for A/F ball bearings. price): Complete Engineering Test per Method F (performed in Round Rock, TX) : $63,675 MLP for non-witnessed testing per motor Noise Test, $0 for non-witnessed testing ($0 with a purchase of a Complete Test) Vibration Test, $0 for non-witnessed testing ($0 with a purchase of a Complete Test). Motors will have a fabricated steel frame. Cast Iron is not available in this rating. >> 2.4 F4. Exception to oil lubrication. Motor will come with A/F ball bearings and grease lubrication on both ends. >> 2.4J4. Method B testing (dynamometer) is not available in Round Rock. A Complete Test per IEEE-112, Method F (Dual Frequency) Test will be performed instead. >> Bentley Nevada can't be offered with A/F ball bearings, standard acceloremeters are provided. Motor Manufacturer: _____TECO_____ Motor Delivery: __26__ weeks Pricing based on a quantity of __3__ chillers. Notes : 1) Some special motors/features might require longer motor which may disallow Marine waterboxes on the motor-end and VSD may need to ship-loose due to covering the chain-lift point. Please check with us if you have Marine water box at motor end. 2) Cable entry to the motor terminal box shall be from bottom. Alaa Attia 289 6816562<br>Service Factor – 1.04 Class F insulation<br>Optional Adder (not included in the SQ<br>Comments to Section 23 05 10.01 Motors >> 2.4C<br>Note: Chiller will not be UL listed. | 1 | 153467 |
| | | **MLP Subtotal** | **1892094.00** |

Currency: United States Dollars

| Line # | Equipment Description | Qty. | MLP |
|---|---|---|---|
| 01 | **Base Unit/Access. - YKWEW5K7-DKHS (293)** | | |
| | Evaporator Design & Options | | |
| | Evaporator Marine Water Box (2 Pass, 150 PSIG DWP) | 1 | 30731 |
| | Evaporator Tube No.: 372 (0.028" Enhanced Copper) | 1 | 15630 |
| | Evaporator Water Connection Flange (18") | 1 | 5023 |
| | 150# class RF (raised-face) ANSI B16.5 | | |
| | Condenser Design & Options | | |
| | Condenser Marine Water Box (2 Pass, 150 PSIG DWP) | 1 | 17300 |
| | Condenser Gas Inlet Diffuser | 1 | 8192 |
| | Condenser Tube No.: 268 (CSL 0.035" Enhanced Copper) | 1 | 45568 |
| | Condenser Water Connection Flange (20") | 1 | 4585 |
| | 150# class RF (raised-face) ANSI B16.5 | | |
| | Other Options | | |
| | NEMA 1 Control Panel and Wiring, 40-110 Ambient | 1 | N/C |
| | Neoprene Isolation Pad | 1 | N/C |
| | ASHRAE Standard 90.1 Compliance Label | | |
| | Isolation Valves | 1 | 3921 |
| | General Arrangement Drawing | 1 | 8067 |
| | QC Documents | 1 | 1837 |
| | Form 2 Shipment (Refrigerant shipped separately) | 1 | 1616 |
| | Long Term Storage Preparation | 1 | 15192 |
| | Complete Chiller Wrapping | 1 | 1520 |
| | Factory Mounted Smart Chiller Equip Board Only | 1 | 2147 |
| | The Factory Mounted and Field Commissioned Smart Equipment ONLY option: | | |
| | INCLUDES COSTS FOR: | | |
| | - BACnet/ModBus/N2 Gateway for Connection to Customer's BAS | | |
| | DOES NOT INCLUDE: | | |
| | - Wiring for Connection to Customer's BAS | | |
| | - Internet Cloud Connected Access Point | | |
| | - 24/7 ROC Alarm/Alert Monitoring | | |
| | - Remote Scheduled Service Visits (SSVs) | | |
| | - Hosting and Cellular Modem Wireless Charges | | |
| | Unit Special Quote # SQ20-117921-002: | | |
| | MLP price to provide prime coat + 2coats of finisjh paint on | 1 | 30686 |
| | the chiller. Similar to SQ12-001777 in the previous order. | | |
| | Specs not reviewed, standard components certified by JCI | | |
| | quoted. Please note, all YK wiring harnes, insulation are | | |
| | Ddyin/primed in Caribbean blue - exact color match can not | | |
| | **MLP Subtotal** | | **1892094.00** |

Currency: United States Dollars

| Line # | Equipment Description | Qty. | MLP |
|---|---|---|---|
| 01 | **Base Unit/Access. - YKWEW5K7-DKHS (293)** | | |
| | be guaranteed. Munsell code for the paint needs to be submitted subject to availability. Munsell code 41073-R1 as per the previous order. Alaa Attia 289 6816562 | | |
| | Unit Special Quote # SQ20-117921-003: | | |
| | ***HINGES are now available in Yorkworks. It is cheaper to select HINGES in YW*** Pricing to provide DAVITS on Both ends of an evaporator water box and both ends of a condenser water box. * Davits will increase the width of the chiller from what is shown on the YorkWorks drawing. Pricing is based on a quantity of (4) chillers, order must include (4) chillers for the SQ price to be valid. Alaa Attia 289 6816562 | 1 | 96693 |
| | Unit Special Quote # SQ20-117921-004: | | |
| | MLP add to provide weld neck style flanges in lieu of the standard flanges for water box arrangement for W evaporator and W condenser. Price is based on Qty. (4) chillers. Alaa Attia 289 6816562 | 1 | 15483 |
| | Unit Special Quote # SQ20-117921-005: | | |
| | MLP add to provide a valved and capped test port upstream of all relief valves similar to SQ012-001777 in the previous order. Alaa Attia 289 6816562 | 1 | 43821 |
| | Unit Special Quote # SQ20-117921-006: | | |
| | ****Pricing based on a quantity of (4) chiller(s)**** ****Price is per unit**** Price adder to standard neoprene pad pricing found in YorkWorks Pricing includes: Seismic (non-standard) neoprene pads Seismic Certification of Compliance Center of gravity Seismic calculations Mounting brackets ****Pricing is based on the following assumptions:**** Required seismic code is OSHPD Site class is (X) (NOT GIVEN FROM FIELD SALES) Importance factor is (1.5) (NOT GIVEN FROM FIELD SALES) (8) pads per chiller The chillers are located on [grade/floor # (X) of (X)] For units mounted on grade, JCI recommends anchor bolts with neoprene pads All anchoring hardware design & installation shall be responsibility of installation contractor. OSP seismic certification is not available for units exceeds 110,000 lbs of operating weight. Final unit weight can not be confirmed till the unit design/engineering is completed. This price is based on standard OSP certification, no site | 1 | 40975 |
| | | **MLP Subtotal** | **1892094.00** |

Currency: United States Dollars

| Line # | Equipment Description | Qty. | MLP |
|---|---|---|---|
| 01 | **Base Unit/Access. - YKWEW5K7-DKHS (293)** | | |
| | specific certification is provided. Quoted MLP includes seismic modifications on chiller only and does not include any remote mounted items like starters, drives etc. Please submit separate SQ request for any remote items. This SQ will extend the standard lead time on the unit. Please contact customer service for revised lead times. Field must submit "Seismic Request Form" along with the order. Alaa Attia 289 6816562 Anchor bolts must be FIELD SUPPLIED | | |
| | Unit Special Quote # SQ20-117921-008: | | |
| | ***$1,000.00 MLP PER UNIT - PER MILESTONE REQUEST - PER CHILLER*** Pricing to provide ONE INITIAL Milestone report upon receipt of clean released for manufacturing order. Pricing to provide ONE INITIAL Milestone report per chiller. Additional milestone reports may be handled with a sales order revision to reflect additional charges of $1,000.00 MLP per report. Milestone Content Example: 1. ENGINEERING COMPLETED - 10/1 2. DRAFTING COMPLETED - 10/1 3. SHELLS DUE - 11/21 4. TUBE SHEETS DUE - 11/21 5. BOMS/ROUTERS/DRAWING RELEASED TO THE SHOP - 11/17 6. ASSEMBLY STARTED - 11/24 7. SHELL FITUP - 12/1 8. SHELLS WELD OUT DUE COMPLETION - 12/4 9. REFRIGERANT TEST SHELL AND TUBES - 12/11 10. WATER BOXES WELD OUT DUE COMPLETION - 12/18 11. COMPRESSOR DUE - 12/20 12. OPTIVIEW CONTROL PANEL DUE - 12/25 13. FINAL ASSEMBLY TO START - 12/26 14. PIPING SYSTEM TO START - 12/27 15. WIRING TO START - 12/30 16. QUALITY CONTROL TESTS - 1/1 17. FINAL ASSEMBLY COMPLETE - 1/5 18. CUSTOMER WITNESS TESTS - 1/6 19. FINAL PAINT - 1/6 20. FINAL INSPECTION - 1/7 21. SHIP PREPARATION - 1/8 22. SHIP CHILLERS - 1/9 Alaa Attia 289 6816562 | 1 | 1000 |
| | Unit Special Quote # SQ20-117921-009: | | |
| | Zero cost to provide a review copy of factory test forms 2 days prior to factory test. This is for engineer and owner review and confirmation of test points prior to arriving for the test. Alaa Attia 289 6816562 | 1 | N/C |
| | Unit Special Quote # SQ20-117921-012: | | |
| | MLP add to provide 18" condenser nozzles in lieu of the standard 20" diameter connection. The nozzles need to be 150 lb raised face flanges to match the existing stanford chillers. Price is based on Qty. (4) chillers. Alaa | 1 | 6309 |
| | | **MLP Subtotal** | **1892094.00** |

Currency: United States Dollars

| Line # | Equipment Description | Qty. | MLP |
|---|---|---|---|
| 01 | **Base Unit/Access. - YKWEW5K7-DKHS (293)** | | |
| | Attia 289 6816562 | | |
| | Unit Special Quote # SQ20-117921-013: | | |
| | MLP deduct representing 10% discount on the chiller only as approved by Nick Staub. Alaa Attia 289 6816562 | 1 | (206036) |
| | Unit Special Quote # SQ20-117921-014: | | |
| | Zero cost MLP to perform a zero tolerance performance test in the facttory as per the attached ZT rating report. Alaa Attia 289 6816562 | 1 | N/C |
| | Unit Special Quote # SQ20-117921-016: | | |
| | Zero cost SQ to update update the seismic calculations/certificate of SQ20-117921-006 to reflect Sds = 1.33 instead of 1.25. Note: The revised documentations had been already provided and no action is required, this SQ is to track the changes. Alaa Attia 289 6816562 | 1 | N/C |
| | Unit Special Quote # SQ20-117921-017: | | |
| | MLP add to revise the seismic plate size and quantity to match the original chillers order and as per the attached drawings. Alaa Attia 289 6816562 | 1 | 8285 |
| | Unit Special Quote # SQ20-117921-018: | | |
| | Request: Please update expiration dates of all SQs. | 1 | N/C |
| | Unit Special Quote # SQ20-117921-019: | | |
| | MLP for GPS tracker. MLP is per chiller. Kal Tuwati (717-676-5807) | 1 | 500 |
| | **MLP Subtotal** | | **1892094.00** |
| 02 | **Factory Test - (1195)** | | |
| | Factory Test - Full Load with 1 Part Load test point(s) Including 2 Sound Tests | 1 | 13875 |
| | Note: Factory Test will be customer witnessed. | | |
| | Note: Performance test reports were requested in English units of measure. | | |
| | **MLP Subtotal** | | **13875.00** |
| 03 | **Start up/PCAT - Santa Rosa/San Francisco, CA Common Branch - N0K in 2020 (7253)** | | |
| | Startup [3 day(s)] to occur during 2020 in Santa Rosa/San Francisco, CA Common Branch - N0K, Tier 13 | 1 | 6588 |
| | **MLP Subtotal** | | **6588.00** |
| 04 | **Delayed Startup - 12 Months (8004)** | | |
| | Note: Inspect unit on a monthly basis. Customer is responsible for interim monthly inspections. Customer to notify York if "out of bounds". Monthly Inspection Sheet - Customer submission of log sheet. | | |
| | **MLP Subtotal** | | **6506.00** |

Currency: United States Dollars

| | | | |
|---|---|---|---|
| **05** | **Entire Unit Warranty - 66 Month Parts and Labor (8562)** | | |
| | 66 Month (2-5 Year) Parts and Labor | 1 | 23940 |
| | Extended Warranty Does Not Include Starter | | |
| | | **MLP Subtotal** | **23940.00** |
| **06** | **Refrigerant Warranty - 66 Month (8582)** | | |
| | 66 Month (5 Year) | 1 | 1500 |
| | | **MLP Subtotal** | **1500.00** |
| **07** | **Field Commissioning of Smart Chiller Equip Board - (7251)** | | |
| | Service Labor | 1 | 878 |
| | | **MLP Subtotal** | **878.00** |

Currency: United States Dollars

| Project Name | MLP Effective Date | Contract - Order No. | Order Rev. No. |
|---|---|---|---|
| **KL20019 - Stanford CUP** | **Dec. 15, 2020** | **0N0K0195-002** | **07** |

# Factory Performance Test Questionnaire / Checklist

| **1. Tests To Be Conducted (* indicates Sound Test to be included):** | **Sound Test Type Specified:** |
|---|---|
| * 1. Full Load, 100% (ECWT: 80.00 °F) | A Weighted Only |
| * 2. Part Load, 50% (ECWT: 65.00 °F) | A Weighted Only |

Note: Each test point must be accompanied by the corresponding computer rating printout to confirm each test condition and expected performance. Include with the order.

**2. Will Customer Witness the Test?** **YES**

Note: All visitors must wear hard-soled shoes. No sneakers!
Sales Engineer must accompany the customers unless approved by marketing.

**3. All Tests/Tolerances To Be Conducted Per AHRI STD 550/590 Unless Noted in the SQ.**

**4. Penalties Associated With The Performance Test:**

Note: Please include job specification pertaining to the factory performance test. Include with the order.

**5. Other Special Requirements:**

Note: Performance test reports were requested in English units of measure.

Currency: United States Dollars

| PIN |
|---|
| YKWEW5K7-DKHSMUYXE5VVD3000552472CAARS1MLFXXW00XK1MLFXXW00XXXXXXAXXAUNXXXXXXSMXYXXXXXAXXJFXX22WXXFX1KXEXXSXXXXX |

| Basic Model | Extended Model | Evaporator Heat Exchanger | Condenser Heat Exchanger |
|---|---|---|---|
| YKWEW5K7-DKHSMUYXE5VVD3000552472CAARS1MLFXXW00XK1MLFXXW | | | |

5 10 15 20 25 30 35 40 45 50 55

| Condenser Heat Exchanger (Cont) | Unit Options | Motor Options | Power Options | Doc & Testing Options | Ship Options | Warranty Options | Misc Options |
|---|---|---|---|---|---|---|---|
| 00XXXXXXAXXAUNXXXXXXSMXYXXXXXAXXJFXX22WXXFX1KXEXXSXXXXX | | | | | | | |

60 65 70 75 80 85 90 95 100 105 110

Currency: United States Dollars

0N0K0195-002

# Special Pricing Quote Cover Sheet

| | |
|---|---|
| Contract Number: | 0N0K0195 |
| Change Order | 002 |
| Job Name: | Stanford CHW Capacity Improvements - Chi |
| Project Owner: | LOPEZ, KRISTOFFER RIVARD Soriano |

| | |
|---|---|
| **Date :** | 01/07/2021 3:19 PM |
| **Fax number :** | SENT ELECTRONICALLY |
| **From :** | KRISTOFFER RIVARD LOPEZ (jlopezkr), Equip Systems App Eng II<br>San Leandro CA Branch<br>1619 Alvarado St, San Leandro, CA, United States of America<br>Phone : +1 510 780 7674 Fax : |
| **Signature :** | KRISTOFFER RIVARD LOPEZ (SIGNED ELECTRONICALLY) |

By providing your signature above, you acknowledge that you are in possession of all original customer documentation

# CH-1016 & CH-1018

## NOTES TO FIELD ERECTING ENGINEER

101. VERIFY BUILDING DIMENSIONS AS PERTAINS TO LOCATION OF EQUIPMENT. INSPECT ALL EQUIPMENT BEFORE ERECTION ON FOUNDATION PADS. USE ONLY CERTIFIED PRINTS.

102. PIPING CONNECTIONS TO NOZZLES ON WATER BOXES OR HEADS TO BE PROPERLY BRACED AND SUPPORTED TO PREVENT UNNECESSARY STRAIN ON NOZZLES.

103. CARE MUST BE TAKEN IN MAKING UP ALL JOINTS IN THE REFRIGERANT CIRCUIT BEFORE AND WHEN ERECTING TO PREVENT DIRT AND MOISTURE FROM GETTING INTO THE SYSTEM.

104. ENTIRE SYSTEM ON REFRIGERANT CIRCUIT MUST BE CLEAN AND FREE OF DIRT, SCALE AND MOISTURE. TO BE PRESSURE AND VACUUM TESTED BEFORE CHARGING WITH REFRIGERANT.

105. COMPANION FLANGES, BOLTS, GASKETS AND RUBBER ISOLATORS WHEN REQUIRED FOR WATER NOZZLE CONNECTIONS AT EVAPORATOR AND CONDENSER TO BE FURNISHED BY PIPING CONTRACTOR.

106. DRAIN AND VENT PIPING WHEN REQUIRED BY PIPING CONTRACTOR:
3/4" VENT & 3/4" DRAIN CONNS. (EVAPORATOR)
3/4" VENT & 3/4" DRAIN CONNS. (CONDENSER)

107. THERMOMETER WELLS AND PRESSURE GAUGE CONNECTIONS TO BE INSTALLED IN WATER AND/OR BRINE INLET AND OUTLET PIPING NEAR CONDENSER AND EVAPORATOR BY PIPING CONTRACTOR.

108. N/A

109. THE RELIEF CONNECTION SHOULD BE VENTED OUTSIDE THE BUILDING BY MEANS OF A PROPERLY SIZED LINE IN ACCORDANCE WITH ASHRAE STD. 15 AND OTHER APPLICABLE CODES FOR PERSONAL SAFETY.

110. N/A

111. FLANGE BOLT HOLES STRADDLE CENTER LINES.

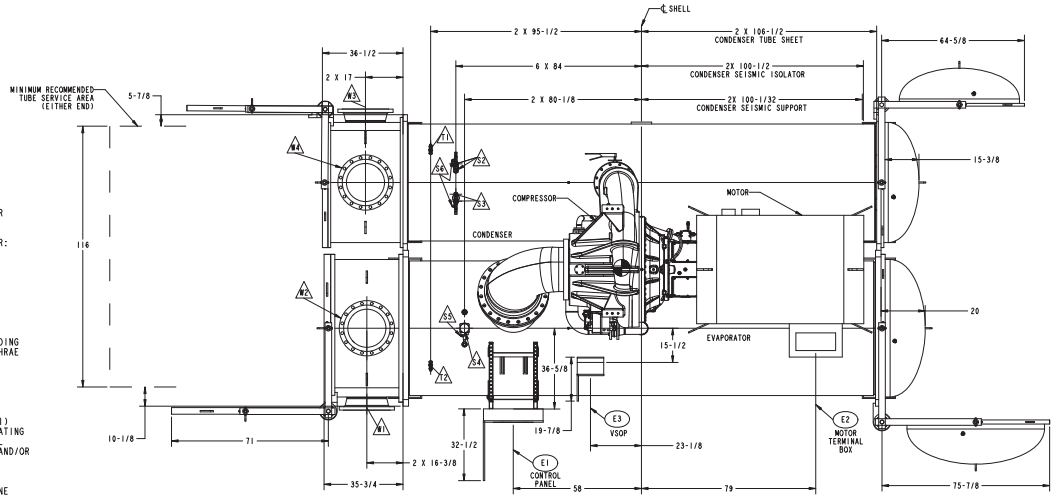
112. FIELD INSULATION (INSULATION NOT FURNISHED BY YORK / JCI) SHELL AND SUCTION CONNECTIONS TO BE INSULATED BY INSULATING CONTRACTOR WITH ANTI-SWEAT INSULATION AS SPECIFIED. ALL THERMOMETER WELLS MUST BE ACCESSIBLE. REMOVABLE HEADS AND/OR WATER BOXES AND SIGHT PORTS RECOMMENDED.

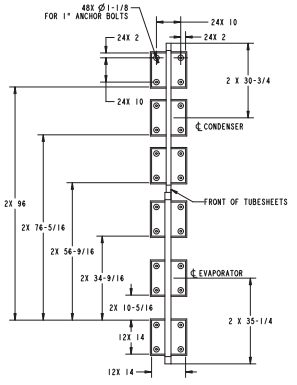
113. FOR FINAL FIELD ALIGNMENT OF COMPRESSOR AND MOTOR/TURBINE SHAFTS SEE INSTALLATION INSTRUCTIONS.

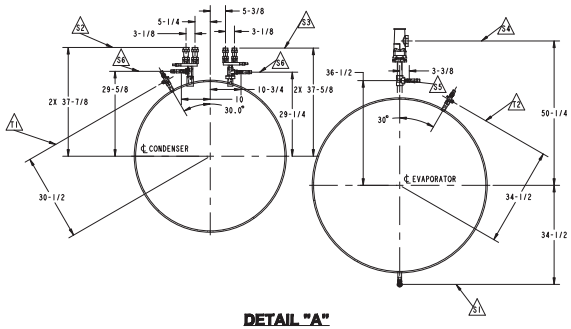
114. NO SPECIAL FOUNDATION REQUIRED. FLOOR MUST BE FLAT AND LEVEL WITHIN 1/4" AND CAPABLE OF CARRYING THE OPERATING WEIGHT SHOWN ON THIS DRAWING.

APPROXIMATE WEIGHTS:

SHIPPING WEIGHT: 80,212 LB
OPERATING WEIGHT: 100,168 LB
(INCLUDES REFRIGERANT, WATER, OIL, ECT)



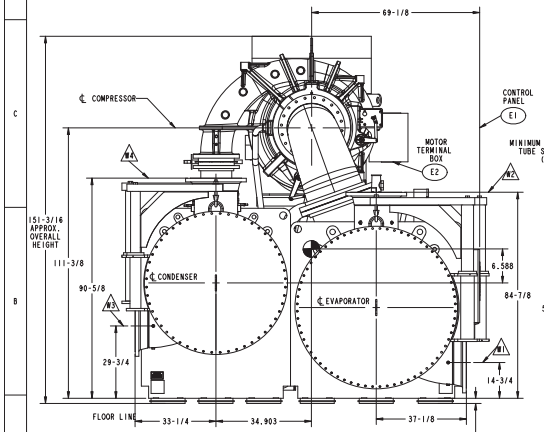




DETAIL "A"

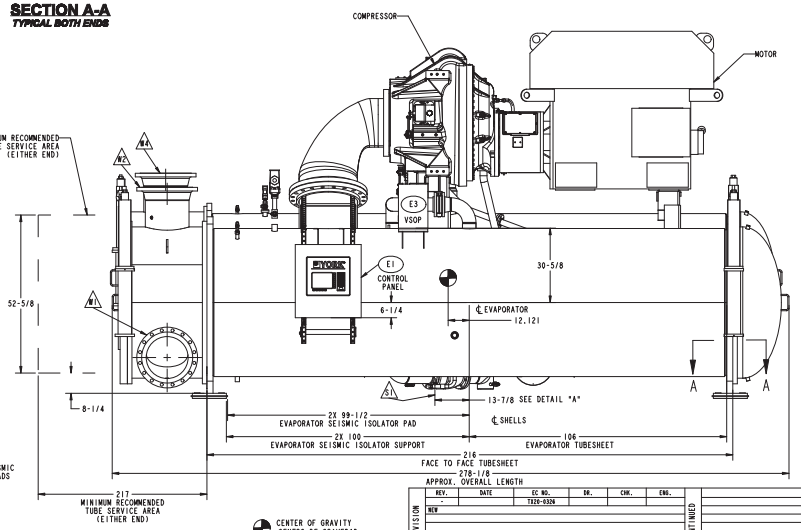
## INSTALLING CONTRACTOR CONNECTIONS

| | |
|---|---|
| W1 | 18" - 150 LB FLANGE CONNECTION EVAPORATOR WATER INLET |
| W2 | 18" - 150 LB FLANGE CONNECTION EVAPORATOR WATER OUTLET |
| W3 | 18" - 150 LB FLANGE CONNECTION CONDENSER WATER INLET |
| W4 | 18" - 150 LB FLANGE CONNECTION CONDENSER WATER OUTLET |
| S1 | 3/4" FLARE MALE DRAIN & CHARGING CONNECTION |
| S2 | 2X 1-1/4" NPTI FEMALE OUTLET DUAL SYSTEM RELIEF VENT CONNECTION(CONDENSER) SEE NOTE 109 |
| S3 | 2X 1" NPTI FEMALE OUTLET DUAL SYSTEM RELIEF VENT CONNECTION (CONDENSER) SEE NOTE 109 |
| S4 | 2X 1-1/2" NPTI FEMALE OUTLET DUAL SYSTEM RELIEF VENT CONNECTION (EVAPORATOR) SEE NOTE 109 |
| S5 | 1/2" NPTI CUSTOMER TEST PORT CONNECTION (EVAPORATOR) |
| S6 | 2 X 1/2" NPTI CUSTOMER TEST PORT CONNECTION (CONDENSER) |
| T1 | 3/4" FLARE MALE TRANSFER/SERVICE CONNECTION (CONDENSER) |
| T2 | 3/4" FLARE MALE TRANSFER/SERVICE CONNECTION (EVAPORATOR) |
| E1 | ANY AVAILABLE KNOCK OUT CONTROL PANEL POWER SUPPLY |
| E2 | CUSTOMER CONDUIT CONNECTION MOTOR TERMINAL BOX |
| E3 | 7/8" KNOCK OUT VARIABLE SPEED OIL PUMP DRIVE PANEL(VSOP) POWER SUPPLY |

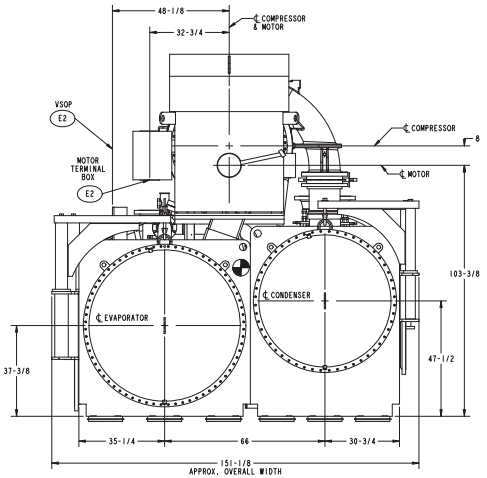
JOB NAME: STANFORD CHILLER PLANT EXP.
YORK ORDER NO.: TBD
TAG NO.: CH-1
CUSTOMER ORDER NO.: TBD
CUSTOMER: TBD




SECTION A-A
*TYPICAL BOTH ENDS*




CENTER OF GRAVITY
*CENTRO DE GRAVEDAD*




YORK INTERNATIONAL CORPORATION
YORK, PA 17405

| REVISION | REV. | DATE | EC NO. | BY. | CHK. | ENG. |
|---|---|---|---|---|---|---|
| | - | | T020-0324 | | | |
| | NEW | | | | | |

CONTINUED

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DIMENSIONS ARE IN INCHES
DO NOT SCALE
TOLERANCES PER ENG. STD. M-282

| | | |
|---|---|---|
| DRAWN | MARIJOSE GARZA | 26-AUG-2020 |
| MODELER | BRANDON GARCIA | 26-AUG-2020 |
| CHKD | JAMES D. GOODWIN | 26-AUG-2020 |
| ENG | | |

SCALE: 1.000 | WEIGHT: .000

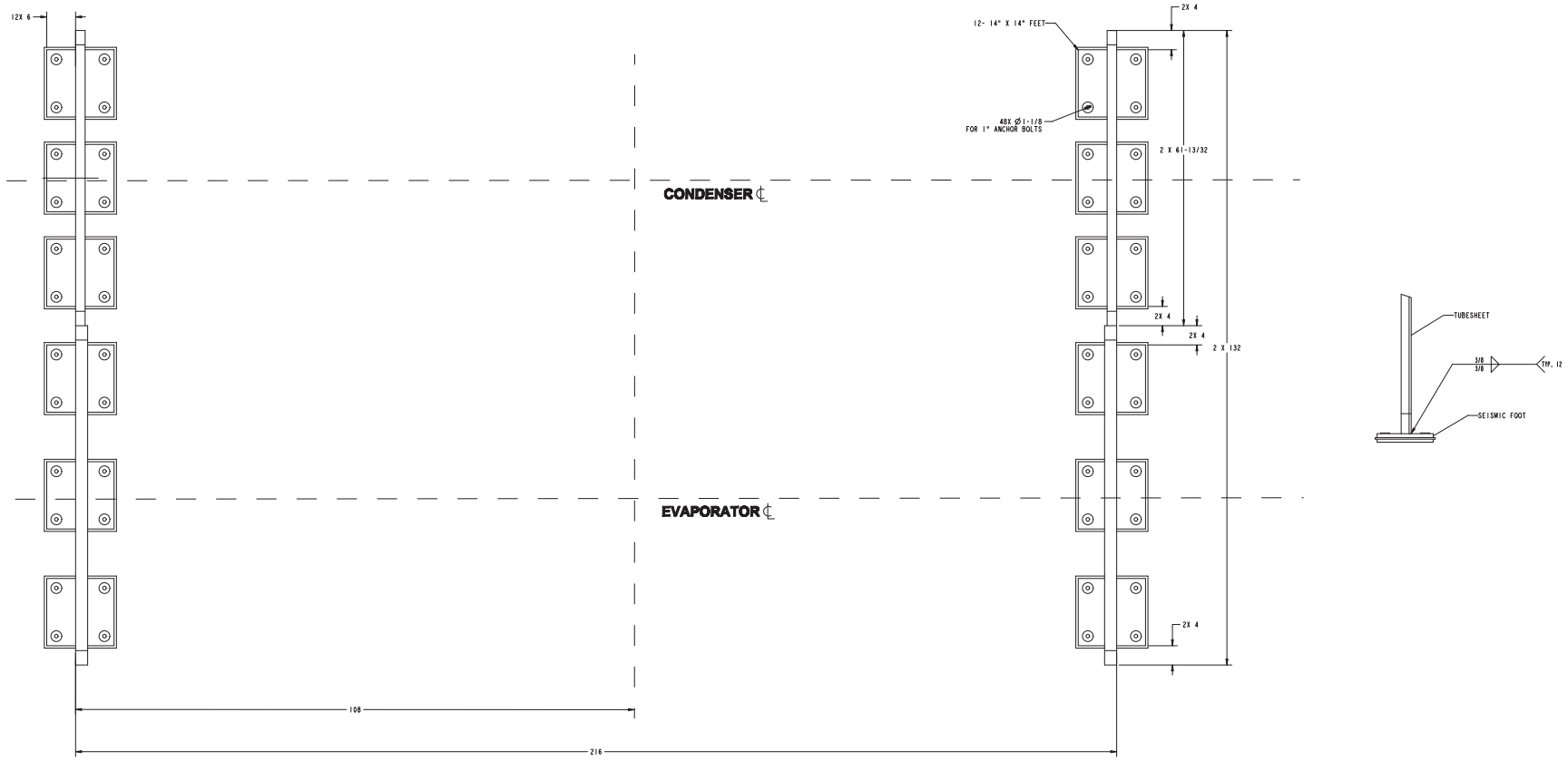
GENERAL ARRANGEMENT
YVWE/WXT-D0A5

MATERIAL
ENG. STD.
PART NO.
CUT SIZE

CAGE NUMBER: E 66935
DRAWING NUMBER: 077-65812-000
REVISION / VERSION / Eng Chg

DRVG. NO.: 093 15282 000REV.A
SHEET 1 OF 2

# STANDFORD YK K7 SEISMIC FEET LAYOUT




| REVISION | REV. | DATE | EC NO. | DR. | CHK. | ENG. |
|---|---|---|---|---|---|---|
| | - | | T820-0326 | | | |
| | NEW | | | | | |

CONTINUED



DIMENSIONS ARE IN INCHES
DO NOT SCALE
TOLERANCES PER ENG. STD. M-282

| | | |
|---|---|---|
| DRAWN | MARIJOSE GARZA | 26-AUG-2020 |
| MODELER | BRANDON GARCIA | 26-AUG-2020 |
| CHKD | JAMES D. GOODWIN | 26-AUG-2020 |
| ENG | | |

SCALE: 1.000 WEIGHT: .000

THIRD ANGLE

YORK INTERNATIONAL CORPORATION
YORK, PA 17405

GENERAL ARRANGEMENT
YHWE9XT-D0A6

MATERIAL
ENG. STD.
PART NO.
CUT SIZE

CAGE NUMBER: E 66935
DRAWING NUMBER: 077-65812-000
REVISION / VERSION / Eng Chg

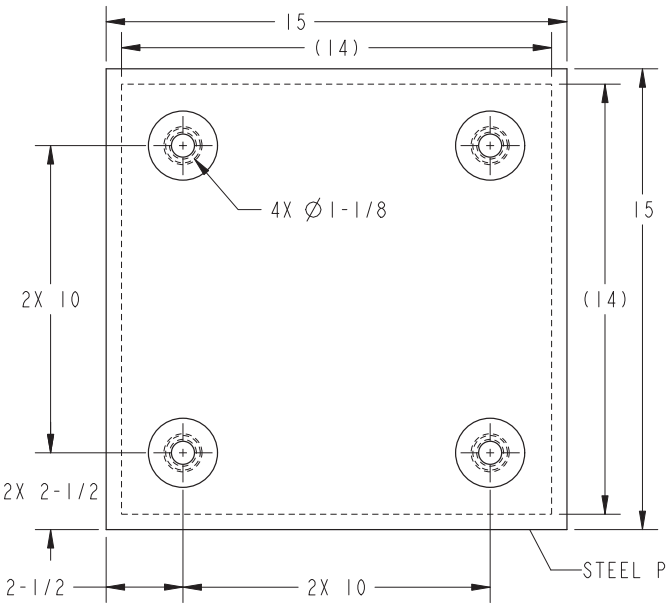
DRG. NO.: 003 15282 000REV.A
SHEET 2 OF 2

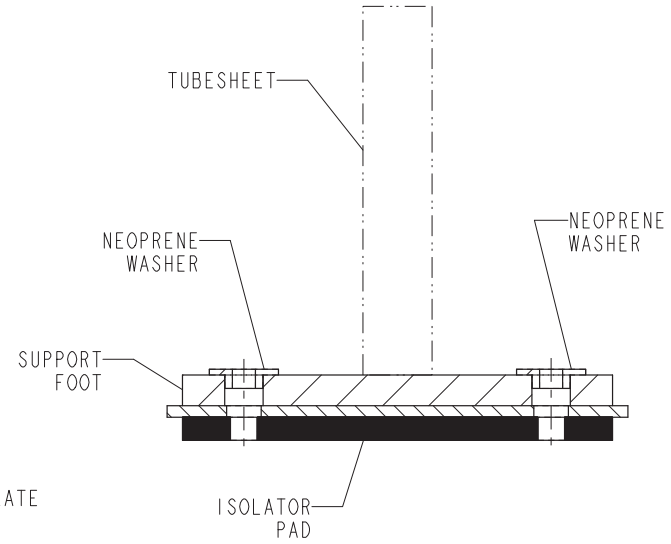
NOTES:

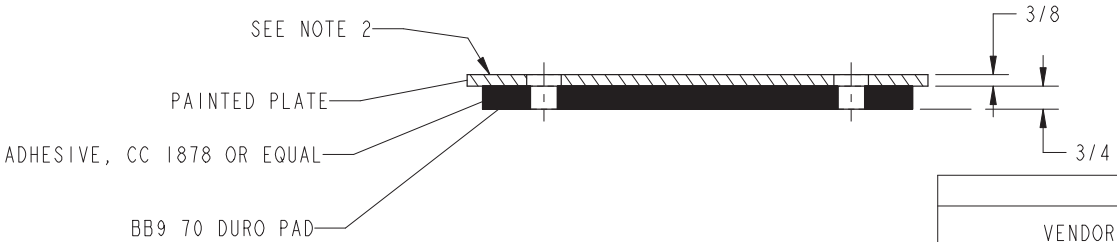
1. QUANTITY (1) OF PART NO. 028-12828B INCLUDES PACKAGE OF QUANTITY (4) ISOLATOR PADS AND (12) 1/16 INCH GALVANIZED SHIMS.

   JCI PART NO. 028-12828B TO APPEAR ON OUTSIDE OF PACKAGE.

2. VENDOR TO PROVIDE A PAINT STAMP OR A LABEL WHICH SAYS "THIS SIDE UP" AND ATTACH IT TO TOP OF 3/8" PLATE.




| KIT, ISOLATORS, SHIMS & NEOPRENE WASHER | | | |
|---|---|---|---|
| VENDOR | VENDOR PART NUMBER | RATED LOAD PER PAD | RATED LOAD DEFLECTION |
| MASON INDUSTRIES, INC | A-35507-1 | 30,000 LB. | 0.15 IN |
| MASON NEOPRENE WASHER | HG-100 | | |

THIRD ANGLE

YORK INTERNATIONAL

YORK INTERNATIONAL CORPORATION
YORK, PA 17405

| REVISION | REV. | DATE | EC NO. | DR. | CHK. | ENG. |
|---|---|---|---|---|---|---|
| | - | | TX14-0245 | | | |
| | NEW | | | | | |



DIMENSIONS ARE IN INCHES
DO NOT SCALE
TOLERANCES PER ENG. STD. M-282

| | | |
|---|---|---|
| DRAWN | ROBERT McLEOD | 13-AUG-2014 |
| MODELER | ROBERT McLEOD | 13-AUG-2014 |
| CHKD | JD GOODWIN | 14-AUG-2014 |
| ENG | | |

SCALE: .111 WEIGHT: 85.051

KIT,
ISOLATOR PAD
SEISMIC

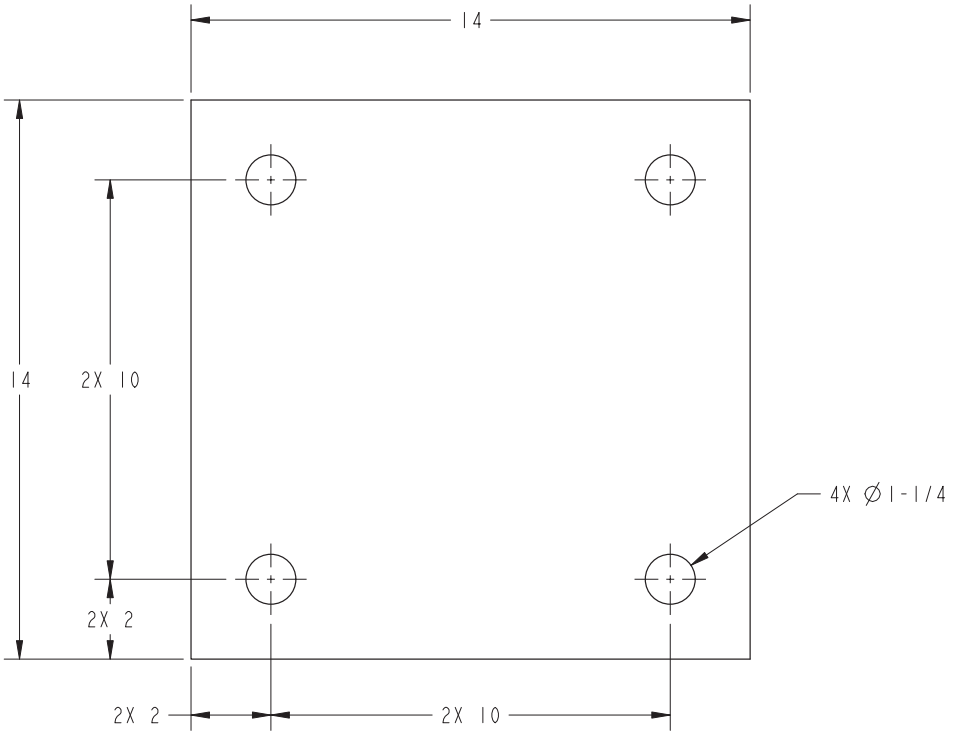
MATERIAL
ENG. STD.
PART NO.
CUT SIZE

B | CAGE NUMBER 66935 | DRAWING NUMBER 028-12828-000 | REVISION - | VERSION 1 | Released

ORIG. NO.:

SHEET 1 OF 1

| | MATERIAL | | | | | |
|---|---|---|---|---|---|---|
| PART NO. | TYPE | STD. | PART NO. | CUT SIZE | CERTIFICATE | TOL. |
| 077-43826-000 | STEEL | R-19 | ---------- | 1.00" THK | --------- | M-282 |




THIRD ANGLE

YORK INTERNATIONAL

# YORK INTERNATIONAL CORPORATION

YORK, PA 17405

| REVISION | REV. | DATE | EC. NO. | DR. | CHK. | ENG. |
|---|---|---|---|---|---|---|
| | - | | TX14-0245 | | | |
| | NEW | | | | | |



DIMENSIONS ARE IN INCHES
DO NOT SCALE
TOLERANCES PER ENG. STD. M-282

| | | |
|---|---|---|
| DRAWN | ROBERT McLEOD | 13-AUG-2014 |
| MODELER | ROBERT McLEOD | 13-AUG-2014 |
| CHKD | JD GOODWIN | 14-AUG-2014 |
| ENG | | |

SCALE: .003 WEIGHT: 54.579

SUPPORT
FOOT
1X14X14

| | |
|---|---|
| MATERIAL | STEEL |
| ENG. STD. | |
| PART NO. | |
| CUT SIZE | |

| B | CAGE NUMBER | DRAWING NUMBER | REVISION |
|---|---|---|---|
| | 66935 | 077-43826-000 | - |
| | | | VERSION 0 |

ORIG. NO.: 077-39084-000 REV - SHEET 1 OF 1 Released

MANWILL ENGINEERING

Johnson Controls

## ATTACHMENT 1: ANCHOR FORCE CALCULATIONS

**CALCULATION NO.: YC20-062**

**Project: Stanford Chiller Plant Expansion; Sales Order #: TBD**

**REVISION NO.: 2, Page 1 of 3**

### Limitations

The Certificate of Compliance provided for this project specifically excludes the supports and attachments. The Engineer of Record must design adequate attachments and must verify that the supports (including their connection to the unit, if applicable) can withstand the project seismic forces. Calculation of the project seismic forces for the referenced unit is provided here for the convenience of the Engineer of Record. However, it is the responsibility of the Engineer of Record to verify the Project Seismic Parameters and the methodology used to calculate the forces if they are to be used for design or verification purposes.
For installation, the actual chiller must be used as a template to match-mark the anchor holes to the holes in each foot. Do not use reference drawings and do not use one chiller as a template for a different chiller as the holes will not line up.

### Project Seismic Parameters

| | | | |
|---|---|---|---|
| $I_P$ = 1.5 | $S_{DS}$ = 1.33g | z/h = 0.00 | Values provided by project team |
| $a_P$ = 2.5 | $R_P$ = 2.5 | $\Omega_0$ = 2.0 | For mounting on Neoprene Pads |

Note: Per ASCE 7-16 Table 13.6-1, components mounted on vibration isolators shall have a bumper restraint or snubber in each horizontal direction. The nominal clearance (air gap) of the bumper restraint must not be greater than 0.25in.

| | |
|---|---|
| $\rho$ = 1.0 | Per ASCE 7-16 Sections 13.3.1.1 and 12.3.4.1 |
| $F_P/W_P$= 0.80 | Seismic design force (divided by operating weight) per ASCE 7-16 Equations 13.3-1, 13.3-2, & 13.3-3 |
| $F_{Pv}/W_P$= 0.27 | Vertical seismic design force (divided by operating weight) per ASCE 7-16 Section 13.3.1.2 |

### Component Information

Model = YKWEW5K7-DKHS

| | |
|---|---|
| $W_P$ = 100,168-lb | Total operating weight of chiller |
| $n_{feet}$ = 12 | Total number of 14-in wide feet |
| $D_X$ = 216.0-in | Support spacing along shells |
| $D_Y$ = 106.0-in | Outer support spacing along tubesheets |
| $D_{Yi}$ = 14.0-in | Innermost support spacing along tubesheets |
| $D_{Yi2}$ = 53.0-in | Spacing of center tubesheet supports along tubesheets (only present with 12 feet) |
| $H_{cg}$ = 62-in | Height to center of gravity |
| $e_X$ = 5% | Center of gravity eccentricity along shells (as a percent of support spacing) |
| $e_Y$ = 5% | Center of gravity eccentricity along tubesheets (as a percent of support spacing) |

### Overall Component Seismic Forces

The values below are the total seismic forces for the component.

| | |
|---|---|
| $F_h$ = 79,934-lb | Total horizontal seismic force |
| $F_{mh}$ = 159,868-lb | Total horizontal seismic force including overstrength |
| $F_v$ = 26,645-lb | Total vertical seismic force (does not include dead load) |

### Seismic Forces on Individual Support

The values below are the maximum forces on an individual support (foot). The support and/or the anchor group should be designed for these resultant forces.

| | |
|---|---|
| V = 13,165-lb | Maximum horizontal shear on support (no overstrength) |
| T = 8,800-lb | Maximum upward tension on support (no overstrength) |
| $V_m$ = 26,330-lb | Maximum horizontal shear on support including overstrength |
| $T_m$ = 30,002-lb | Maximum upward tension on support including overstrength |
| C = 56,249-lb | Maximum downward compression on support |


Date Signed: 08/06/2020

derek@manwillSE.com 541.241.2102 www.manwillSE.com

MANWILL ENGINEERING

Johnson Controls

## ATTACHMENT 1: ANCHOR FORCE CALCULATIONS

**CALCULATION NO.: YC20-062**

**Project: Stanford Chiller Plant Expansion; Sales Order #: TBD**

**REVISION NO.: 2, Page 2 of 3**

**CASE 1: LOADING ALONG TUBESHEETS (Y-DIRECTION)**

Y-direction loading applies seismic forces in the horizontal plane along the tubesheets or perpendicular to the shells. Loading is applied at the center of gravity. To get the reactions at the tubesheets, the shells are assumed to act like a beam with their ends fixed from rotating (since the configuration of the supports resists rotation about the vertical axis).

**Properties of Supports at Tubesheet**

| | | |
|---|---|---|
| $I$ = | 7121-in^2 | Moment inertia of support centroids at one tubesheet |
| $S$ = | 134.3-in | Section modulus of outer support centroids at one tubesheet |

**Overall Forces (No Overstrength)**

| | | |
|---|---|---|
| $F_Y$ = | 79,934-lb | Total horizontal seismic force in the Y-direction |
| $F_Z$ = | -63,507-lb | Total vertical uplift force per ASCE 7-16 Section 2.3.6 Equation 7 (net downward if negative) |
| $F_{Zdn}$ = | 146,846-lb | Total vertical downward force per ASCE 7-16 Section 2.3.6 Equation 6 |

**Reactions at Tubesheet (No Overstrength)**

| | | |
|---|---|---|
| $R_Y$ = | 45,942-lb | Y-direction reaction force at tubesheet |
| $R_Z$ = | -34,929-lb | Upward Z-direction reaction force at tubesheet (net downward if negative) |
| $R_{Zdn}$ = | 80,765-lb | Downward Z-direction reaction force at tubesheet |
| $M_X$ = | 2,848,410-lb·in | Moment about the X-axis (overturning) at tubesheet |
| $M_Z$ = | 1,438,813-lb·in | Moment about Z-axis (due to fixed ends) at tubesheet |

**Forces at Support (No Overstrength)**

| | | |
|---|---|---|
| $V_X$ = | 10,710-lb | Horizontal shear in X-direction on support |
| $V_Y$ = | 7,657-lb | Horizontal shear in Y-direction on support |
| $V$ = | 13,165-lb | Horizontal shear on support |
| $T$ = | 8,800-lb | Upward tension on support (no tension if zero) |
| $C$ = | 56,249-lb | Downward compression on support |

**Overall Forces Including Overstrength**

| | | |
|---|---|---|
| $F_{mY}$ = | 159,868-lb | Total horizontal seismic force in the Y-direction including overstrength |
| $F_Z$ = | -63,507-lb | Total vertical uplift force per ASCE 7-16 Section 2.3.6 Equation 7 (net downward if negative) |

**Reactions at Tubesheet Including Overstrength**

| | | |
|---|---|---|
| $R_{mY}$ = | 91,884-lb | Y-direction reaction force at tubesheet including overstrength |
| $R_Z$ = | -34,929-lb | Upward Z-direction reaction force at tubesheet (net downward if negative) |
| $M_{mX}$ = | 5,696,821-lb·in | Moment about the X-axis (overturning) at tubesheet including overstrength |
| $M_{mZ}$ = | 2,877,626-lb·in | Moment about Z-axis (due to fixed ends) at tubesheet including overstrength |

**Forces at Support Including Overstrength**

| | | |
|---|---|---|
| $V_{mX}$ = | 21,419-lb | Horizontal shear in X-direction on support including overstrength |
| $V_{mY}$ = | 15,314-lb | Horizontal shear in Y-direction on support including overstrength |
| $V_m$ = | 26,330-lb | Horizontal shear on support including overstrength |
| $T_m$ = | 30,002-lb | Upward tension on support including overstrength (no tension if zero) |

MANWILL ENGINEERING

Johnson Controls

## ATTACHMENT 1: ANCHOR FORCE CALCULATIONS

**CALCULATION NO.: YC20-062**

**Project: Stanford Chiller Plant Expansion; Sales Order #: TBD**

**REVISION NO.: 2, Page 3 of 3**

**CASE 2: LOADING ALONG SHELLS (X-DIRECTION)**

X-direction loading applies seismic forces in the horizontal plane along the shells or perpendicular to the tubesheets. Loading is applied at the center of gravity. To get the reactions at the tubesheets, the shells are assumed to act like a beam with their ends pinned (since the configuration of the supports does not resist rotation about the Y-axis).

**Overall Forces (No Overstrength)**

| | | |
|---|---|---|
| $F_X$ = | 79,934-lb | Total horizontal seismic force in the X-direction |
| $F_Z$ = | -63,507-lb | Total vertical uplift force per ASCE 7-16 Section 2.3.6 Equation 7 (net downward if negative) |
| $F_{Zdn}$ = | 146,846-lb | Total vertical downward force per ASCE 7-16 Section 2.3.6 Equation 6 |
| $M_Y$ = | 4,955,912-lb·in | Overall moment about the Y-axis |

**Reactions at Tubesheet (No Overstrength)**

| | | |
|---|---|---|
| $R_X$ = | 39,967-lb | X-direction reaction force at tubesheet |
| $R_Z$ = | -5,634-lb | Upward Z-direction reaction force at tubesheet (net downward if negative) |
| $R_{Zdn}$ = | 103,709-lb | Downward Z-direction reaction force at tubesheet |

**Forces at Support (No Overstrength)**

| | | |
|---|---|---|
| V = | 6,661-lb | Resultant shear on anchor group |
| T = | 0-lb | Tension on anchor group (zero value means no net tension on group) |
| C = | 17,285-lb | Compression on foot |

**Overall Forces Including Overstrength**

| | | |
|---|---|---|
| $F_{mX}$ = | 159,868-lb | Total horizontal seismic force in the X-direction including overstrength |
| $F_Z$ = | -63,507-lb | Total vertical uplift force per ASCE 7-16 Section 2.3.6 Equation 7 (net downward if negative) |
| $M_{mY}$ = | 9,911,824-lb·in | Overall moment about the Y-axis including overstrength |

**Reactions at Tubesheet Including Overstrength**

| | | |
|---|---|---|
| $R_{mX}$ = | 79,934-lb | X-direction reaction force at tubesheet including overstrength |
| $R_{mZ}$ = | 17,310-lb | Upward Z-direction reaction force at tubesheet including overstrength (net downward if negative) |

**Forces at Support Including Overstrength**

| | | |
|---|---|---|
| $V_m$ = | 13,322-lb | Horizontal shear on support including overstrength |
| $T_m$ = | 2,885-lb | Upward tension on support including overstrength (no tension if zero) |

# CERTIFICATE OF COMPLIANCE: YC20-062

## Manufacturer's Certification of Components Meeting the International Building Code

### PROJECT INFORMATION

Project: Stanford Chiller Plant Expansion;  Sales Order #: TBD

Customer: TBD;  Base PO #: TBD

Site Location: Stanford, CA

Project Seismic Parameters: $I_P$ = 1.5; $S_{DS}$ = 1.33g; z/h = 0.00

### REFERENCE SPECIAL SEISMIC CERTIFICATION

Compliance Report Number: OSP-0045; Certification Company: MANWILL ENGINEERING LLC

Certifying Engineer: Derek Manwill, SE - 541.241.2102 - derek@manwillSE.com

The certification meets the requirements of the following codes (and their prior versions): 2018 International Building Code, 2019 California Building Code, and ASCE 7-16. The basis of the certification is shake table testing in accordance with ICC-ES AC156.

The certification covers the following seismic parameters, which meet or exceed those of this project:
$I_P$ = 1.5; $S_{DS}$ = 1.85g for z/h = 1 (rooftop); $S_{DS}$ = 2.50g for z/h = 0 (at grade).

The certification is only valid for the following mounting: ISOLATED FLOOR MOUNTED.

### CERTIFIED MODEL

The following unit for this project is covered by and has been built in accordance with the above-referenced special seismic certification, including all required seismic enhancements:

Model: YKWEW5K7-DKHS (operating weight = 100168 lb)

Prepared By: _____ Date: _____

Matthew Johnson

Approved By: _____ Date: _____

Patrick C. Marks

JOHNSON CONTROLS INC., 5000 Renaissance Drive, New Freedom, PA 17349

Contact: Matthew Johnson - 717.771.6816 - matthew.2.johnson@jci.com