



Submittal

Prepared For:
MEEC

Date: April 27, 2026

Sold To:
Brighton Area Schools
Attn: Mr. Scott Jacobs

Job Name:
Brighton Area Schools - HS Science and Chiller Upg

Opportunity ID: 8568674

Trane U.S. Inc. is pleased to provide the following submittal for your review and approval.

Product Summary

Qty Product

1 Marley Cooling Tower

Matthew J. Krusniak, Systems Sales Engineer
Trane U.S. Inc.
5335 Hill 23 Drive
Flint, MI 48507
E-mail: mjkusniak@trane.com
Office Phone: (810) 767-7800

The attached information describes the equipment we propose to furnish for this project and is submitted for your approval.

Submittal acceptance and return is a critical step, so please ensure submittals are returned with approval to release to production within 14 days of submittal date.

MECHANICAL ELECTRICAL ENGINEERING CONSULTANTS, P.C.

Review is only for conformance with the design concept on the Project and compliance with the information given in the Contract Documents. Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to the fabrication processes or to techniques of construction, and for coordination of his work with all other trades.

☒ No Exceptions Taken INITIALS: ZS
☐ Note Markings
☐ Rejected DATE: 6/2/26
☐ Resubmit

Product performance and submittal data is valid for a period of 6 months from the date of submittal generation. If six months or more has elapsed between submittal generation and equipment release, the product performance and submittal data will need to be verified. It is the customer's responsibility to obtain such verification.

Submittal to:

Brighton Area Schools
7878 Brighton Road
Brighton, MI 48116

Opportunity / Quote No. (Ver): MICHAEL CHIMKO_230517_084806318 / MICHAEL CHIMKO_260326_110351271 (1)
Rep Quote No.:

April 22, 2026

TOWER MODEL	PERFORMANCE CONDITIONS	MOTOR DATA	TOWER DIMENSIONS	WEIGHTS
Quantity of (1) Marley NC Class model NC8405QAN factory assembled 1-Cell crossflow cooling tower	Per 1-cell tower: 1,300 gpm 93.5 °F Hot Water 84.5 °F Cold Water 77.2 °F Entering WB	NEMA 20 HP 1 speed / 1 wind 3 phase / 60 Hz / 230/460v 1.2sf / TEFC 1800 RPM Premium Efficiency Inverter duty nameplatedExternal shaft grounding ring per motor <i>Site Voltage; 480</i>	Each cell: (without options) Length 9' - 10 3/4" Width 19' - 11" Height 11' - 11 3/4" Per 1-cell tower: (with options) Length 10' - 7 11/16" Width 19' - 11" Height 15' - 0 7/8"	Per cell: Shipping: 10,062 lb Operating: 20,858 lb Per 1-cell tower: Shipping: 10,062 lb Operating: 20,858 lb

Quantities shown below are per tower.

Base Tower Construction/Equipment:

Galvanized Steel casing.
Galvanized Steel structure.
Stainless Steel (per SS Grade) collection basin.
Stainless Steel (per SS Grade) distribution basin.
All stainless steel is series 300.
Low Sound fan with aluminum blades.
Marley designed Geareducer® with 5-year warranty.
15 mil PVC film fill with integral louvers and drift eliminators designed and manufactured by Marley.
Published sound data is independently verified by a CTI licensed test agency.
CTI Thermal certification per STD-201 and CTI Sound certification per STD-204.
HDG steel fan guard.

Collection Basin Connections and Accessories:

All flanges are to Class 125 ANSI B16.1 standard.
All threads are to American Standard Pipe Taper Thread.
(1) 14 in (356 mm) diameter bottom outlet(s) with trash screen(s) and anti-vortex plate(s).
(1) 10 in (254 mm) diameter Std Cased Face Bypass connection(s) (sized for 100% of design flow)
4 in (102 mm) diameter combination drain and overflow in each cell
Probe type electronic water level sensor, in first cell, with the following events: make-up, low-alarm, high-alarm

Distribution Basin Inlet and Accessories:

(1) self-balancing 8 in (203 mm) diameter PVC bottom inlet connection per cell.
All internal piping is PVC. External piping is PVC.

Maintenance & Maintenance Access Features:

Tower is designed in accordance with OSHA safety standards.
This quotation does not include features which are available to allow safe access on the fan deck while the fan is still operating. If this is a desired feature for your intended operation, please contact your sales representative.
External lube line with dipstick
Convenient access to the collection basin and plenum area is provided via a large access door located on each endwall
Easy fitting perimeter guardrail, kneerail & toeboard
(1) Cased face ladder
Self closing safety gate(s) included at the top of the access ladders

Control Systems:

(1) Metrix 5550 Mechanical sw, DPDT (no cord) vibration cutoff switch per cell

Chemical Delivery System:

None

Tower Specials:

Field Services

Extended Warranty:

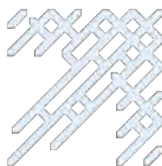
The SPX Cooling Tech, LLC Certification of Limited Warranty ("Warranty Certificate") shall include an extended material warranty covering 5 years from date of shipment. All other terms of the Warranty Certificate remain unchanged and in effect.

Field Installed Equipment:

The field installed portion of the equipment will require approximately 18.0 man-hours of installation time after the tower arrives at the jobsite (based on USA experienced crew). The price to install these components is NOT included in the total price.

Please advise if the drawing type you need has not been supplied. These are the available drawing types:

- PDF 2D documents - These documents display the tower geometry with dimensions, notes and annotations.
- DWG 2D AutoCAD layouts – This 2D layout is a full scale electronic representation of the tower to insert into your own AutoCad layout. The .dwg contains no text so should be accompanied by the PDF files.
- JT 3D solid model files - These lightweight 3D solids may be used by solid model programs such as NX (Unigraphics), I-DEAS, Solid Edge, Catia, Pro/Engineer, and Autodesk Inventor 2009, among others. A free JT viewer can be found at www.jt2go.com. JT is not compatible with Revit; however, the JT file can be converted to DWG using Autodesk Inventor and then imported into Revit. This results in a heavy Revit file thus not suitable for all applications.
- Revit – Configuration specific Revit files are not yet available. However, a lightweight Revit part family showing the basic tower may be downloaded from our website. Go to <http://spxcooling.com/revit>.

MARLEY® 

SUBMITTAL DOCUMENTS

Drawings & Data

<i>Transmittal Code</i>	<i>Approval Code</i>	<i>No. of Copies</i>	<i>Drawing Number /Rev/Date</i>	<i>Description</i>

Transmittal Codes:

- E = Enclosed Herewith
- S = Sent Separately
- F = Sent via Fax
- O = Other

Other Codes:

- P = Print
- R = Reproducible
- D = Reduced Copy

Approval Codes:

- SFA = Approval Document. Equipment is held for Approval and Release.
- AFC = Certified Document. Equipment has been Approved for Construction.
Changes made after this point may result in price adds and/or delays.
- INF = Information Document. Submitted for Information only.
- RFA = Corrected Document. Re-submitted for Approval and Release
- OTH = Other

Estimated Shipment Lead-Time After Drawing Approval: 50 business days

Lead times are estimates and are subject to change at time of release

April 22, 2026

For: SPX Cooling Tech, LLC

By: R B E Inc

Thank you,
Michael Chimko

Job Information

Selected by

RBE, Incorporated
4822 Joslyn Road

Orion, Michigan 48359

Michael Chimko
248-765-3471
mchimko@rbeincorporated.com

Marley NC8405QAN1

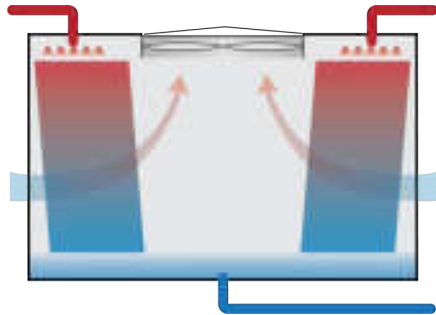
Marley NC Steel Crossflow Induced Draft Double-Flow Open Cooling Tower
Standard Low Sound (A)

<https://spxcolling.com/cooling-towers/marley-nc/>

Selection

Model	NC8405QAN1
Number of Cells	1
Capacity	110.0%
ASHRAE 90.1 Eff. (gpm/Hp)	81.3
Fill Type	MX75

This selection satisfies your design conditions.



Design Conditions

Fluid	Water
Total Flow (gpm)	1300
HWT (°F)	93.5
CWT (°F)	84.5
WBT (°F)	77.2
Total Heat Load (Btu/h)	5814700

Mechanical

	Per Cell	Total
Fan Type	Low Sound	
Fans	1	1
Fan Speed (rpm)	370	
Fan Motor Speed (rpm)	1800	
Fan Motor Nameplate (Hp)	20	20
Fan Motor Rated (BHp)	20	20
Fan Motor Required (BHp)*	14.91	14.91
Airflow (cfm)	113060	113060

* Fan Motor Required power assumes variable speed operation.

Weights / Dimensions (options NOT included, refer to drawings)

	Per Cell	Total
Width	19'-11"	19'-11"
Length	9'-10 ¾"	9'-10 ¾"
Height	11'-11 ¾"	11'-11 ¾"
Shipping Weight (lb)	8293	8293
Heaviest Section (lb)	8293	8293
Max Operating Weight (lb)	19090	19090
Clearance Solid Wall *	4'-4 ¼"	
Clearance 50% Open Wall *	3'	

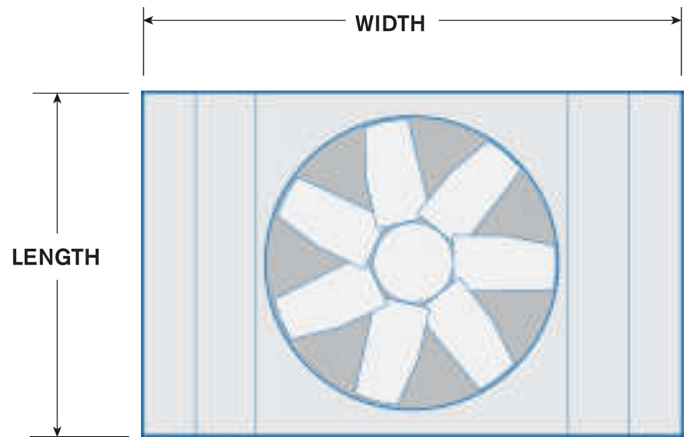
* Air inlet clearances with no performance impact; reduced if tower elevated

Other Data

Static Lift (ft)	12.3
Distribution Head Loss (ft)	NA
Evaporation, 50% RH (gpm)	12.1

Heater Sizing (to prevent collection basin freezing during shutdown)

kW/Cell	18	15	12	9	7.5	6
Ambient (°F)	-17.1	-6.95	3.22	13.4	18.5	23.6



Plan View

Job Information

Selected by

RBE, Incorporated
4822 Joslyn Road
Orion, Michigan 48359

Michael Chimko
248-765-3471
mchimko@rbeincorporate
d.com

Selection

Manufacturer	Marley	Fan Speed (90.3%)	334 rpm
Product	NC Steel	Fan Tip Speed (90.3%)	9452 fpm
Model	NC8405QAN1	Fan Motor Speed (90.3%)	1626 rpm
Cells	1	Fan Motor Capacity per cell	20 Hp
Fan	9 ft, 6 Blades , Low Sound	Fan Motor Output per cell	14 . 91 BHp
Fans per cell	1	Fan Motor Output total	14 . 91 BHp

Model Group Standard Low Sound (A)

Sound » CTI Certified

1 - Cell sound data for an unobstructed environment.

Sound Pressure Level (SPL) expressed in dB (re: 20x10⁶ Pa)

Sound Power Level (PWL) expressed in dB (re: 1x10¹² watts)



Distance	Location	Octave Band Center Frequency (Hz)								Overall dBA
		63	125	250	500	1000	2000	4000	8000	
5 ft	Air Inlet Face SPL	81	79	75	74	70	66	59	50	75
5 ft	Cased Face SPL	73	71	71	65	61	56	51	44	67
5 ft	Fan Discharge SPL	81	79	79	77	74	71	68	60	79
50 ft	Air Inlet Face SPL	70	65	59	61	56	52	45	39	62
50 ft	Cased Face SPL	68	63	60	57	54	48	41	31	59
50 ft	Fan Discharge SPL	69	67	68	64	59	56	52	44	66

Notes

- Sound levels are CTI Certified per the Cooling Technology Institute STD-204 Sound Certification Program.
- Published values have been tested by a CTI-licensed agency, using ANSI S1.4 Type 1 precision instrumentation, and thoroughly reviewed for accuracy by the CTI Sound Certification Administrator.
- Data developed in accordance with Cooling Technology Institute ATC-128 for Small Heat Rejection Equipment per 2025 revision. Sound power level Overall dBA has been adjusted per ATC-128 Appendix H directivity correction.

Other Resources

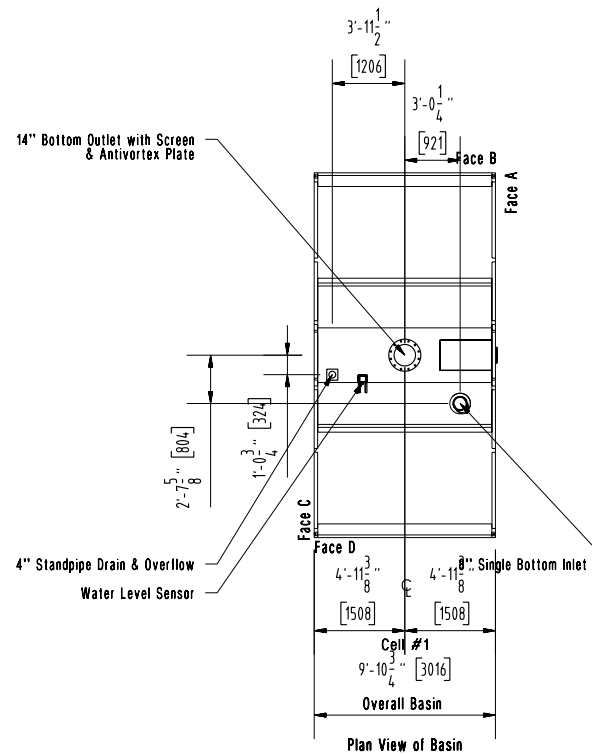
For additional information on sound-related topics please see:

Sound Power Impacts Per CTI Code Revision

<https://spxcooling.com/library/sound-power-impacts-per-cti-code-revision/>

Understanding and Evaluating Cooling Tower Sound Levels Among Manufacturers

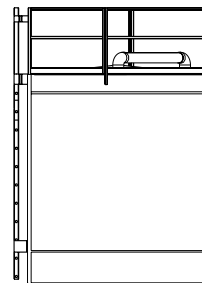
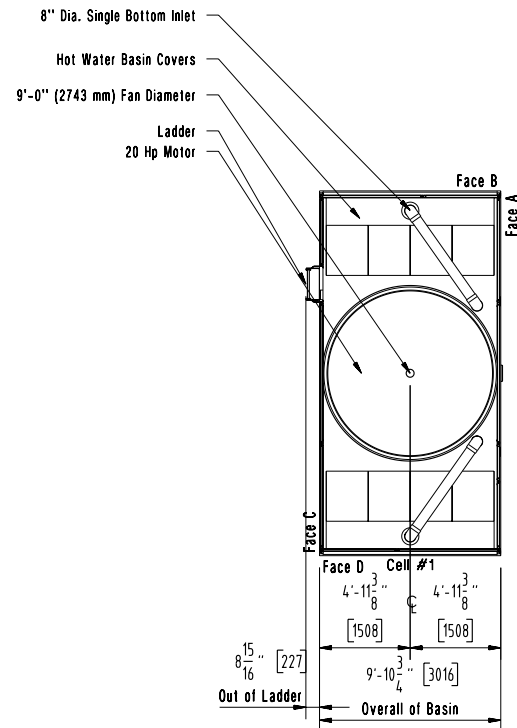
<https://spxcooling.com/library/understanding-and-evaluating-cooling-tower-sound-levels-among-manufacturers/>



NOTES

1. All piping supports are by others. Do NOT support outlet piping from the tower.
2. The collection basin piping accessories shown on this drawing are furnished by SPX CT. This includes a full faced gasket. Flat faced flange, fasteners and seal washers attachment to the outlet are supplied by others. The use of a flange other than a flat faced flange will damage the collection basin floor.
3. The diameter of the bottom outlet equalizer option is based on a SPX CT standard using 20 percent of a tower's outlet design flow and a head differential between two adjacent towers of 1" (25 mm).
4. The standpipe overflow is to be field installed by others.
5. The design operating loads shown in the table on the Grillage Details drawing are based upon the volume of water in the collection basin at shutdown. The shutdown water level has been sized to accommodate the maximum allowable flow rates. The actual operating load is variable, and is dependent upon the design flow rate per cell. Design loads are all based upon the recommended operating water level. Operating levels in excess of that recommended can result in loads exceeding values stated. Consult a SPX CT representative for greater detail on this or any other subject.
6. The accessories for inlet piping bypass option are provided by SPX CT. Piping supports are by others and are not to be supported by the tower.
7. The electric water level probes are cut to length and assembled with the probe holder, stilling chamber, and support in the factory. This sub-assembly is field installed by others to the factory installed support clip.
8. The electric water level relay box and it's wiring is field installed by others. Customer's installation should meet the requirements of the latest National Electrical Code as well as applicable local codes.
9. All standard electric water level control components are UL or CSA listed.
10. An electric water level with a single relay system is one solid state relay. A multi-relay system is two or more solid state relays connected to a terminal strip.
11. The tower assembly tolerance applicable to all dimensions is + or - 1/8" (3 mm). Consult suppliers of supporting structure for construction tolerances.
12. The units of measure are in IP (SI) units unless otherwise noted.

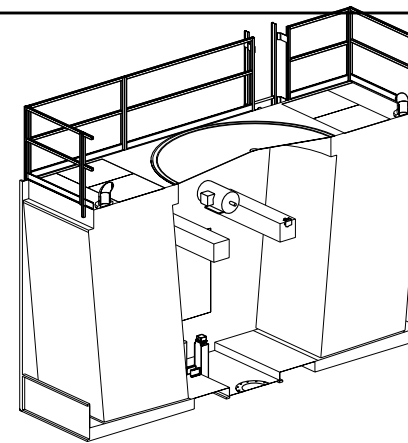
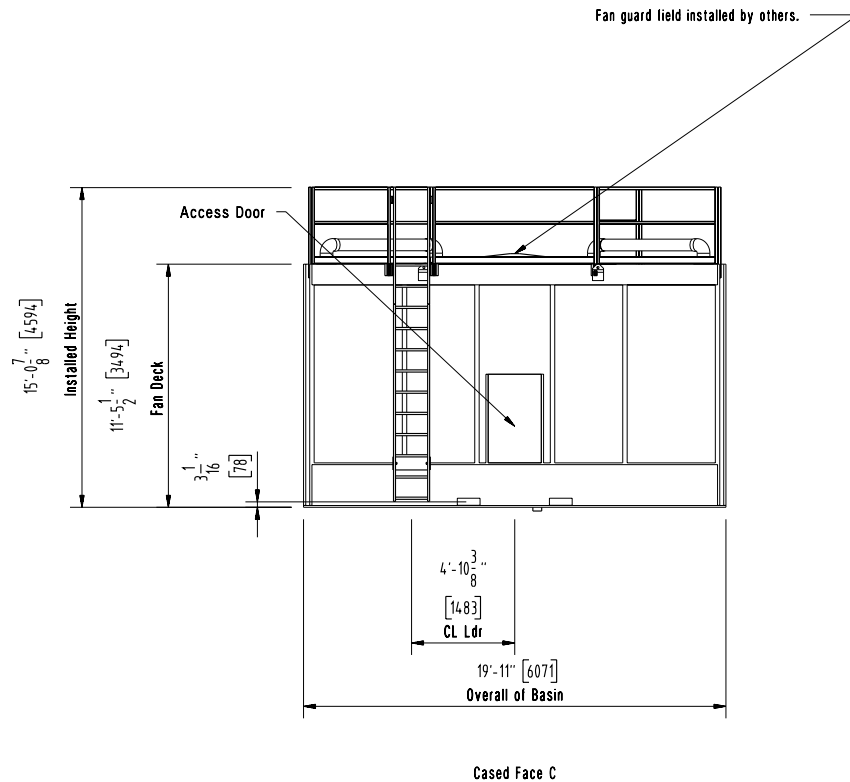
NC8405QAN1BGF – Piping Plan 2.0 Brighton Size Tower Replacement Brighton, MI, United States							MARLEY	
							ORDER	0
DRAWN BY	CHECKED	REV BY	REV CHK	DATE	APPROVED	DRAWING NUMBER	REV.	
MICHAEL CHIMKO.260326.110351271 V1	QTC			04/22/26	SYS	MC960858P		



NOTES

1. The tower assembly tolerance applicable to all dimensions is + or - 1/8" (3 mm). Consult suppliers of supporting structure for construction tolerances.
2. The units of measure are in IP (SI) units unless otherwise noted.
3. See Schematic Cased Elevation and Notes drawing for additional notes.

NC8405QAN1BGF - Schematic Plan and Louver Elevation 2.0 Brighton Size Tower Replacement Brighton, MI, United States								MARLEY	
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MICHAEL CHIMKO_260326_110351271 V1		QTC			04/22/26	SYS	MC960858S		



Interior View

NOTES

1. The fan motor must be locked out and inoperable before entering the tower. This warning has been placed on the access door.
2. The internal inlet piping, including flat face flange gaskets, which starts at the face of the inlet connection is provided by SPX CT. The piping external to the tower and its supports are provided by others. The external piping may not be supported from the tower.
3. The external inlet piping at the top of the tower is provided by SPX CT and installed in the field by others. This piping can be an obstacle to personnel on top of the tower. The installation detail drawings are included in the Literature Package shipped with the tower.
4. The internal vertical riser will apply an additional vertical operating load of 700 lb (318 kg) at the bottom inlet flange attachment to the external piping which is supported by others.
5. To ensure maximum thermal performance the cooling tower must be installed level and plumb. Both of the air inlet faces must have adequate air supply. If obstructions exist, consult your SPX CT representative.
6. Contact your SPX CT sales engineer for the required pump head for this inlet arrangement.
7. Hoisting clips are provided for ease of unloading and positioning. For overhead lifts or where additional safety precautions are prudent, add slings beneath the tower. See Hoisting Details drawing.
8. Flanged connections conform to Class 125 ANSI B16.1 specification. The bolt holes straddle the centerlines.
9. Construction of the ladder and guardrail: The guardrail is fabricated from galvanized structural tubing. Top rail, middle rail and posts are 1 1/2" (38 mm) square tube 1/8" (3 mm) thick. Toeboards are 12 gauge heavy mill galvanized steel. The ladder is aluminum 3" (76 mm) x 1 1/8" (29 mm) I-beam side rails and 1 1/4" (32 mm) serrated rungs.
10. The ladder and guardrail are field installed by others. The tower is shop modified to accept this option. The clips and hardware are provided by SPX CT for the field installation. The installation detail drawings are included in the literature package shipped with the tower.
11. Single inlet options (side or bottom inlet) - This piping can be an obstacle to personnel on top of the tower.
12. The tower assembly tolerance applicable to all dimensions is + or - 1/8" (3 mm). Consult suppliers of supporting structure for construction tolerances.
13. The units of measure are in IP (SI) units unless otherwise noted.

NC8405QAN1BGF – Schematic Cased Elevation and Notes
2.0 Brighton Size Tower Replacement
Brighton, MI, United States

MARLEY

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DRAWN BY
MICHAEL CHIMKO.260326.110351271 V1

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DATE
04/22/26

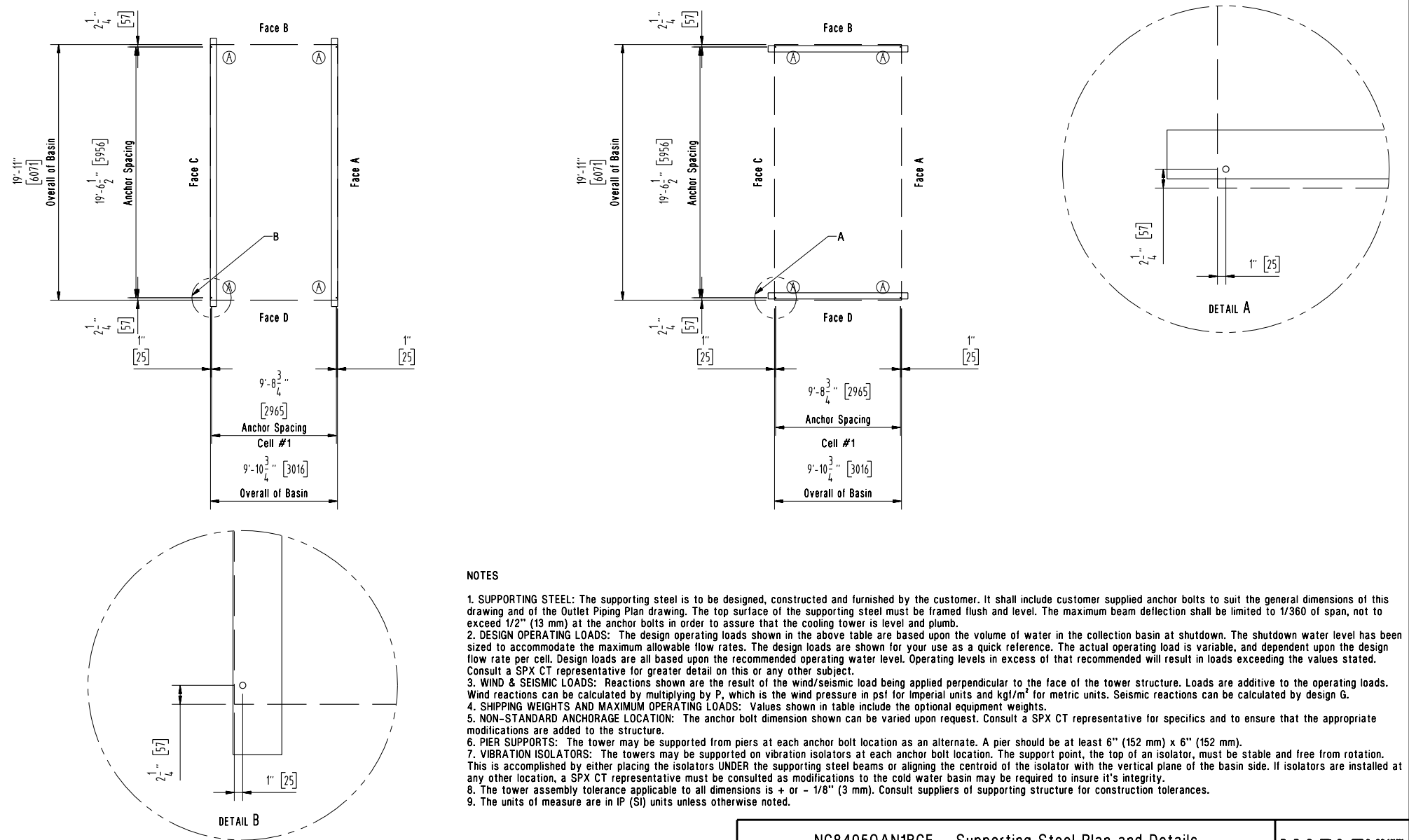
APPROVED
SYS

DRAWING NUMBER
MC960858M

REV.

Shipping Weight		Design Operating Loads			Wind Load		Seismic Load	
per Tower	per Cell	per Tower	per Cell	at A	Vert. Reaction at A	Horiz. Reaction at A	Vert. Reaction at A	Horiz. Reaction at A
10062 lb (4564 kg)	10062 lb (4564 kg)	20858 lb (9461 kg)	20858 lb (9461 kg)	5717 lb (2593 kg)	67.17 x P lb (6.24 x P kgf)	57.04 x P lb (5.3 x P kgf)	5587 x G lb (2534 x G kgf)	5296 x G lb (2402 x G kgf)

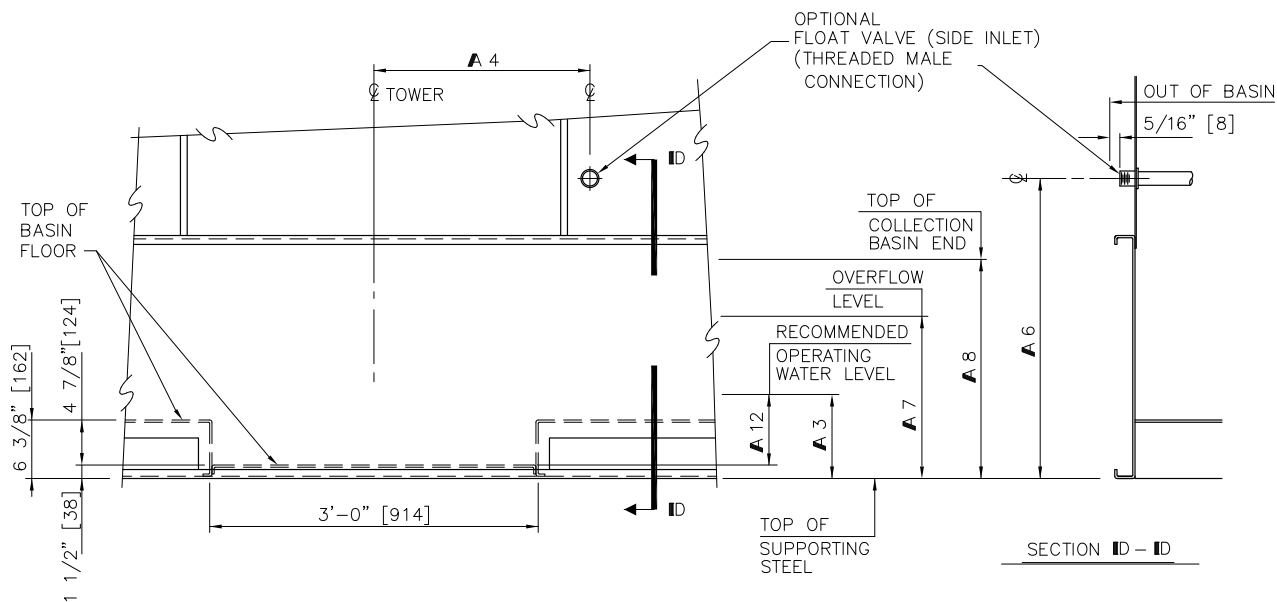
(4) 3/4" ASTM A307 or M20 Grade 4.6 anchor bolts are required per cell. These anchor bolts are capable of resisting 68 psf (3256 N/m²) wind load or 0.68 G seismic load applied to the tower. Wind and Seismic capacities are un-factored loads as determined by ASCE7-10/16/22. Determination of the site specific design wind and seismic loads are by others.



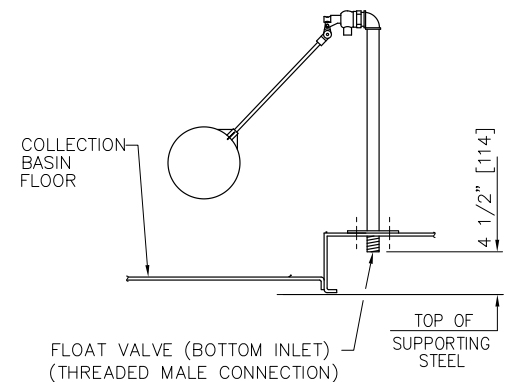
NOTES

- SUPPORTING STEEL:** The supporting steel is to be designed, constructed and furnished by the customer. It shall include customer supplied anchor bolts to suit the general dimensions of this drawing and of the Outlet Piping Plan drawing. The top surface of the supporting steel must be framed flush and level. The maximum beam deflection shall be limited to 1/360 of span, not to exceed 1/2" (13 mm) at the anchor bolts in order to assure that the cooling tower is level and plumb.
- DESIGN OPERATING LOADS:** The design operating loads shown in the above table are based upon the volume of water in the collection basin at shutdown. The shutdown water level has been sized to accommodate the maximum allowable flow rates. The design loads are shown for your use as a quick reference. The actual operating load is variable, and dependent upon the design flow rate per cell. Design loads are all based upon the recommended operating water level. Operating levels in excess of that recommended will result in loads exceeding the values stated. Consult a SPX CT representative for greater detail on this or any other subject.
- WIND & SEISMIC LOADS:** Reactions shown are the result of the wind/seismic load being applied perpendicular to the face of the tower structure. Loads are additive to the operating loads. Wind reactions can be calculated by multiplying by P, which is the wind pressure in psf for Imperial units and kgf/m² for metric units. Seismic reactions can be calculated by design G.
- SHIPPING WEIGHTS AND MAXIMUM OPERATING LOADS:** Values shown in table include the optional equipment weights.
- NON-STANDARD ANCHORAGE LOCATION:** The anchor bolt dimension shown can be varied upon request. Consult a SPX CT representative for specifics and to ensure that the appropriate modifications are added to the structure.
- PIER SUPPORTS:** The tower may be supported from piers at each anchor bolt location as an alternate. A pier should be at least 6" (152 mm) x 6" (152 mm).
- VIBRATION ISOLATORS:** The towers may be supported on vibration isolators at each anchor bolt location. The support point, the top of an isolator, must be stable and free from rotation. This is accomplished by either placing the isolators UNDER the supporting steel beams or aligning the centroid of the isolator with the vertical plane of the basin side. If isolators are installed at any other location, a SPX CT representative must be consulted as modifications to the cold water basin may be required to insure it's integrity.
- The tower assembly tolerance applicable to all dimensions is + or - 1/8" (3 mm). Consult suppliers of supporting structure for construction tolerances.
- The units of measure are in IP (SI) units unless otherwise noted.

NC8405QAN1BGF – Supporting Steel Plan and Details 2.0 Brighton Size Tower Replacement Brighton, MI, United States								MARLEY	
DRAWN BY MICHAEL CHIMKO.260326.110351271 V1								ORDER 0	
CHECKED QTC	REV BY	REV CHK	DATE 04/22/26	APPROVED SYS	DRAWING NUMBER MC960858G	REV.			



EXTERIOR CELL ELEVATION
(FACES "A" OR "C")



OPTIONAL FLOAT VALVE
(BOTTOM INLET)

SEE "OUTLET PIPING PLAN" DRAWING FOR FLOAT VALVE LOCATION, SIZE & TYPE

TOWER MODEL	DIMENSIONS						
	A3	A4	A6		A7	A8	A12
			1" DIAMETER [25]	2" DIAMETER [51]			
8401	8 1/2" [216]	1'-6 3/16" [462]	2'-3 11/16" [703]	2'-4 3/16" [716]	1'-3" [381]	1'-8" [508]	7" [178]
8402	8 1/2" [216]	1'-10 1/2" [572]	2'-3 11/16" [703]	2'-4 3/16" [716]	1'-3" [381]	1'-8" [508]	7" [178]
8403	8 1/2" [216]	2'-4 3/8" [721]	2'-6 7/8" [784]	2'-7 3/8" [797]	* 1'-5 1/4" [438]	1'-10 1/4" [565]	7" [178]
8405	8 1/2" [216]	1'-11 7/8" [606]	2'-6 7/8" [784]	2'-7 3/8" [797]	* 1'-5 1/4" [438]	1'-10 1/4" [565]	7" [178]
8407	9 1/2" [241]	2'-2 3/8" [670]	2'-6 7/8" [784]	2'-7 3/8" [797]	* 1'-5 1/4" [438]	1'-10 1/4" [565]	8" [203]
8409	9 1/2" [241]	2'-2 3/8" [670]	2'-6 7/8" [784]	2'-7 3/8" [797]	* 1'-5 1/4" [438]	1'-10 1/4" [565]	8" [203]
8410	9 1/2" [241]	1'-11 7/8" [606]	2'-9 15/16" [862]	2'-10 7/16" [875]	1'-7 3/8" [492]	2'-2 1/4" [667]	8" [203]
8411	9 1/2" [241]	2'-5 3/4" [755]	2'-9 15/16" [862]	2'-10 7/16" [875]	1'-9 1/4" [540]	2'-2 1/4" [667]	8" [203]
8412	9 1/2" [241]	2'-5 3/4" [755]	2'-9 15/16" [862]	2'-10 7/16" [875]	1'-9 1/4" [540]	2'-2 1/4" [667]	8" [203]
8413	9 1/2" [241]	2'-5 3/4" [755]	2'-9 15/16" [862]	2'-10 7/16" [875]	1'-11 1/4" [591]	2'-4 1/4" [718]	8" [203]
8414	9 1/2" [241]	2'-5 3/4" [755]	2'-9 15/16" [862]	2'-10 7/16" [875]	1'-11 1/4" [591]	2'-4 1/4" [718]	8" [203]

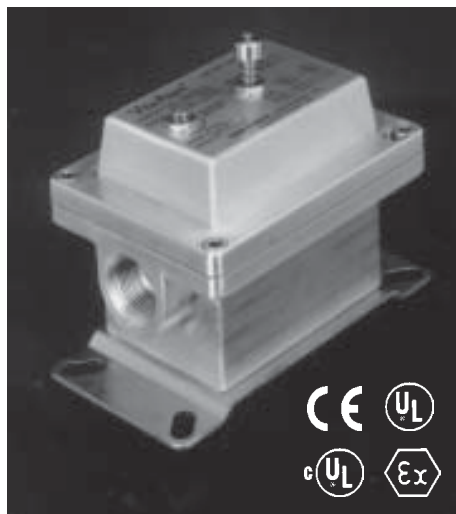
* 1'-6 1/2" [470] ON TOWERS WITH 12" OR 14" DIA. SIDE SUCTION OUTLET

GENERAL NOTES

- FOR FLOAT VALVE INLET DIAMETER SIZING INFORMATION, SEE DWG. 98-22969 [98-22970].
- TOLERANCE APPLICABLE TO DIMENSIONS SHOWN ARE DEPENDENT UPON FABRICATION, ASSEMBLY AND CONSTRUCTION TOLERANCES. FABRICATION TOLERANCE IS $\pm 1/16"$ [2] AND ASSEMBLY TOLERANCE IS $\pm 1/8"$ [3]. CONSULT SUPPLIERS OF SUPPORTING STRUCTURE FOR CONSTRUCTION TOLERANCE. ALL OF THE DIMENSIONS SHOWN ARE IN INCHES UNLESS OTHERWISE NOTED.
- ON THE 8401, IF A SUMP OR BOTTOM OUTLET OPTION IS SUPPLIED WITH AN ANTI-VORTEX PLATE, A FLOAT VALVE MAY NOT BE IN THE SAME CELL.
- ALL DIMENSIONS SHOWN INSIDE OF BRACKETS [] ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
- REFER TO SUPPORTING STEEL DRAWING FOR DESIGN OPERATING LOADS.
- THE RECOMMENDED WATER LEVEL IS FOR CELLS WITH OUTLETS. THE OPERATING WATER LEVEL IN ADJACENT CELLS MAY BE GREATER DEPENDING ON THE GPM, NUMBER OF OUTLETS AND FLUME ARRANGEMENT.

I-P [SI] UNITS

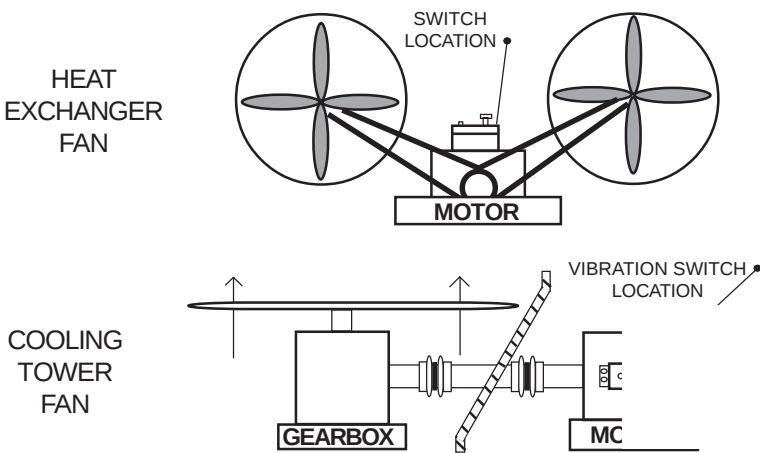
DRAWN BY NXEXXF	DRAWN DATE 08/01/2025	COLLECTION BASIN WATER LEVEL DETAILS 8401 THRU 8414 TOWERS						
CHECKED BY XDAI01	CHECKED DATE 08/01/2025							
RELEASED BY GABDULFATTAH	RELEASED DATE 08/03/2025	ECM NUMBER 504002	ORDER NUMBER -/-	PLOT 1=1	DOC TYPE/PART/VER ACM/000/03	DRAWING NUMBER Z0341072	REV. D	



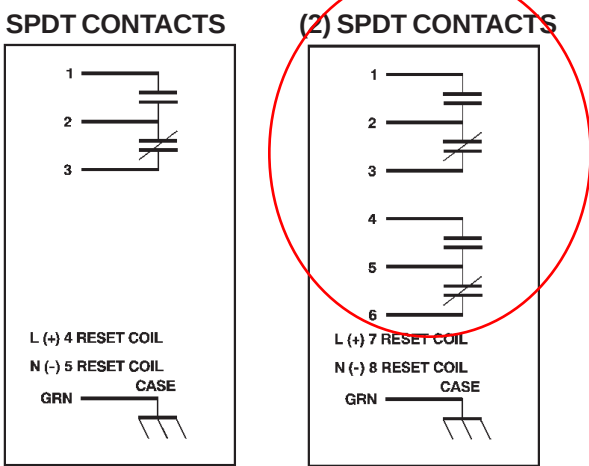
APPLICATION TIPS	BASIC MODEL NUMBER
-Lowest cost vibration protection; -Baseplates available to accomodate most previous Metrix or competitor's switch models for easy retrofit. -Watertight & optional hazardous area rated enclosure -Options for built-in start up trip delay and/or remote reset.	5550

The Model 5550 vibration switch is designed to meet all requirements for mechanical switches in a single, affordable package. This unit provides economical vibration protection for low to medium speed machinery. An inertia sensitive mechanism activates a snap-action switch with SPDT output contacts if the vibration exceeds an adjustable setpoint. The Model 5550 contacts can be used to activate an alarm or initiate equipment shutdown. The housing is weatherproof with an optional hazardous area rating. Electrical (remote) reset with start-up time delay and a second set of SPDT output contacts to accomodate DPDT needs (e.g. separate trip and trip light circuits) are available.

Typical Installation Diagrams



User Wiring Diagrams



Features

- Meets all requirements for mechanical switches in one package
- Weatherproof and optional hazard area rating
- Local and optional remote reset with startup delay
- SPDT or (2)SPDT switch output contacts

Applications

- Heat Exchanger Fans
- Cooling Tower Fans
- Recip Engines
- Recip Compressors

Application Note:

For an upgrade to velocity (ips or mm/s) monitoring or for dual limits (i.e. separate alarm and trip setpoints), see SW Series electronic switches.

Specifications

Function: Armature mechanism trips on high vibration and operates snap action switch(es).

Vibration Range: See How to Select "C"

Frequency Range: 0 to 3600 RPM

Set Point Adjust: 0 to 100% of range. External set point adjustment.

Reset: Local reset, plus optional remote reset electrical coil. See How to Select.

Start Delay: Applying reset coil voltage at start up holds mechanism from tripping for 20-30 seconds, after which the switch is automatically activated. Requires electric reset option (D10).

Temperature Limit: -40° to +70°C
(-40° to +158° F)

Enclosure: Cast Aluminum

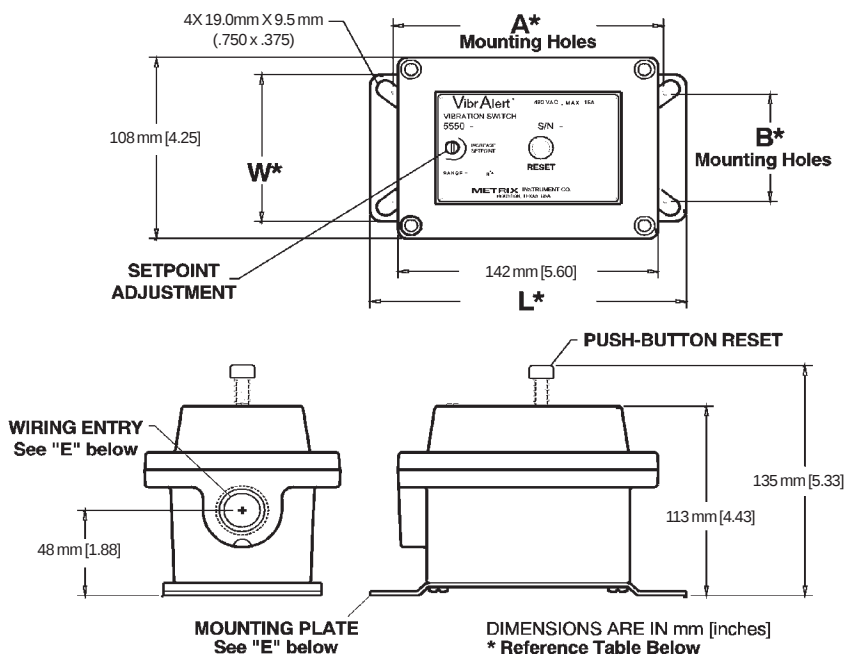
Environmental Rating: NEMA 4, IP 65 & CE mark

Switch Contact(s) Rating: 15 amps, 125, or 480 vac; 1/8 hp, 125 vac; 1/4 hp, 250 vac; 1/2 amp, 125 vdc; 1/4 amp, 250 vdc.

Hazard Rating: See How to Select "A"

Weight: 1.8 kg (4.0 lbs.)

Model 5550 Weight & Dimensions



How To Select...

Marley item #
C56936

MODEL 5550 - **A** **B** **C** **D** **E** **F**
5550 - **1** **2** **1** **0** **1** **0**

Standard
5550 - 011 - 01

A ☐ Hazard Area Rating

0= None

1= UL, cUL Explosion Proof
Class I, Groups C & D, Div 1
Class II, Groups E, F & G, Div 1

2= UL, cUL Explosion Proof
Class I, Groups B, C & D, Div 1
Class II, Groups E, F & G, Div 1

3= CENELEC Flameproof
EEx d IIB T6

4= CENELEC Flameproof
EEx d IIB+H₂ T6

B ☐ Contacts

1= SPDT

2= (2) SPDT (use for DPDT too)

C ☐ Full Scale Vibration Range

1= 5 g

2= 2 g

3= 10 g

D ☐ Reset Coil & Start Up Delay

0= None

1= 115 VAC

2= 230 VAC

3= 24 VDC

4= 115 VDC

E ☐ Wiring Entry/Mounting Plate
(See chart below for E)

1= 3/4" NPT/Metrix 5173 or 5175

2= 3/4" NPT/Metrix 5097; VS-2-EX; 366

3= 3/4" NPT/Metrix 5078; 365

4*= M20 x 1.5/Metrix 5097; VS-2-EX; 366

5*= Same as option 4 above w/ epoxy coated mounting plate

6*= M20 x 1.5 / Metrix 5173 or 5175

7= 3/4" NPT / PMC/BETA 440

8*= M20 x 1.5 / Metrix 5078; 365

*Note: When option A1 or A2 is specified, options E4, E5, E6 and E8 are not allowed.

F ☐ Environmental Rating

0= NEMA 4, IP 65, CE

1= NEMA 4X, IP 65, CE

If left blank, NEMA 4, IP 65, CE unit is provided.



Internal Mechanism

CHART FOR HOW TO SELECT "E"		(L)	(W)	(A)	(B)
E = 1, 6		165 mm [6.50]	83 mm [3.25]	141 mm [5.56]	59 mm [2.33]
E = 2, 4, 5		152 mm [6.00]	121 mm [4.75]	118 mm [4.63]	79 mm [3.12]
E = 3, 8		165 mm [6.50]	121 mm [4.75]	136 mm [5.37]	92 mm [3.62]
E = 7		114 mm [4.50]	127 mm [5.00]	71 mm [2.80]	108 mm [4.25]



No.:

Date: 16-DEC-2015

DATA SHEET

Three-phase induction motor - Squirrel cage rotor

Customer :
Product line : W22 Cooling Tower Motors: NEMA Premium - TEFC

Frame : 256T
Output : 20 HP
Frequency : 60 Hz
Poles : 4
Full load speed : 1765
Slip : 1.94 %
Voltage : 208-230/460 V
Rated current : 53.3-48.2/24.1 A
Locked rotor current : 313/157 A
Locked rotor current (I_L/I_n) : 6.5
No-load current : 20.0/10.0 A
Full load torque : 58.7 lb.ft
Locked rotor torque : 230 %
Breakdown torque : 270 %
Design : B
Insulation class : F
Temperature rise : 80 K
Locked rotor time : 15 s (hot)
Service factor : 1.25
Duty cycle : S1
Ambient temperature : -20°C - +40°C
Altitude : 1000
Degree of Protection : IP55
Approximate weight : 291 lb
Moment of inertia : 3.0963 sq.ft.lb
Noise level : 64 dB(A)

	D.E.	N.D.E.
Bearings	6309 2RS-C3	6209 2RS-C3
Regreasing interval	---	---
Grease amount	---	---

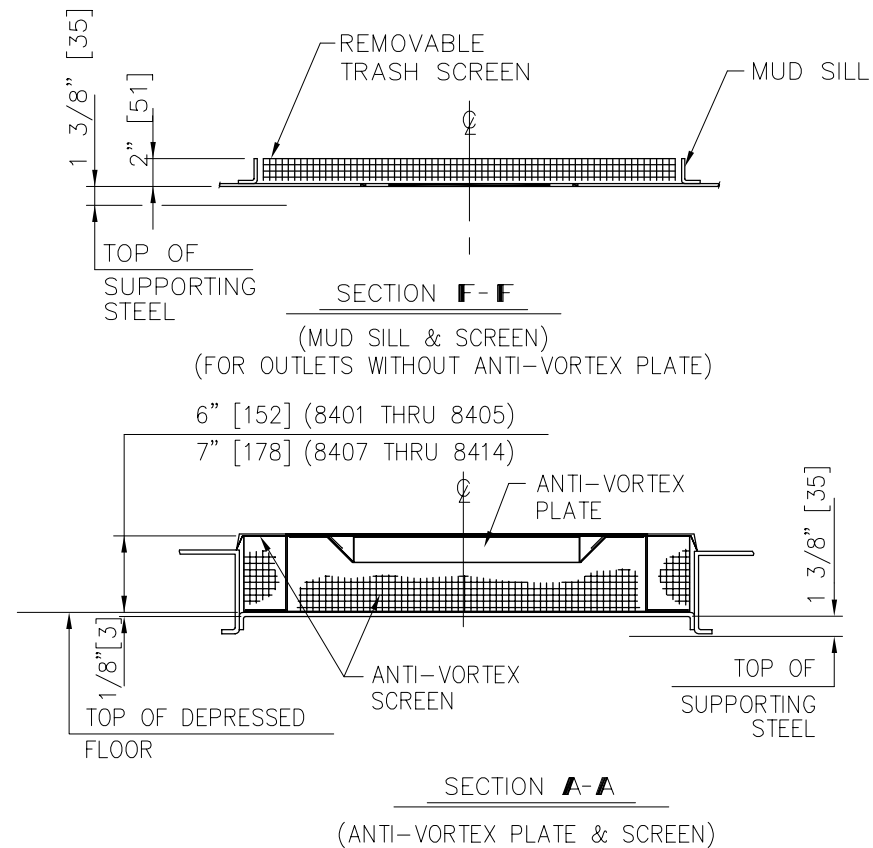
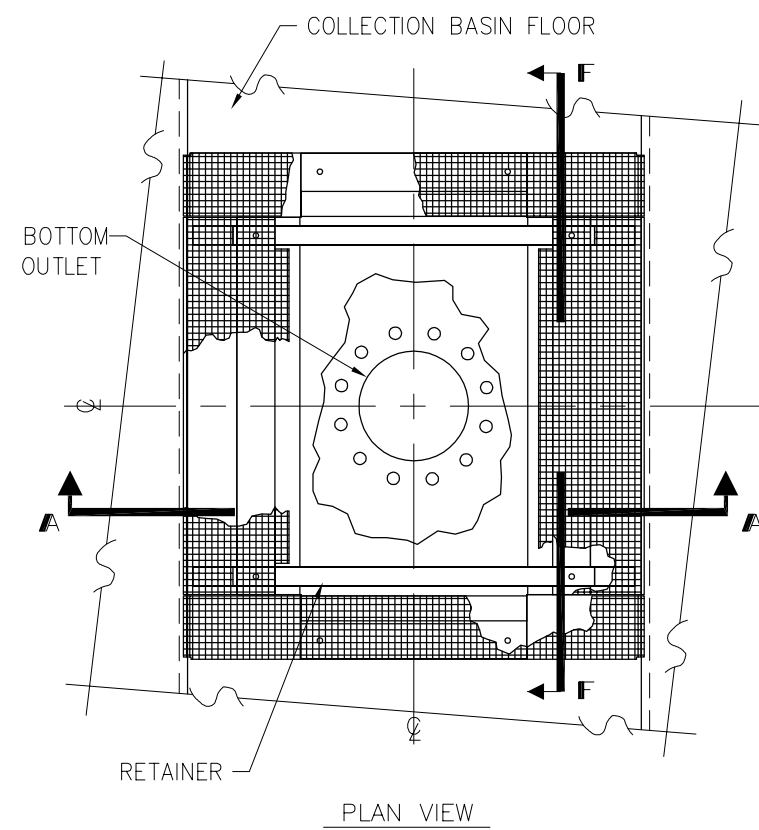
Load	Power factor	Efficiency (%)
100%	0.84	93.0
75%	0.79	92.4
50%	0.68	91.7

Notes:

Typical Motor Data Sheet

Performed by

Checked



BOTTOM OUTLET WITH ANTI-VORTEX PLATE AND SCREEN

BOTTOM OUTLET WITH MUD SILL AND SCREEN

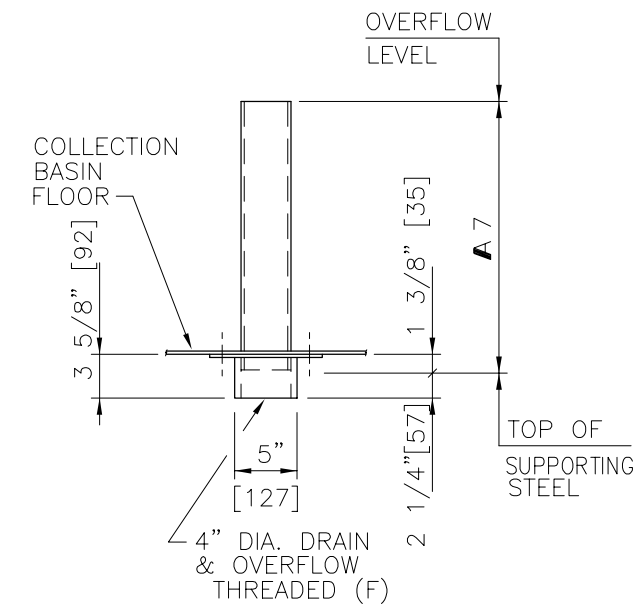
BOTTOM OUTLET WITHOUT SCREEN

BOTTOM OUTLET EQUALIZER

NOTE: ANTI-VORTEX PLATE AND SCREEN ARE NOT PROVIDED FOR BOTTOM OUTLET EQUALIZER.

SEE "OUTLET PIPING PLAN" DRAWING FOR OUTLET DIAMETER

TOWER MODEL	DIMENSIONS
	A7
8401	1'-3" [381]
8402	1'-3" [381]
8403	1'-5 1/4" [438]
8405	1'-5 1/4" [438]
8407	1'-5 1/4" [438]
8409	1'-5 1/4" [438]
8410	1'-7 3/8" [492]
8411	1'-9 1/4" [540]
8412	1'-9 1/4" [540]
8413	1'-11 1/4" [591]
8414	1'-11 1/4" [591]



STANDARD STANDPIPE

DRAIN & OVERFLOW

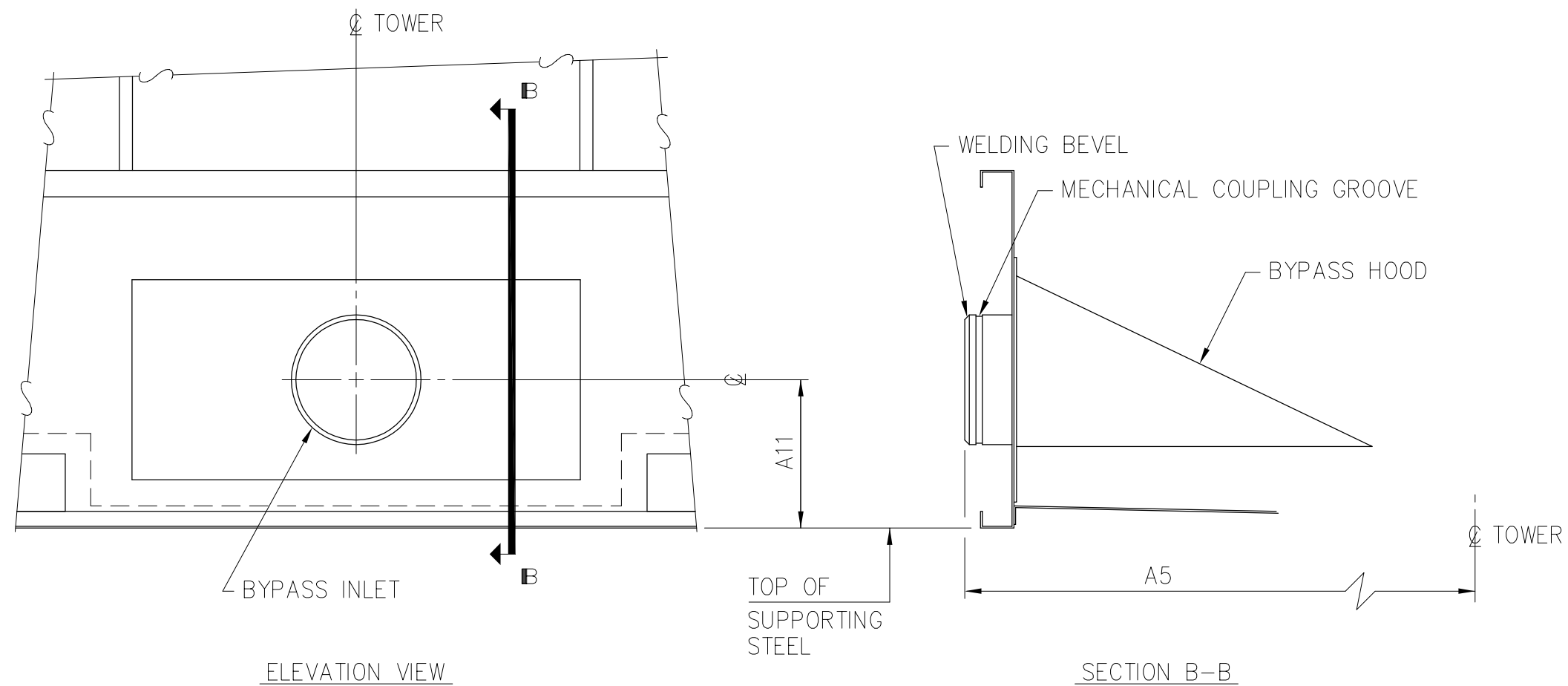
(TYPICAL ALL CELLS)

GENERAL NOTES

- ALL ACCESSORIES SHOWN ARE PROVIDED WITH THE COOLING TOWER.
- ALL PIPING SUPPORTS ARE BY OTHERS. DO NOT SUPPORT PIPING FROM TOWER.
- FLANGE DRILLING SHOWN CONFORMS TO CLASS 125 ANSI B16.1. BOLT HOLES WILL STRADDLE CENTERLINE OF AN OUTLET. THE OUTLET PIPING ATTACHMENT REQUIRES USE OF A FLAT FACED FLANGE, FASTENERS AND SEAL WASHERS(SUPPLIED BY OTHERS) AND A FULL FACED GASKET (PROVIDED WITH THE COOLING TOWER).
- TOLERANCE APPLICABLE TO DIMENSIONS SHOWN ARE DEPENDENT UPON FABRICATION, ASSEMBLY AND CONSTRUCTION TOLERANCES. FABRICATION TOLERANCE IS $\pm 1/16"$ [2] AND ASSEMBLY TOLERANCE IS $\pm 1/8"$ [3]. CONSULT SUPPLIERS OF SUPPORTING STRUCTURE FOR CONSTRUCTION TOLERANCE. ALL OF THE DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.
- ALL DIMENSIONS SHOWN INSIDE OF BRACKETS[] ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

I-P [SI] UNITS

DRAWN BY MA_STD	DRAWN DATE 01/22/2016	STANDARD BOTTOM OUTLET PIPING DETAILS 8401 THRU 8414 TOWERS					
CHECKED BY ABDULFATTAH	CHECKED DATE 01/26/2016						
RELEASED BY ABDULFATTAH	RELEASED DATE 01/27/2016	ECM NUMBER 20945	ORDER NUMBER —/—	FORMAT ANSI B	PLOT 1=1	DRAWING NUMBER ZO341074	REV. A



SEE "OUTLET PIPING PLAN" DRAWING FOR OUTLET DIAMETER

DIMENSIONS		
TOWER MODEL	A5	A11
8401	3'-4 1/8" [1019]	10" [254]
8402	4'-3 3/8" [1305]	10" [254]
8403	4'-3 3/8" [1305]	11 1/4" [286]
8405	5'-0 3/8" [1534]	11 1/4" [286]
8407	6'-0 3/8" [1838]	11 1/4" [286]
8409	7'-0 3/8" [2143]	11 1/4" [286]
8410	6'-0 3/8" [1838]	11 1/4" [286]
8411	6'-0 3/8" [1838]	11 1/4" [286]
8412	7'-0 3/8" [2143]	11 1/4" [286]
8413	6'-0 3/8" [1838]	11 1/4" [286]
8414	7'-0 3/8" [2143]	11 1/4" [286]

CASED FACE BYPASS

(FACE A OR C)

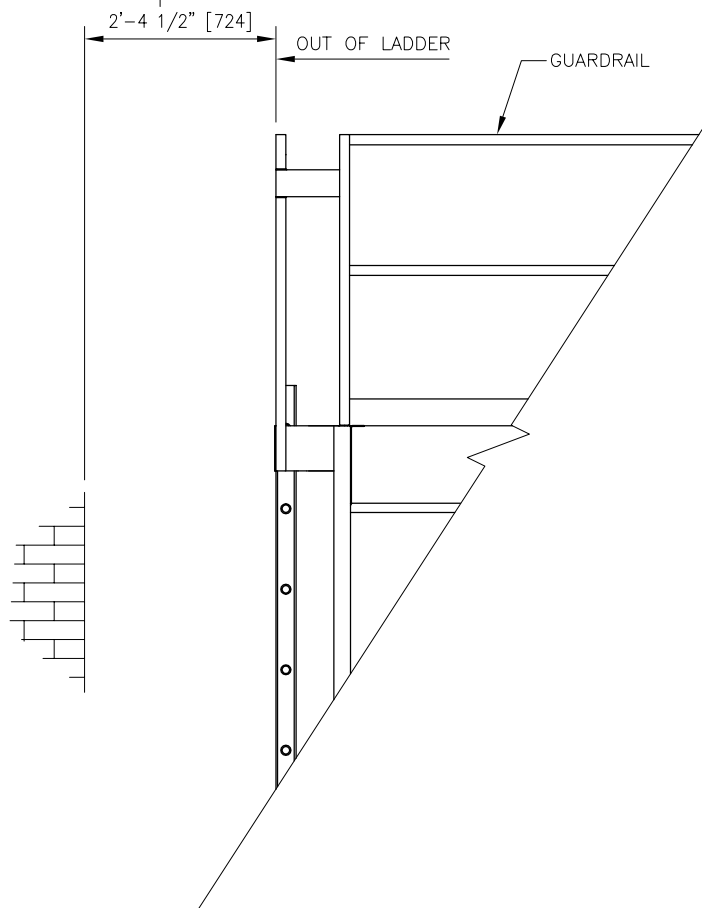
GENERAL NOTES

1. THE COLLECTION BASIN PIPING ACCESSORIES SHOWN ON THIS DRAWING ARE FURNISHED WITH THE COOLING TOWER.
2. ALL PIPING SUPPORTS ARE BY OTHERS. DO NOT SUPPORT PIPING FROM TOWER.
3. TOLERANCE APPLICABLE TO DIMENSIONS SHOWN ARE DEPENDANT UPON FABRICATION, ASSEMBLY, AND CONSTRUCTION TOLERANCES. FABRICATION TOLERANCE IS $\pm 1/16"$ [2] AND ASSEMBLY TOLERANCE IS $\pm 1/8"$ [3]. CONSULT SUPPLIERS OF SUPPORTING STRUCTURE FOR CONSTRUCTION TOLERANCE. ALL OF THE DIMENSIONS SHOWN ARE IN INCHES UNLESS OTHERWISE NOTED.
4. ALL DIMENSIONS SHOWN INSIDE OF BRACKETS[] ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

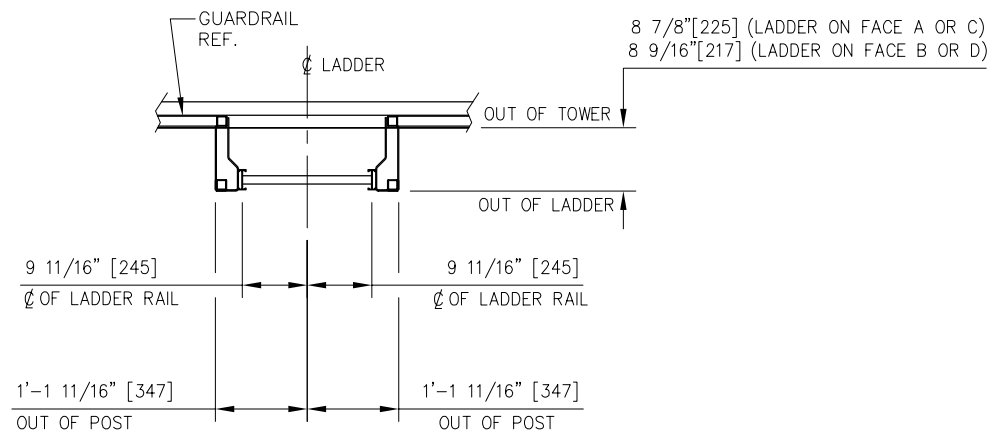
I-P [SI] UNITS

DRAWN BY MA_STD	DRAWN DATE 01/22/2016	CASED FACE BYPASS DETAILS 8401 THRU 8414 TOWERS					
CHECKED BY ABDULFATTAH	CHECKED DATE 01/25/2016						
RELEASED BY ABDULFATTAH	RELEASED DATE 01/27/2016	ECM NUMBER 20945	ORDER NUMBER —/—	FORMAT ANSI B	PLOT 1=1	DRAWING NUMBER Z0628242	REV. A

IMPORTANT! THIS IS THE MINIMUM CLEARANCE TO THE NEAREST OBJECT ON THE CLIMBING SIDE OF A 90° VERTICAL LADDER AS RECOMMENDED BY O.S.H.A. STANDARDS.



LADDER ELEVATION



LADDER DETAIL
(PLAN VIEW)

NOTES

1. THE COOLING TOWER FAN DECK IS NOT CONSIDERED AN ELEVATED WORKING PLATFORM SINCE NORMAL RECOMMENDED MAINTENANCE PROCEDURES ARE LESS THAN THE FREQUENCY OF MAN-HOURS THAT OSHA DEFINES FOR SUCH A PLATFORM, PER OSHA'S 1984 INTERPRETATION OF THEIR REGULATIONS. THIS OPTION AND OTHERS ARE AVAILABLE FOR THOSE CUSTOMERS WHO PREFER THE EXTRA DEGREE OF PROTECTION IT PROVIDES.
2. NORMAL TOWER MAINTENANCE DOES NOT REQUIRE PERSONNEL TO BE ON TOP OF THE TOWER. IF ACCESS TO TOP OF THE TOWER IS NEEDED, THEN LADDER AND HANDRAIL OPTION IS RECOMMENDED.
3. TOWER IS MODIFIED FOR LADDER AND HANDRAIL WITH ALL ATTACHING CLIPS AND HARDWARE PROVIDED WITH THE COOLING TOWER. LADDER AND HANDRAIL ARE ASSEMBLED AND INSTALLED IN THE FIELD BY OTHERS. INSTALLATION DETAILS ARE SHIPPED WITH THE TOWER.
4. TOLERANCE APPLICABLE TO DIMENSIONS SHOWN ARE DEPENDENT UPON FABRICATION, ASSEMBLY AND CONSTRUCTION TOLERANCES. FABRICATION TOLERANCE IS $\pm 1/16"$ [2] & ASSEMBLY TOLERANCE IS $\pm 1/8"$ [3]. CONSULT SUPPLIERS OF SUPPORTING STRUCTURE FOR CONSTRUCTION TOLERANCE. ALL OF THE DIMENSIONS SHOWN ARE IN INCHES UNLESS OTHERWISE NOTED.
5. PER O.S.H.A. STANDARDS, SAFETY CAGE IS RECOMMENDED WHEN THE DIFFERENCE IN ELEVATION BETWEEN TOWER FAN DECK AND GRADE EXCEEDS 20' [6096].
6. ALL DIMENSIONS SHOWN INSIDE OF BRACKETS [] ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

DRAWN BY QIAN_STD	DRAWN DATE 01/31/2018	LADDER DETAILS					DRAWING NUMBER Z0628306	REV. A
CHECKED BY Morby	CHECKED DATE 04/03/2018							
RELEASED BY QIAN_STD	RELEASED DATE 04/03/2018	ECM NUMBER 23431	ORDER NUMBER -/-	FORMAT ANSI A	PLOT 1=30			

EXTERNAL INLET PIPING PROVIDED WITH THE COOLING TOWER AND FIELD INSTALLED BY OTHERS

INLET CONNECTION LOCATED OPPOSITE MOTOR

OPTIONAL MOTOR OUTSIDE THE AIRSTREAM LOCATION

STANDARD MOTOR LOCATION

PLAN

SEE "OUTLET PIPING PLAN" DRAWING FOR DIMENSTIONAL LOCATION OF INTERNAL INLET PIPING.

NOTES

- 1. ALL INTERNAL INLET PIPING TO THE FACE OF THE INLET CONNECTION, INCLUDING RUBBER SLEEVE IS SUPPLIED WITH THE COOLING TOWER. EXTERNAL PIPING AND SUPPORTS BEYOND THE INLET CONNECTION IS BY OTHERS. EXTERNAL PIPING MAY NOT BE SUPPORTED FROM THE TOWER.
- 2. ASSEMBLY TOLERANCE IS $\pm 1/8"$ [3]. CONSULT SUPPLIERS OF SUPPORTING STRUCTURE FOR CONSTRUCTION TOLERANCE. ALL OF THE DIMENSIONS SHOWN ARE IN I-P (INCH-POUND) UNITS UNLESS OTHERWISE NOTED.
- 3. INLET CONNECTION CONFORMS TO CLASS 125 ANSI B16.1 SPECIFICATIONS. BOLT HOLES STRADDLE CENTERLINES. FLAT FACE FLANGE GASKETS ARE SUPPLIED WITH THE COOLING TOWER.
- 4. USE THIS DRAWING IN CONJUNCTION WITH THE SCHEMATIC DETAIL DRAWINGS.
- 5. MULTI-CELL TOWERS SHOULD INCLUDE PROVISIONS TO BALANCE FLOW BETWEEN CELLS.
- 6. CONTACT YOUR SALES ENGINEER FOR THE REQUIRED PUMP HEAD FOR THIS ARRANGEMENT.
- 7. ALL DIMENSIONS SHOWN INSIDE OF BRACKETS[] ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

6" [152] TO FACE OF INLET CONNECTION INCLUDING GASKET

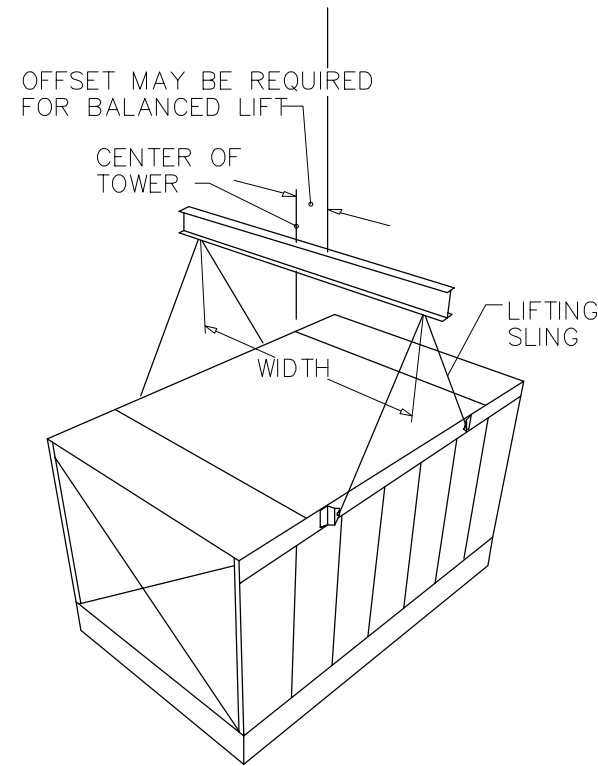
TOP OF SUPPORT

INLET

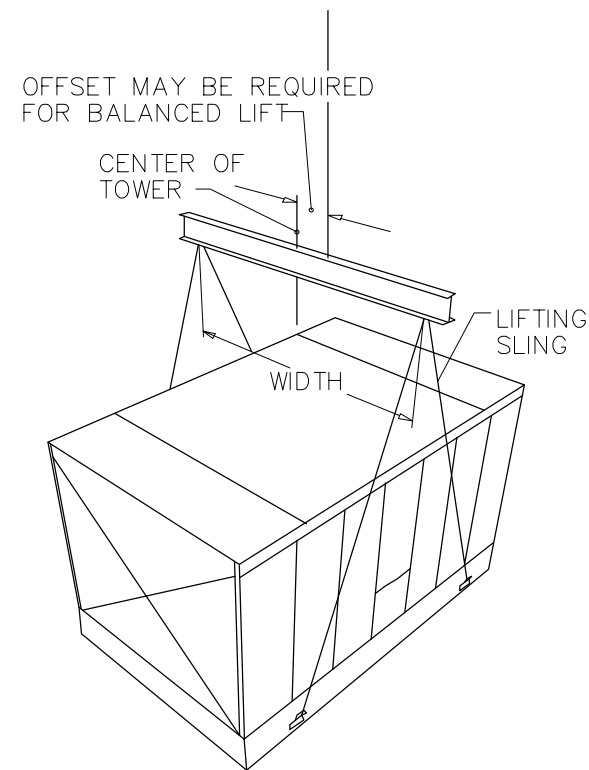
AIR INLET ELEVATION

I-P [SI] UNITS

DRAWN BY MADHU_STD		DRAWN DATE 02/28/2020		BOTTOM INLET CONNECTION DETAILS 8401 THRU 8414 TOWERS					
CHECKED BY ABDULFATTAH		CHECKED DATE 02/28/2020							
RELEASED BY ABDULFATTAH		RELEASED DATE 02/28/2020		ECM NUMBER 25607	ORDER NUMBER — / —	FORMAT ANSI B	PLOT 1=1	DRAWING NUMBER Z0628318	REV. B



TOWER UNITS WITH
HOISTING CLIPS AT THE TOP
8401 THRU 8407
TOP MODULE OF 8410, 8411, 8412, 8413 & 8414



TOWER UNITS WITH
HOISTING CLIPS AT THE BOTTOM
8409
BOTTOM MODULE OF 8410, 8411, 8412, 8413 & 8414

TOWER MODEL	TOWER WIDTH	TOWER LENGTH	TOWER HEIGHT	MINIMUM SLING LENGTH	HOIST CLIP SPACING
8401	6'-7" [2007]	12'-10" [3912]	10'-2 1/2" [3105]	5'-6" [1676]	5'-10" [1778]
8402	8'-5" [2565]	14'-2" [4318]	10'-3" [3124]	6'-0" [1829]	6'-6" [1981]
8403	8'-5" [2565]	18'-2" [5537]	11'-11 1/4" [3639]	8'-0" [2438]	9'-0" [2743]
8405	9'-10 3/4" [3016]	19'-11" [6071]	11'-11 1/4" [3639]	8'-0" [2438]	8'-10 1/2" [2705]
8407	11'-10 3/4" [3626]	21'-0" [6401]	11'-11 1/4" [3639]	8'-6" [2591]	9'-4" [2845]
8409	13'-10 3/4" [4235]	22'-5" [6833]	11'-11 1/4" [3639]	17'-6" [5334]	18'-8 1/2" [5702]
8410 TOP	11'-10 3/4" [3626]	22'-5" [6833]	9'-3 1/4" [2826]	9'-0" [2743]	10'-2" [3099]
8410 BOTTOM	11'-10 3/4" [3626]	22'-5" [6833]	6'-8 3/4" [2048]	16'-6" [5029]	18'-8 1/2" [5702]
8411 TOP	11'-10 3/4" [3626]	22'-5" [6833]	9'-3 1/2" [2832]	9'-0" [2743]	10'-2" [3099]
8411 BOTTOM	11'-10 3/4" [3626]	22'-5" [6833]	9'-3" [2819]	16'-6" [5029]	18'-8 1/2" [5702]
8412 TOP	13'-10 3/4" [4235]	22'-5" [6833]	9'-3 1/2" [2832]	9'-0" [2743]	10'-2" [3099]
8412 BOTTOM	13'-10 3/4" [4235]	22'-5" [6833]	9'-3" [2819]	16'-6" [5029]	18'-8 1/2" [5702]
8413 TOP	11'-10 3/4" [3626]	22'-5" [6833]	11'-2 1/4" [3410]	9'-0" [2743]	10'-2" [3099]
8413 BOTTOM	11'-10 3/4" [3626]	22'-5" [6833]	11'-0" [3353]	16'-6" [5029]	18'-8 1/2" [5702]
8414 TOP	13'-10 3/4" [4235]	22'-5" [6833]	11'-2 1/4" [3410]	9'-0" [2743]	10'-2" [3099]
8414 BOTTOM	13'-10 3/4" [4235]	22'-5" [6833]	11'-0" [3353]	16'-6" [5029]	18'-8 1/2" [5702]

NOTES:

1. ALL HOISTING CLIP HOLES ARE 1 1/4" [32].
2. OVERALL LENGTH OF SHACKLE PIN SHOULD NOT EXCEED 5 1/4" [133].
3. FOR OVERHEAD LIFTS OR WHERE ADDITIONAL SAFETY IS REQUIRED, ADD SLINGS BENEATH THE TOWER UNIT.
4. ALL DIMENSIONS SHOWN INSIDE OF BRACKETS[] ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
5. REFERENCE SUPPORT STEEL DRAWINGS FOR WEIGHT OF HEAVIEST LIFT.

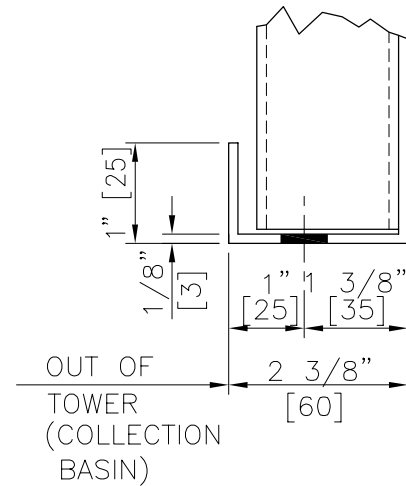
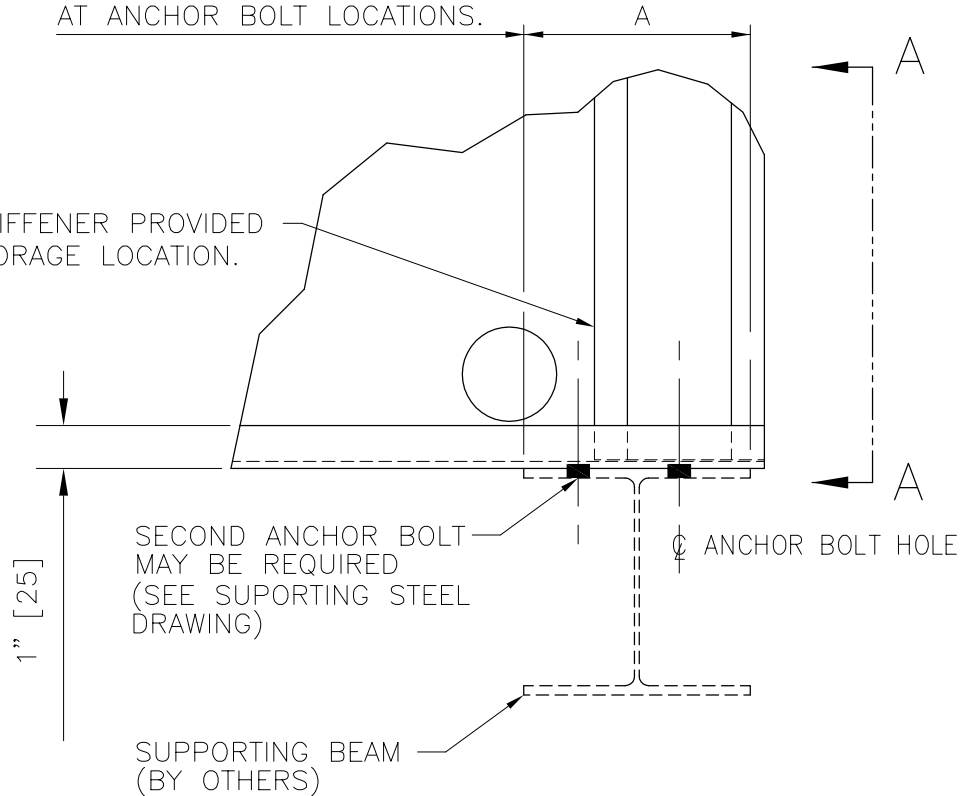
I-P [SI] Units

DRAWN BY MEIERAREND_S		DRAWN DATE 11/05/2018		HOISTING DETAILS 8401 THRU 8414 TOWERS					
CHECKED BY ABDULFATTAH		CHECKED DATE 11/30/2018							
RELEASED BY ABDULFATTAH		RELEASED DATE 11/30/2018		ECM NUMBER 23975	ORDER NUMBER -/-	FORMAT ANSI B	PLOT 1=1	DRAWING NUMBER Z0628615	REV. B

TOWER MODEL	A
8401 THRU 8414	6" [152]
8422	8" [203]

MINIMUM BEARING WIDTH
MAY BE PROVIDED BY BEAM
FLANGE OR BEARING PLATE
AT ANCHOR BOLT LOCATIONS.

BASIN STIFFENER PROVIDED
AT ANCHORAGE LOCATION.



SECTION A-A
(LOUVER FACE B OR D)

GENERAL NOTES

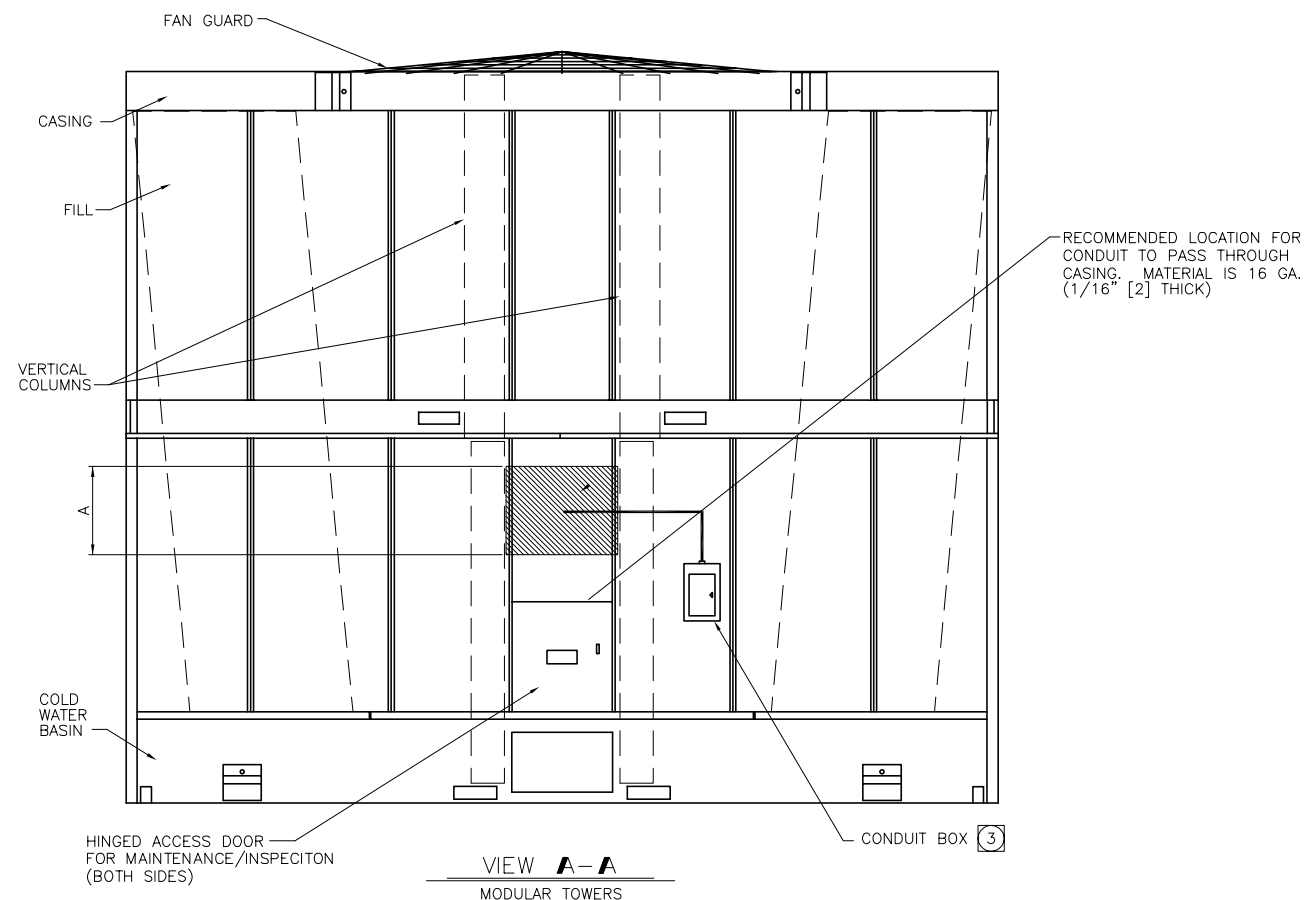
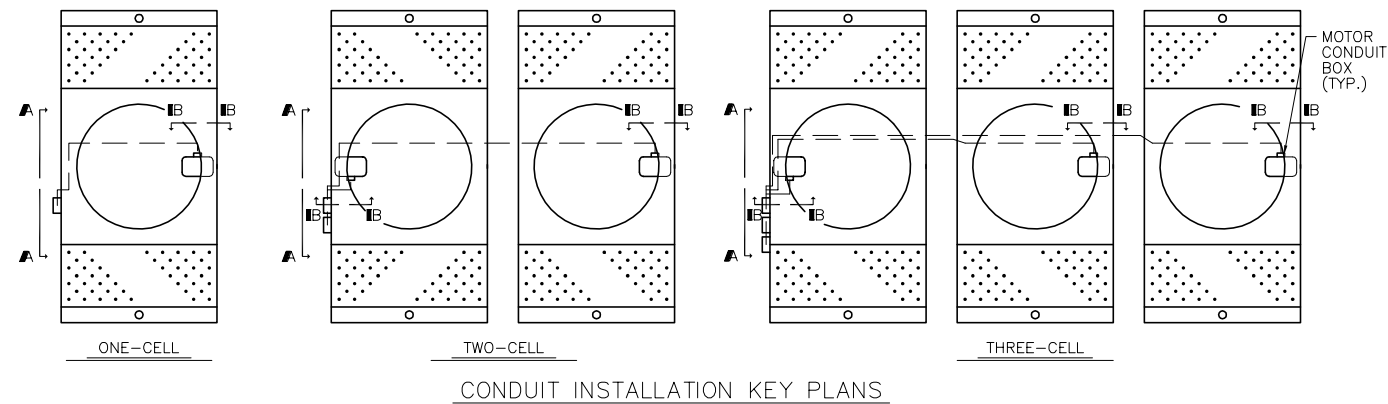
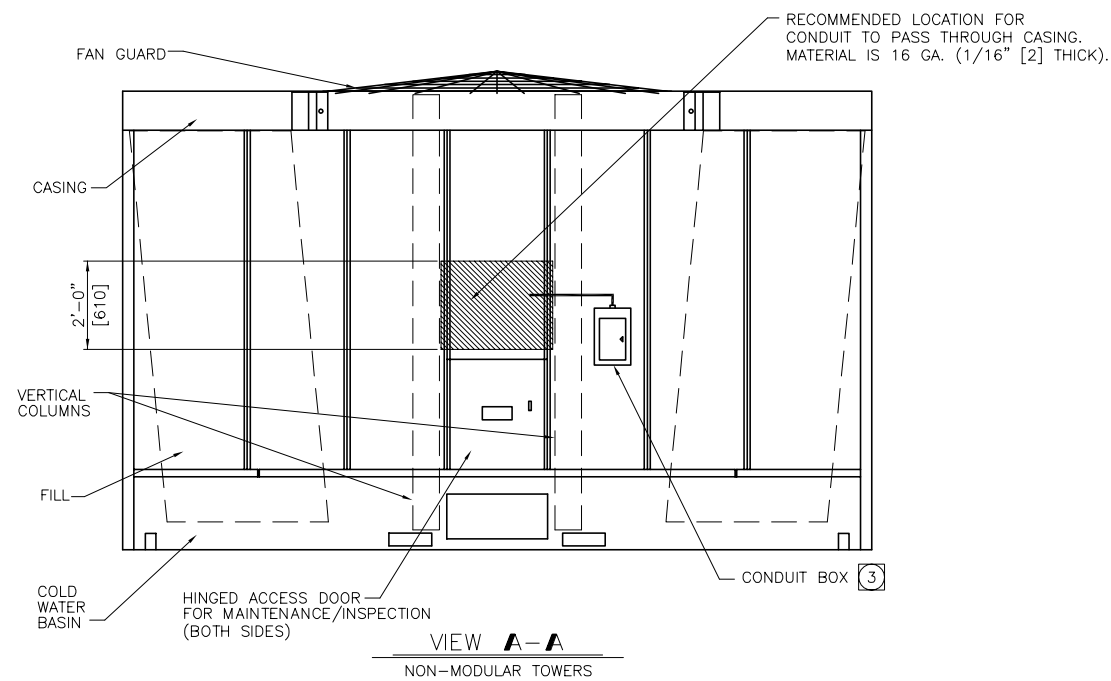
1. TOLERANCE APPLICABLE TO DIMENSIONS SHOWN ARE DEPENDENT UPON FABRICATION, ASSEMBLY AND CONSTRUCTION TOLERANCES. FABRICATION TOLERANCE IS $\pm 1/16$ " [2] & ASSEMBLY TOLERANCE IS $\pm 1/8$ " [3]. CONSULT SUPPLIERS OF SUPPORTING STRUCTURE FOR CONSTRUCTION TOLERANCE. ALL OF THE DIMENSIONS SHOWN ARE IN INCHES UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS SHOWN INSIDE OF BRACKETS [] ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

I-P [SI] UNITS

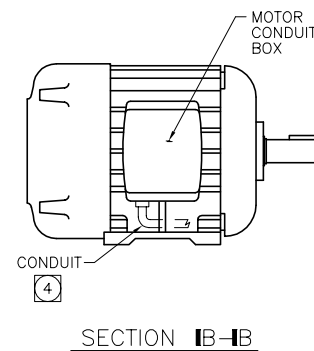
SUPPORT BEARING DETAILS

(PARTIAL CASED FACE A OR C ELEVATION)

DRAWN BY SCHENK_STD	DRAWN DATE 07/20/2016	SUPPORT BEARING DETAILS NC8401 THRU NC8422 TOWERS					
CHECKED BY	CHECKED DATE						
RELEASED BY JENKINS_STD	RELEASED DATE 07/28/2016	ECM NUMBER 21681	ORDER NUMBER -/-	FORMAT ANSI A	PLOT 1=1	DRAWING NUMBER Z0628641	REV. A



TOWER MODEL	DIMENSIONS
	A
8410	3 5/8" [92]
8411	2' [610]
8412	2' [610]
8413	2' [610]
8414	2' [610]



GENERAL NOTES

- ALL CONDUIT, CONNECTIONS, SUPPORTING CLIPS, HANGERS, AND SAFETY SWITCHES ARE SUPPLIED BY OTHERS.
- ALL WIRING MUST CONFORM TO LOCAL AND NATIONAL CODES.
- NON-FUSED SAFETY DISCONNECT SWITCHES ARE RECOMMENDED; THREE-POLE FOR SINGLE SPEED MOTORS, SIX-POLE FOR TWO SPEED MOTORS, WITH VOLTAGE AND HORSEPOWER RATED FOR FAN MOTOR, LOCATED IN A NEMA 3 OR 4 WEATHERPROOF ENCLOSURE. ATTACH ENCLOSURE TO EXTERIOR OF TOWER USING VERTICAL FLANGES OF CASING. CONDUIT BOX MUST BE LOCATED AT A LOWER ELEVATION THAN MOTOR.
- CONDUIT SHOULD BE SUPPORTED APPROXIMATELY EVERY TEN FEET [3048], EXCEPT WHERE NOTED BELOW. IMPORTANT! CONDUIT MUST BE PITCHED DOWN TO ALLOW CONDENSATION TO DRAIN AWAY FROM MOTOR AND OUT OF CONDUIT. CONDUIT MUST BE WATERTIGHT. CONDUIT SHOULD BE RIGID EXCEPT AS NOTED BELOW.
 - APPROXIMATELY 2 FEET [610] OF FLEXIBLE STEEL CONDUIT (SEALTIGHT OR EQUIVALENT) SHOULD BE USED AT THE MOTOR CONDUIT BOX.
 - A CONDUIT SUPPORT SHOULD BE LOCATED WITHIN 3 FEET [914] OF ALL CONDUIT BOXES.
 - IF MOISTURE CANNOT DRAIN OUT OF MOTOR CONDUIT BOX, A SMALL (3/16" [5] - 1/4" [6]) DRAIN HOLE MUST BE DRILLED IN BOTTOM OF CONDUIT BOX.
- CONDUIT MAY BE SUPPORTED ON THE SIDE OF THE INTERIOR BOX BEAMS OR SUSPENDED FROM BOTTOM OF THE BEAM. SEE KEY PLANS AND VIEW A-A FOR LOCATION AT WHICH TO RUN CONDUIT THROUGH TOWER CASING.
- HOLE(S) CUT IN CASING FOR CONDUIT SHOULD NOT BE FLAME CUT, AND SHOULD NOT BE LARGER THAN NECESSARY TO ACCOMMODATE CONDUIT FITTINGS. SEAL HOLES WITH WATERPROOF CAULKING.
- TOWERS WITH NO LADDER AND HANDRAIL:
 - ONE CELL TOWERS MAY HAVE DISCONNECT SWITCH LOCATED ON MOTOR FACE OF TOWER.
 - MULTI-CELL TOWERS SHOULD HAVE DISCONNECT SWITCHES LOCATED TOGETHER. SEPARATE CONDUIT IS REQUIRED FOR EACH MOTOR. ROUTE CONDUIT THROUGH CASING AND ACROSS ADJACENT CELLS AS SHOWN ON INSTALLATION KEY PLAN.
- TOWERS WITH LADDER AND HANDRAIL:

DISCONNECT SWITCHES SHOULD BE LOCATED ON LADDER SIDE OF TOWER FOR EASE OF ACCESSIBILITY. SEPARATE CONDUIT IS REQUIRED FOR EACH MOTOR. ROUTE CONDUIT THROUGH CASING AND ACROSS ADJACENT CELLS AS SHOWN IN INSTALLATION KEY PLAN.
- ALL OF THE DIMENSIONS SHOWN INSIDE BRACKETS [] ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

I-P [SI] UNITS

DRAWN BY MA_STD	DRAWN DATE 01/26/2016	RECOMMENDED CONDUIT INSTALLATION					
CHECKED BY ABDULFATTAH	CHECKED DATE 01/26/2016						
RELEASED BY ABDULFATTAH	RELEASED DATE 01/27/2016	ECM NUMBER 20945	ORDER NUMBER -/-	FORMAT ANSI B	PLOT 1=1	DRAWING NUMBER Z0628795	REV. A

About Your Galvanized Steel Cooling Tower

Your new cooling tower or fluid cooler is constructed of sheet steel casing and structural components protected with "heavy mill galvanizing" (HMG). This protective zinc coating is fused to the sheet steel at the steel mill in a continuous hot-dip process. The zinc coating in Marley® towers conforms to the industry standard coating class G-235, which means the weight of zinc coating averages 2.35 ounces per square foot of steel sheet. All of the HMG steel sheet used in our towers is treated after galvanizing with a chromium-based solution to initially passivate the zinc coating. This important step helps prevent the formation of "white rust" (aka "wet storage stain") on the surface of galvanized steel sheet during storage, fabrication, and transportation.

Neutral pH Water Treatment at Tower Start-Up Necessary

HMG steel provides excellent corrosion resistance in cooling towers and many other applications exposed to natural outdoor environments. Zinc protects the base steel sheet by galvanic action. **To get the best life from your galvanized tower, proper water treatment is required.** Initially, the zinc coating must be allowed to develop a natural nonporous surface of "basic zinc carbonate." This natural chemical barrier prevents further rapid corrosion of the zinc coating from the environment as well as normal cooling tower operation. **The basic zinc carbonate barrier will form on galvanized surfaces within eight weeks of tower operation with water of neutral pH (6.5 - 8.0), calcium hardness of 100 - 300 ppm (as CaCO_3), and alkalinity of 100 - 300 ppm (as CaCO_3).** It is very important for the protective basic zinc carbonate barrier to form on galvanized tower surfaces to resist further corrosion. The initial operation of your cooling tower will *significantly* affect its service life.

What is "White Rust" – Can it Harm My Cooling Tower?

Based on our experience, a very small percentage of galvanized towers incur a damaging type of corrosion which is commonly called "*white rust*." White rust appears as a white, waxy

or fluffy adherent deposit on surfaces. If it occurs unchecked, the galvanized steel coating will continue to corrode, eventually leading to an early failure of the galvanization in your cooling tower. White rust is actually another form of zinc carbonate which has a different porous structure from the protective "basic zinc carbonate barrier" that naturally protects galvanized surfaces. **White rust can form if your new cooling tower is operated with water of pH greater than 8.0 for an extended time period before the basic zinc carbonate barrier can form.** There is also evidence that some types of film-forming inhibitor water treatments can promote the formation of white rust if used excessively. If start-up water treatment of the cooling system does not allow for initial passivation of your tower's galvanized surfaces, you may face expensive corrective repairs and water treatment to cure the resulting white rust.

Why is a Knowledgeable Water Treater Important for My Cooling Tower?

The best cure for white rust is an ounce of prevention when you begin operating your tower. Natural passivation can be achieved by initially operating your cooling tower with water having a pH between 6.5 and 8.0, and calcium hardness and alkalinity values between 100 - 300 ppm for at least 8 weeks. An alternative to natural passivation is specialized chemical treatment. Many water treaters offer corrosion inhibitors specifically for galvanized steel. These inhibitors form a protective film, which must be maintained with a consistent inhibitor residual in the circulating water. **In the event emergency operations are required and it is not possible to wait during the passivation period, chemical corrosion inhibitors are recommended on cooling towers or evaporative condensers until natural passivation can occur.** Consult with your water treatment provider and ask about his program for initial system operation and passivation of your galvanized steel cooling tower. Be certain your water treatment company is recommending a program suitable for your galvanized steel cooling tower before start-up!

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In the interest of technological progress, all products are subject to design and/or material change without notice.



CERTIFICATE OF COMPLIANCE

CTI SOUND CERTIFICATION



This document certifies all published sound ratings for

MARLEY® NC CLASS COOLING TOWERS

manufactured by SPX Cooling Tech, LLC have been independently tested and certified by the
Cooling Technology Institute (CTI) to comply with the global standard

CTI STD-204RS:2025

Sound Rating of Evaporative and Air-cooled Heat Rejection Equipment

CTI STD-204 certification ensures manufacturers' published sound levels are measured and reported using standardized methods, providing Specifiers, Purchasers, and Operators of heat rejection equipment assurance of consistent and accurate acoustic data across certified products.



Manufacturer: SPX Cooling Tech, LLC (Marley)
Product Range: NC Class
CTI Certification Validation Number: S14A-26R00
Date: January 19, 2026
www.cti.org/certification-directory