



**FULL SIZED LEDGIBLE REPORT  
IS REQUIRED TO BE PROVIDED  
BY THE PERMITTEE ON SITE  
FOR ALL INSPECTIONS**



### CoolSpec™ Version 7.3.25

Product Data: 8/28/2023 (Current)

10/3/2023 4:42:51 PM

#### Job Information

#### Selected by

Custom Mechanical Solutions  
12507 Bel-Red Road  
Bellevue, WA 98005 US

Eric Pruehs  
Tel 4254445780  
eric@cmswa.com

#### Cooling Tower Definition

Manufacturer	Marley	Fan Motor Speed	1800 rpm
Product	NC Steel	Required Fan Motor Output per cell *	45.63 BHp
Model	NC8407UAN1	Required Fan Motor Output total *	45.63 BHp
Cells	1	Fan Motor Capacity per cell	50.00 Hp
CTI Certified	Yes	Fan Motor Output per cell	50.00 BHp
Fan	10 ft, 6 Blades, Low Sound	Fan Motor Output total	50.00 BHp
Fan Speed	389 rpm, 12221 fpm	Air Flow per cell	178600 cfm
Fans per cell	1	Air Flow total	178600 cfm
Fill Type	MX75	Static Lift	12 ft
		Distribution Head Loss	0 ft
		ASHRAE 90.1 Performance	48.2 gpm/Hp

Model Group Standard Low Sound (A)

\* Required Fan Motor Output assumes VFD operation

#### Conditions

Tower Water Flow	1725 gpm	Air Density In	0.07298 lb/ft <sup>3</sup>
Hot Water Temperature	81.28 °F	Air Density Out	0.07306 lb/ft <sup>3</sup>
Range	7.68 °F	Humidity Ratio In	0.01101
Cold Water Temperature	73.60 °F	Humidity Ratio Out	0.01999
Approach	6.80 °F	Wet-Bulb Temp. Out	76.76 °F
Wet-Bulb Temperature	66.80 °F	Estimated Evaporation	14 gpm
Relative Humidity	50 %	Total Heat Rejection	6614300 Btu/h
Capacity	103.0 %		

- This selection satisfies your design conditions.

#### Weights & Dimensions

	Per Cell	Total
Shipping Weight	10760 lb	10760 lb
Heaviest Section	10760 lb	
Max Operating Weight	24430 lb	24430 lb
Width	21'	21'
Length	11' - 10 3/4"	11' - 10 3/4"
Height	11' - 11 3/4"	

#### Minimum Enclosure Clearance

Clearance required on air inlet sides of tower without altering performance. Assumes no air from below tower.

Solid Wall	7 ft
50 % Open Wall	5 ft

Weights and dimensions do not include options; refer to sales drawings.

#### Cold Weather Operation

**Heater Sizing** (to prevent freezing in the collection basin during periods of shutdown)

Heater kW/Cell	24.0	18.0	15.0	12.0	9.0	7.5	6.0
Ambient Temperature °F	-20.87	-4.66	3.44	11.55	19.65	23.71	27.76

PRMH20240593



# Submittal

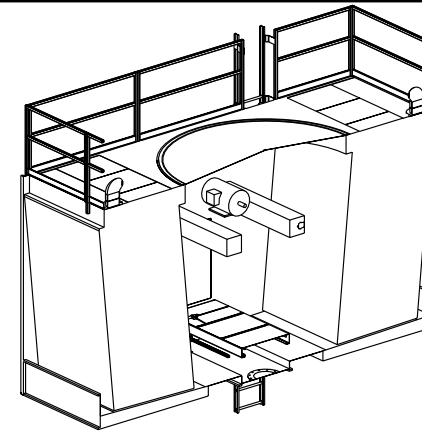
**Project:** Centeris PH2

**Date:** October 6, 2023

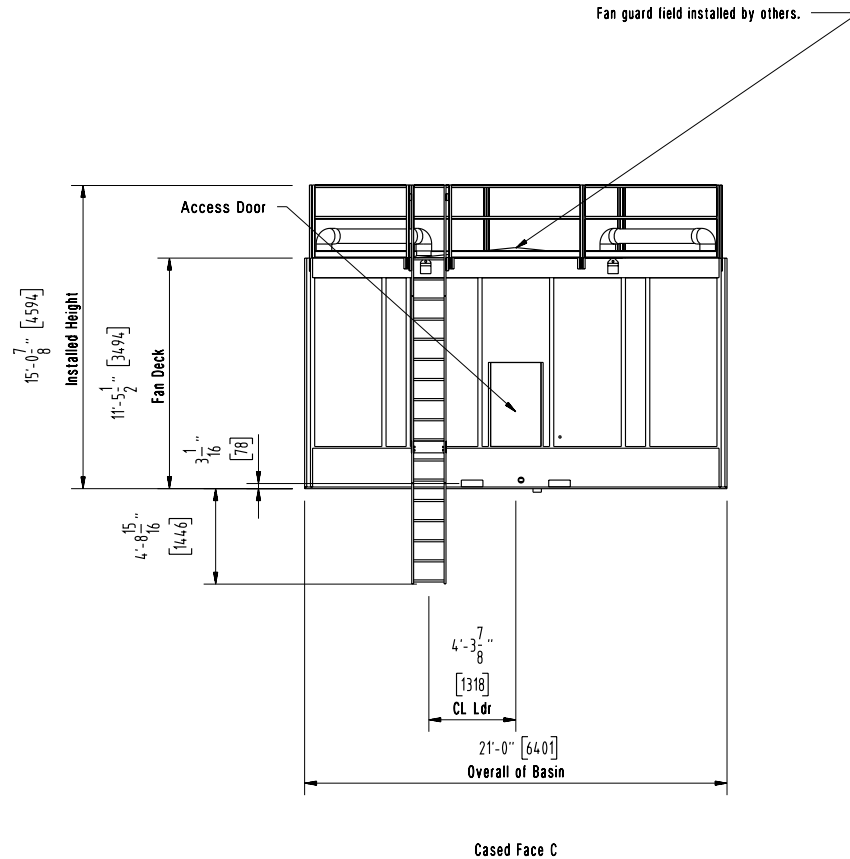
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## Shop Drawings

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Interior View



NOTES

- The fan motor must be locked out and inoperable before entering the tower. This warning has been placed on the access door.
- 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.
- 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.
- 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.
- 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.
- Contact your SPX CT sales engineer for the required pump head for this inlet arrangement.
- 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.
- Flanged connections conform to Class 125 ANSI B16.1 specification. The bolt holes straddle the centerlines.
- 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.
- 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.
- Ladder extensions are provided in nominal lengths of 5' [1524mm] and 11' [4572mm] only. Field modification by others is required for extensions of different lengths. Anchorage of the bottom of the ladder extension for proper stability is by others.
- The Fan Deck Extension is field assembled by others. The tower is shop modified and all attaching clips and fasteners are provided by SPX CT. Assembly details are included in the Literature Package shipped with the tower.
- The Plenum Walkway consists of 11 gauge steel supports and 16 gauge steel walkway panels. The elevation of the Plenum Walkway is above the overflow water level of the collection basin. The distance from the top of the Plenum Walkway to the fan is 8'-1 11/16" (2481 mm).
- O.S.H.A. standards recommend the use of an Access Door Platform if the door is 4'-0" (1219 mm) or higher above grade.
- Single inlet options (side or bottom inlet) - This piping can be an obstacle to personnel on top of the tower.
- 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.

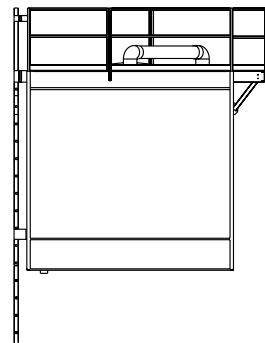
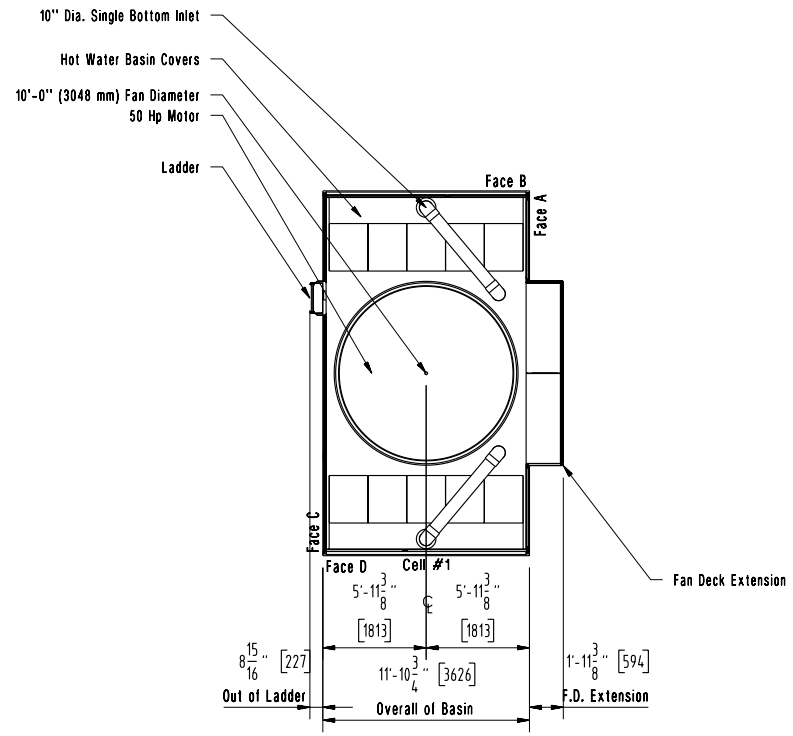
NC8407UAN1BGF - Schematic Cased Elevation and Notes  
Centeris Ph. 2  
Puyallup, WA, United States

MARLEY

ORDER

DRAWN BY	CHECKED	REV BY	REV CHK	DATE	APPROVED	DRAWING NUMBER	REV.
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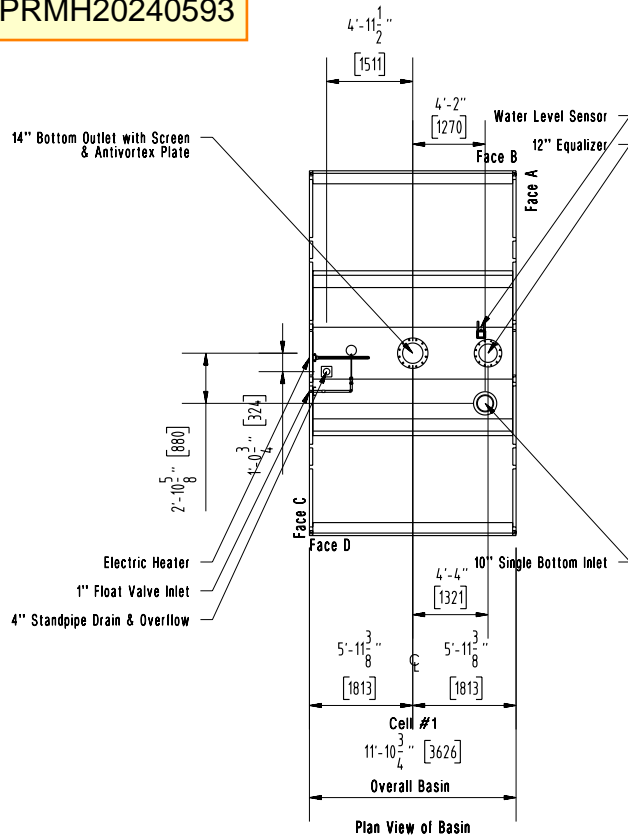
PRMH20240593



- 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.

NC8407UAN1BGF - Schematic Plan and Louver Elevation Centeris Ph. 2 Puyallup, WA, United States							<b>MARLEY</b>	
ORDER								
DRAWN BY Eric Pruehs_231003_154714873 V1	CHECKED QTC	REV BY	REV CHK	DATE 10/06/23	APPROVED SYS	DRAWING NUMBER EP867965S	REV.	

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NOTES

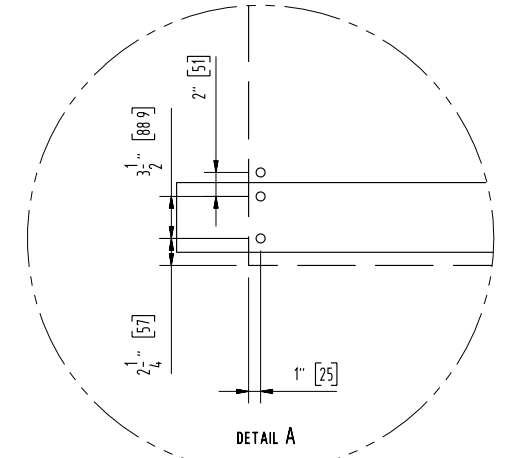
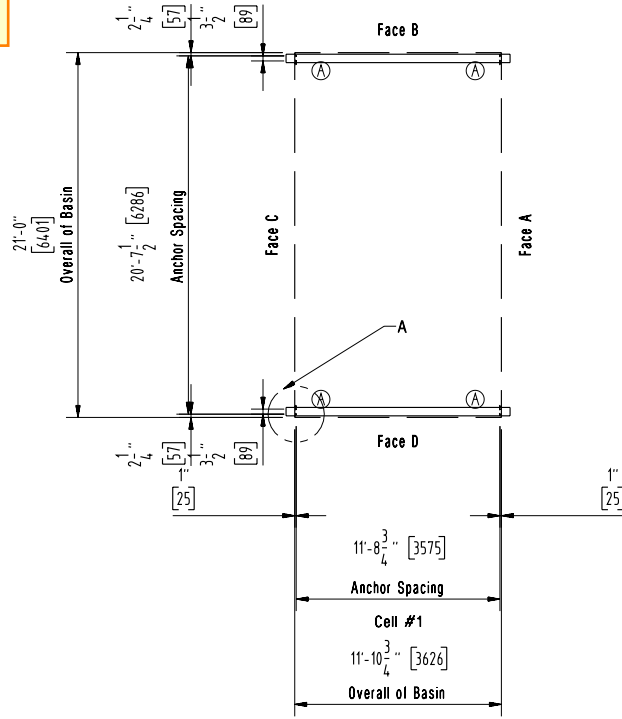
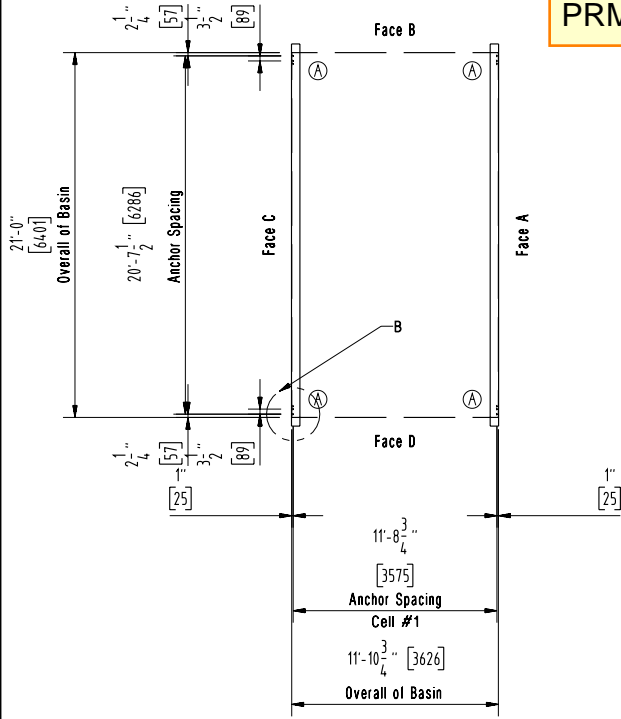
1. Flanged connections conform to Class 125 ANSI B16.1 specification. The bolt holes straddle the centerlines.
2. All piping supports are by others. Do NOT support outlet piping from the tower.
3. The collection basin piping accessories shown on this drawing are furnished by SPX CT. This includes a full faced gasket. Flat faced flange, fasteners and seal washers attachment to the outlet and equalizer are supplied by others. The use of a flange other than a flat faced flange will damage the collection basin floor.
4. 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).
5. The standpipe overflow is to be field installed by others.
6. 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.
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.

NC8407UAN1BGF – Piping Plan Centeris Ph. 2 Puyallup, WA, United States							<b>MARLEY</b>	
							ORDER	
DRAWN BY	CHECKED	REV BY	REV CHK	DATE	APPROVED	DRAWING NUMBER	REV.	
Eric Pruehs_231003_154714873 V1	QTC			10/06/23	SYS	EP867965P		

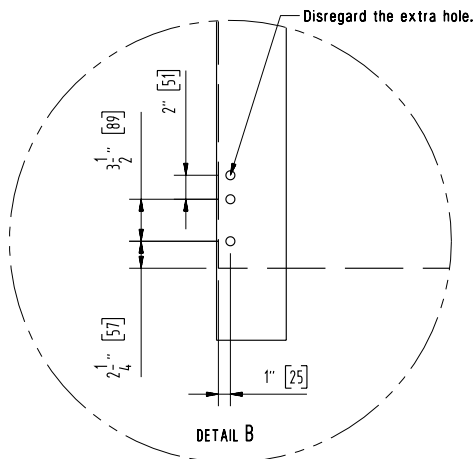
Shipping Weight		Design Operating Loads			Wind Load		Seismic Load	
per Tower	per Cell	per Tower	per Cell	at A	Vert. Reaction at A	Horiz. Reaction at A	Vert. Reaction at A	Horiz. Reaction at A
12686 lb (5754 kg)	12686 lb (5754 kg)	26356 lb (11955 kg)	26356 lb (11955 kg)	7223 lb (3277 kg)	58.75 x P lb (5.46 x P kgf)	60.15 x P lb (5.59 x P kgf)	5746 x G lb (2606 x G kgf)	6557 x G lb (2974 x G kgf)

(8) 3/4" ASTM A307 or M20 Grade 4.6 anchor bolts are required per cell. These anchor bolts are capable of resisting 132 psf (6320 N/m<sup>2</sup>) wind load or 1.12 G seismic load applied to the tower. Wind and Seismic capacities are un-factored loads as determined by ASCE7-10. Determination of the site specific design wind and seismic loads are by others.

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The first anchor bolt hole is the closest to the end of the cold water basin flange. The second anchor bolt should use the hole that matches the gauge of the beam.



NOTES

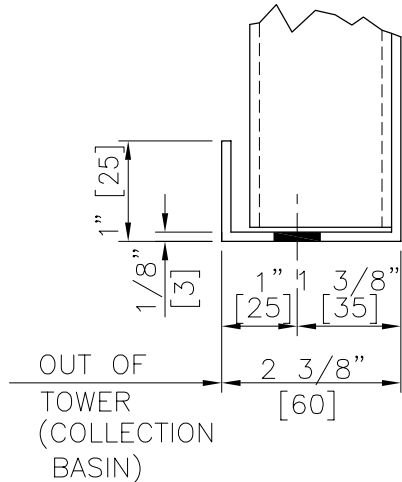
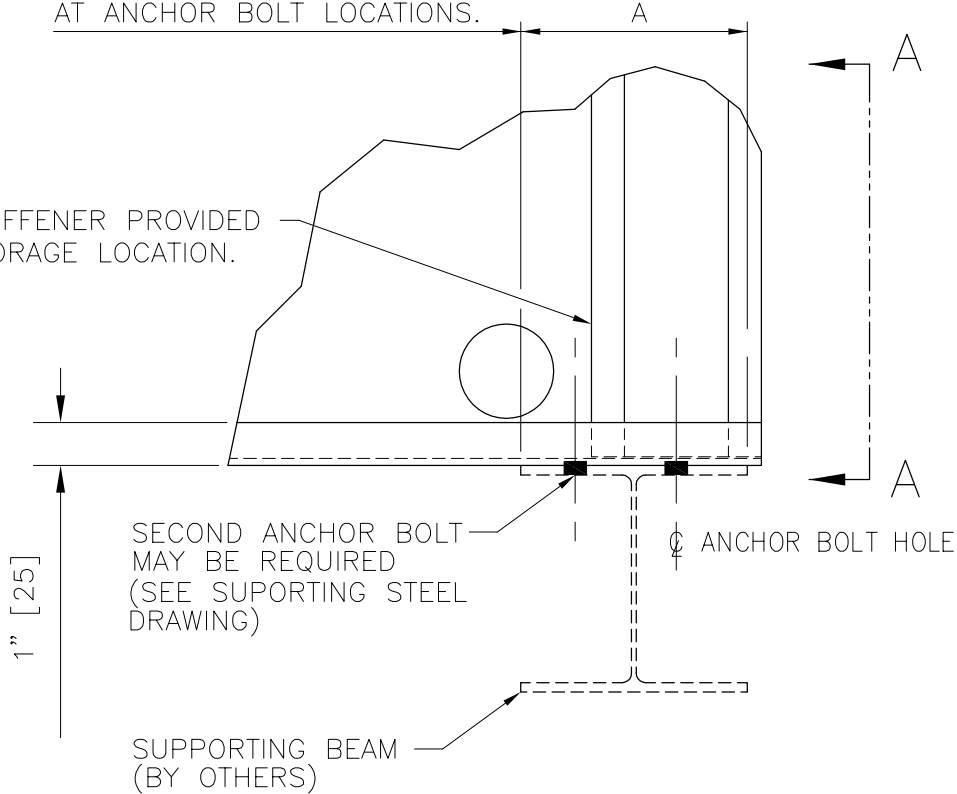
- SUPPORTING STEEL:** The supporting steel is to be designed, constructed and furnished by the customer. It shall include customer supplied anchor bolts to suit the general dimensions of this drawing and of the Outlet Piping Plan drawing. The top surface of the supporting steel must be framed flush and 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/m<sup>2</sup> 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 its 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.

NC8407UAN1BGF - Supporting Steel Plan and Details Centeris Ph. 2 Puyallup, WA, United States							<b>MARLEY</b>	
							ORDER	
DRAWN BY	CHECKED	REV BY	REV CHK	DATE	APPROVED	DRAWING NUMBER	REV.	
Eric Pruehs.231003.154714873 V1	QTC			10/06/23	SYS	EP867965G		

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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

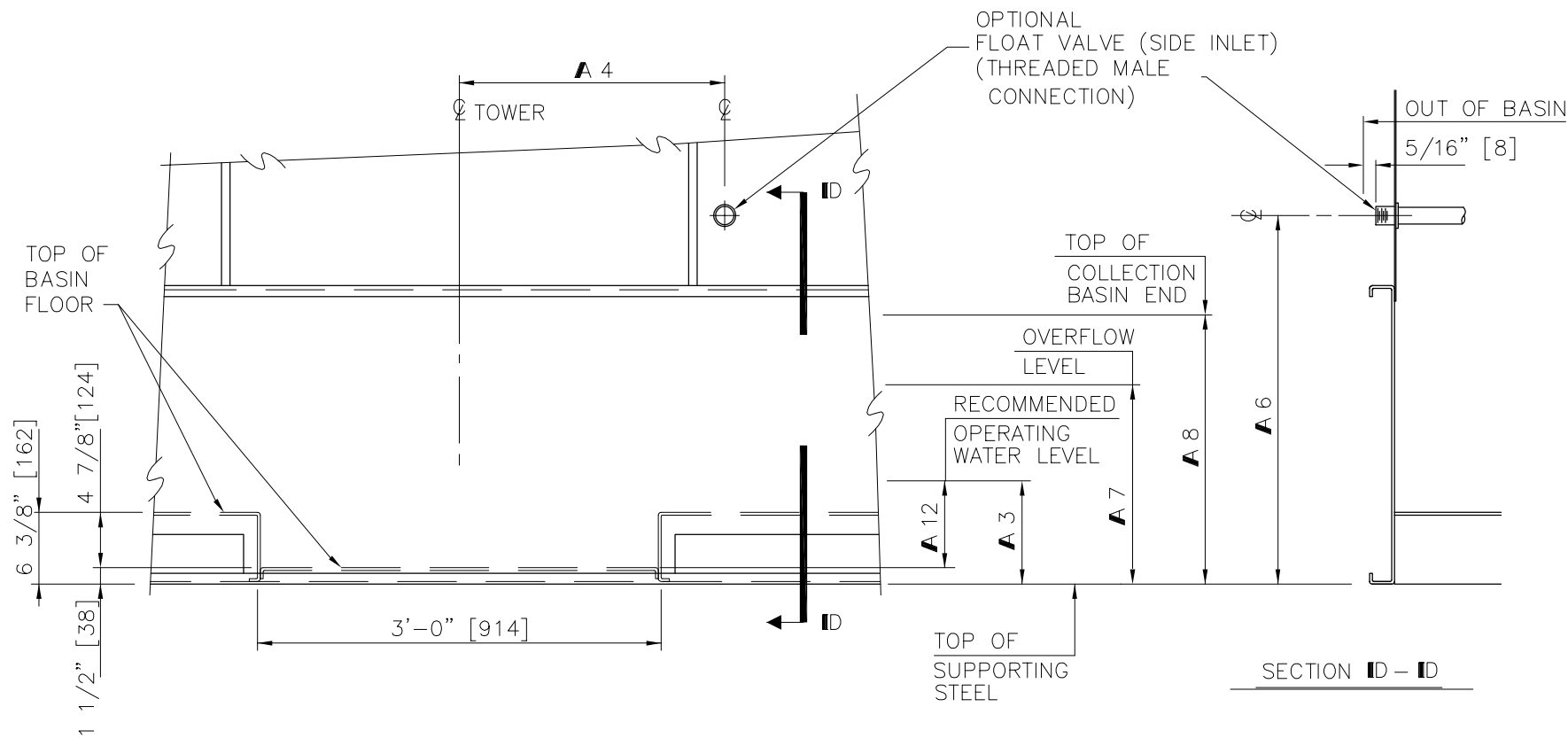
1. TOLERANCE APPLICABLE TO DIMENSIONS SHOWN ARE DEPENDENT UPON FABRICATION, ASSEMBLY AND CONSTRUCTION TOLERANCES. FABRICATION TOLERANCE IS  $\pm 1/16$ " [2] & ASSEMBLY TOLERANCE IS  $\pm 1/8$ " [3]. CONSULT SUPPLIERS OF SUPPORTING STRUCTURE FOR CONSTRUCTION TOLERANCE. ALL OF THE DIMENSIONS SHOWN ARE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

I-P [SI] UNITS

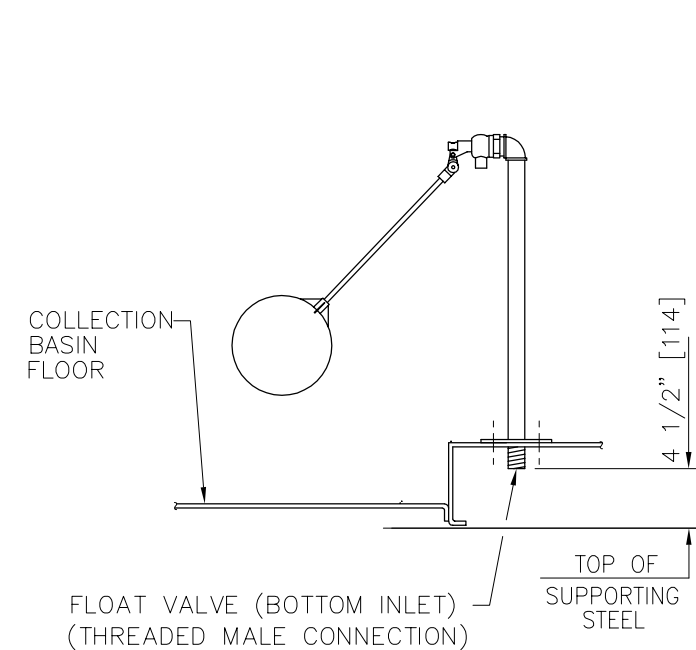
SUPPORT BEARING DETAILS  
(PARTIAL CASED FACE A OR C ELEVATION)

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

DRAWN BY SCHENK_STD		DRAWN DATE 07/20/2016		SUPPORT BEARING DETAILS NC8401 THRU NC8422 TOWERS				<b>MARLEY</b>	
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		



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	2" DIAMETER			
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]	2'-5 3/4" [755]	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'-2 1/4" [667]	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'-2 1/4" [667]	8" [203]

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

GENERAL NOTES

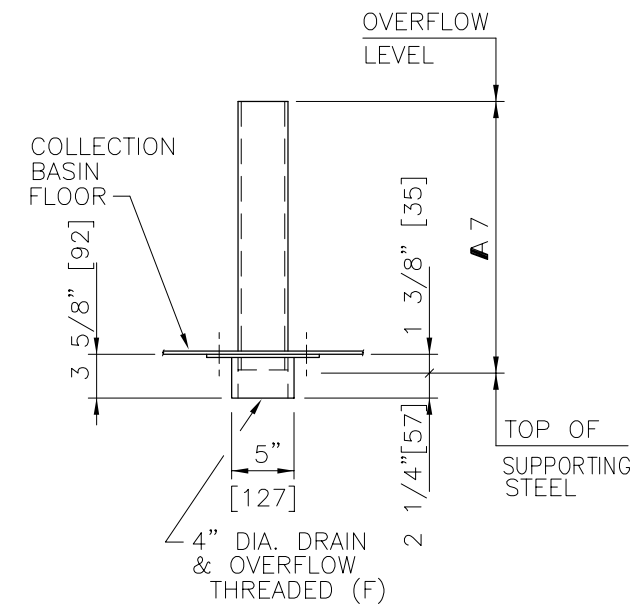
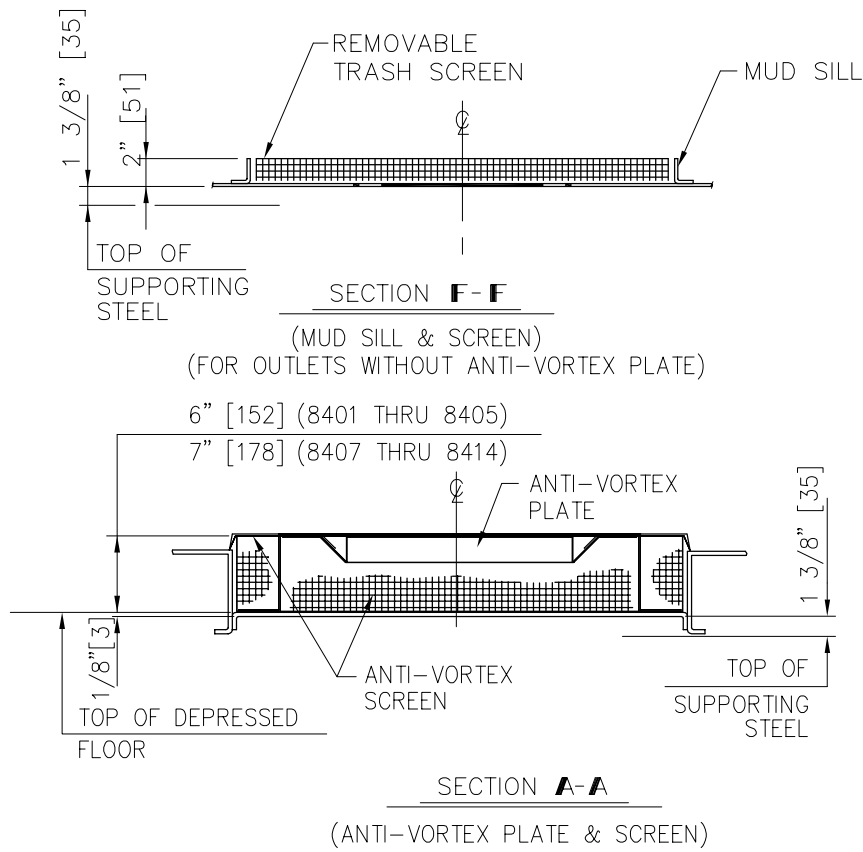
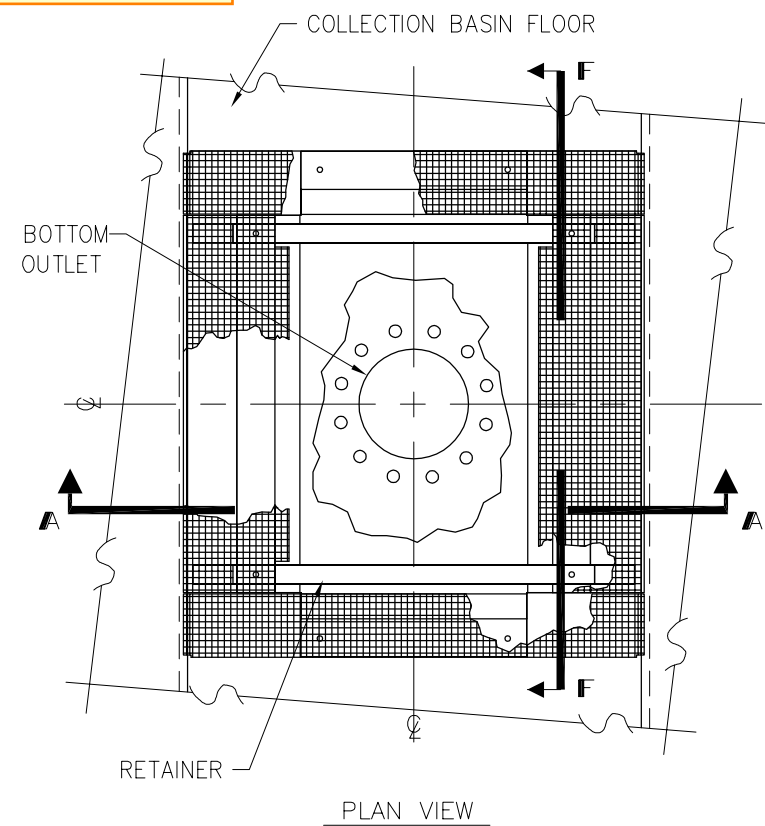
- FOR FLOAT VALVE INLET DIAMETER SIZING INFORMATION, SEE DWG. 98-22969 [98-22970].
- TOLERANCE APPLICABLE TO DIMENSIONS SHOWN ARE DEPENDENT UPON FABRICATION, ASSEMBLY AND CONSTRUCTION TOLERANCES. FABRICATION TOLERANCE IS ±1/16" [2] AND ASSEMBLY TOLERANCE IS ±1/8" [3]. CONSULT SUPPLIERS OF SUPPORTING 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 OUTLES AND FLUME ARRANGEMENT.

I-P [SI] UNITS

DRAWN BY MA_STD		DRAWN DATE 01/22/2016		COLLECTION BASIN WATER LEVEL 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 Z0341072	REV. A



PRMH20240593



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]

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

STANDARD STANDPIPE  
DRAIN & OVERFLOW  
(TYPICAL ALL CELLS)

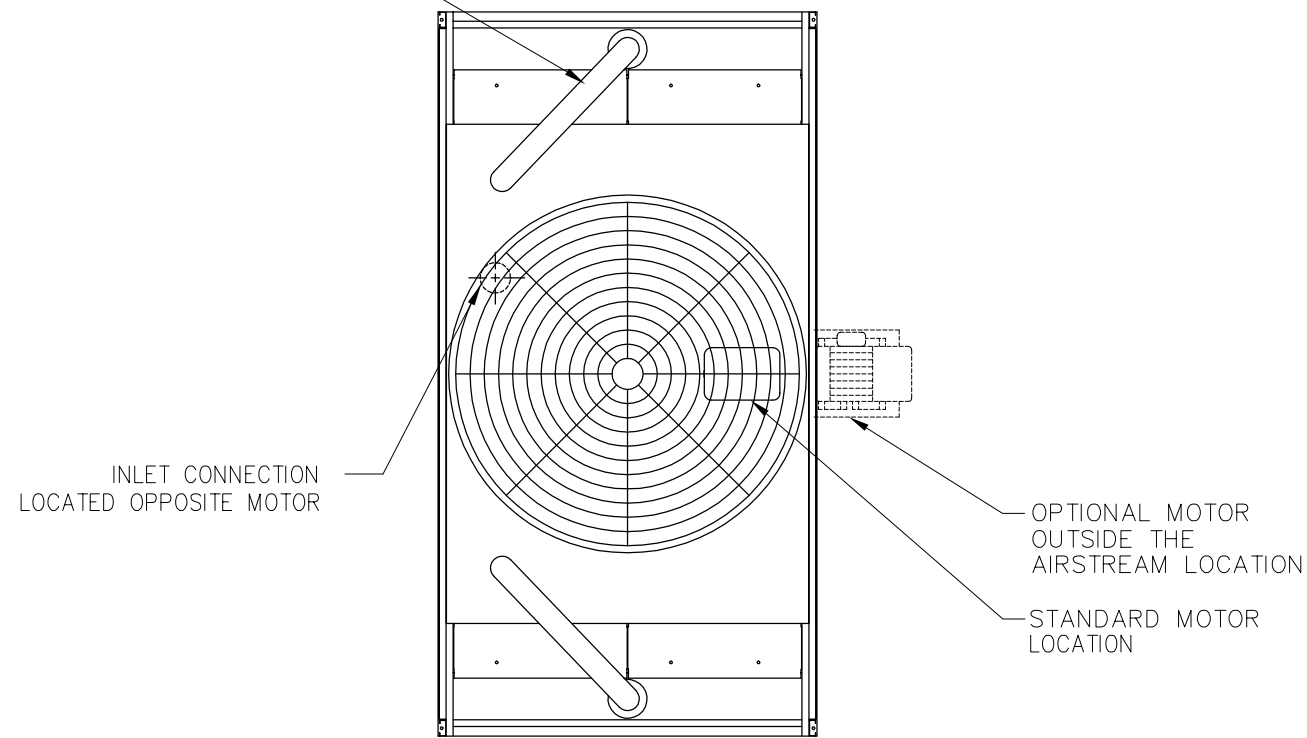
GENERAL NOTES

1. ALL ACCESSORIES SHOWN ARE PROVIDED WITH THE COOLING TOWER.
2. ALL PIPING SUPPORTS ARE BY OTHERS. DO NOT SUPPORT PIPING FROM TOWER.
3. 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).
4. 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.
5. 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 Z0341074	REV. A		

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

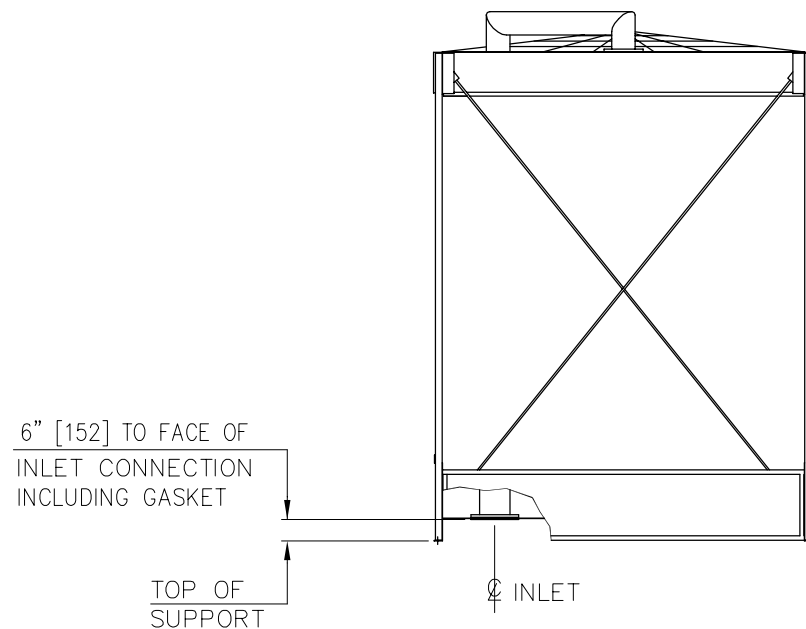


PLAN

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

NOTES

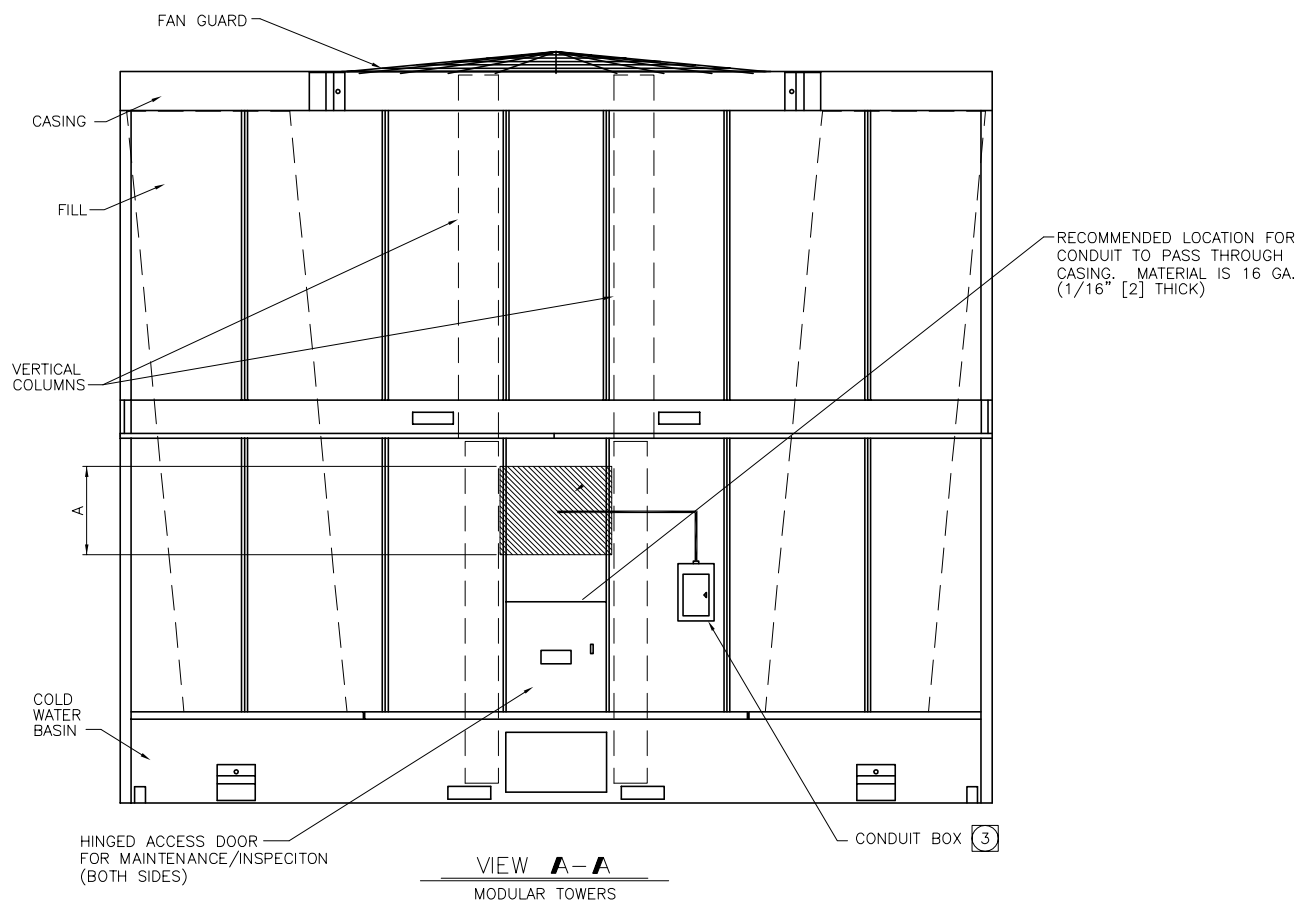
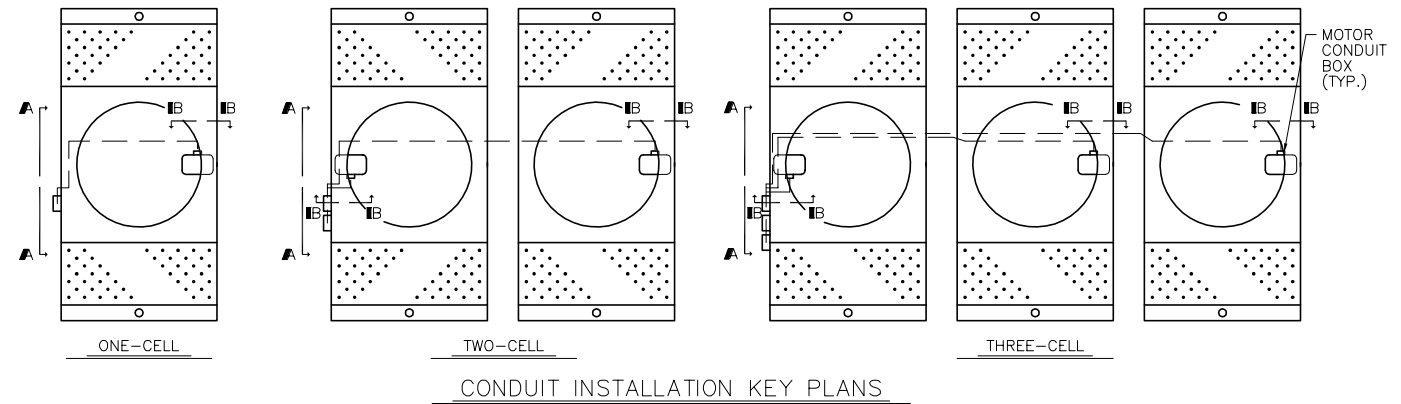
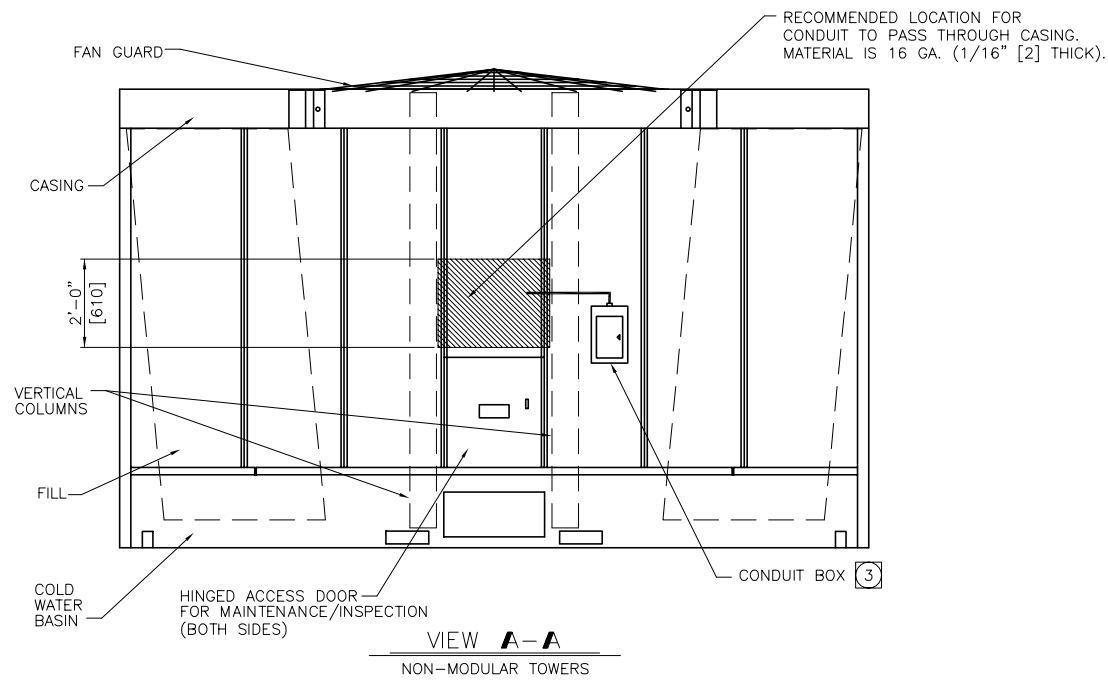
1. ALL INTERNAL INLET PIPING TO THE FACE OF THE INLET CONNECTION, INCLUDING RUBBER SLEEVE IS SUPPLIED WITH THE COOLING TOWER. EXTERNAL PIPING AND SUPPORTS BEYOND THE INLET CONNECTION IS BY OTHERS. EXTERNAL PIPING MAY NOT BE SUPPORTED FROM THE TOWER.
2. ASSEMBLY TOLERANCE IS  $\pm 1/8"$  [3]. CONSULT 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. USE THIS DRAWING IN CONJUNCTION WITH THE SCHEMATIC DETAIL DRAWINGS.
4. MULTI-CELL TOWERS SHOULD INCLUDE PROVISIONS TO BALANCE FLOW BETWEEN CELLS.
5. CONTACT YOUR SALES ENGINEER FOR THE REQUIRED PUMP HEAD FOR THIS ARRANGEMENT.
6. ALL DIMENSIONS SHOWN INSIDE OF BRACKETS [ ] ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



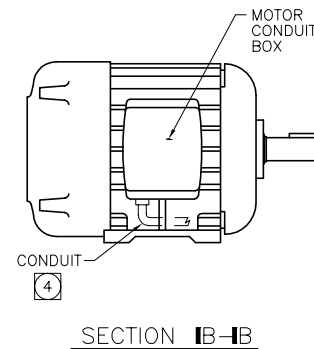
AIR INLET ELEVATION

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

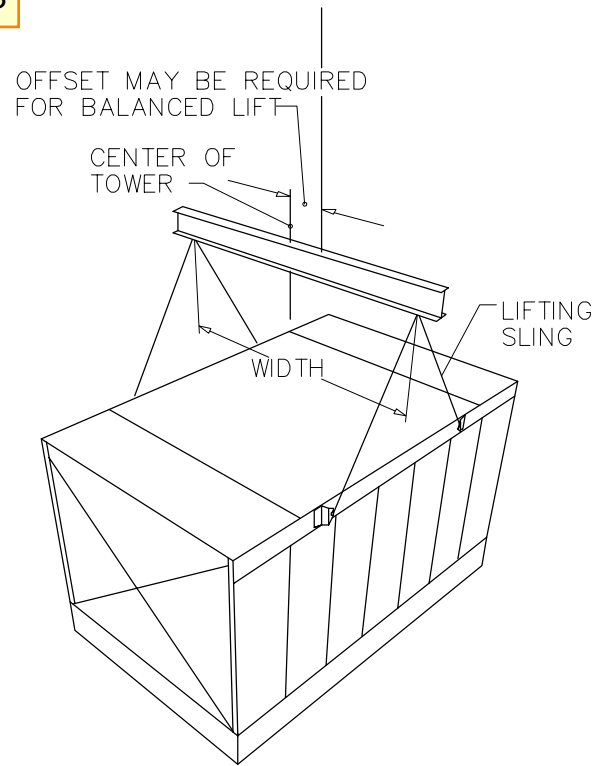


GENERAL NOTES

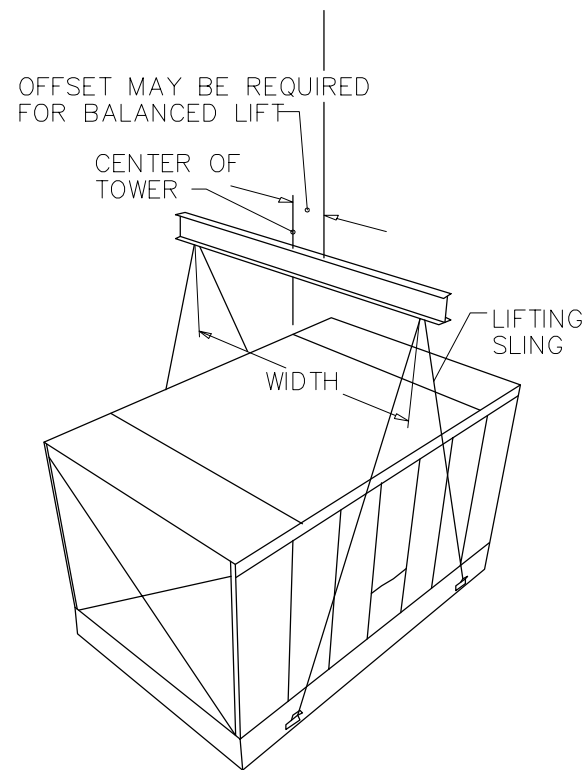
- ALL CONDUIT, CONNECTIONS, SUPPORTING CLIPS, HANGERS, AND SAFETY SWITCHES ARE SUPPLIED BY OTHERS.
- ALL WIRING MUST CONFORM TO LOCAL AND NATIONAL CODES.
- NON-FUSED SAFETY DISCONNECT SWITCHES ARE RECOMMENDED; THREE-POLE FOR SINGLE SPEED MOTORS, SIX-POLE FOR TWO SPEED MOTORS, WITH VOLTAGE AND HORSEPOWER 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



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

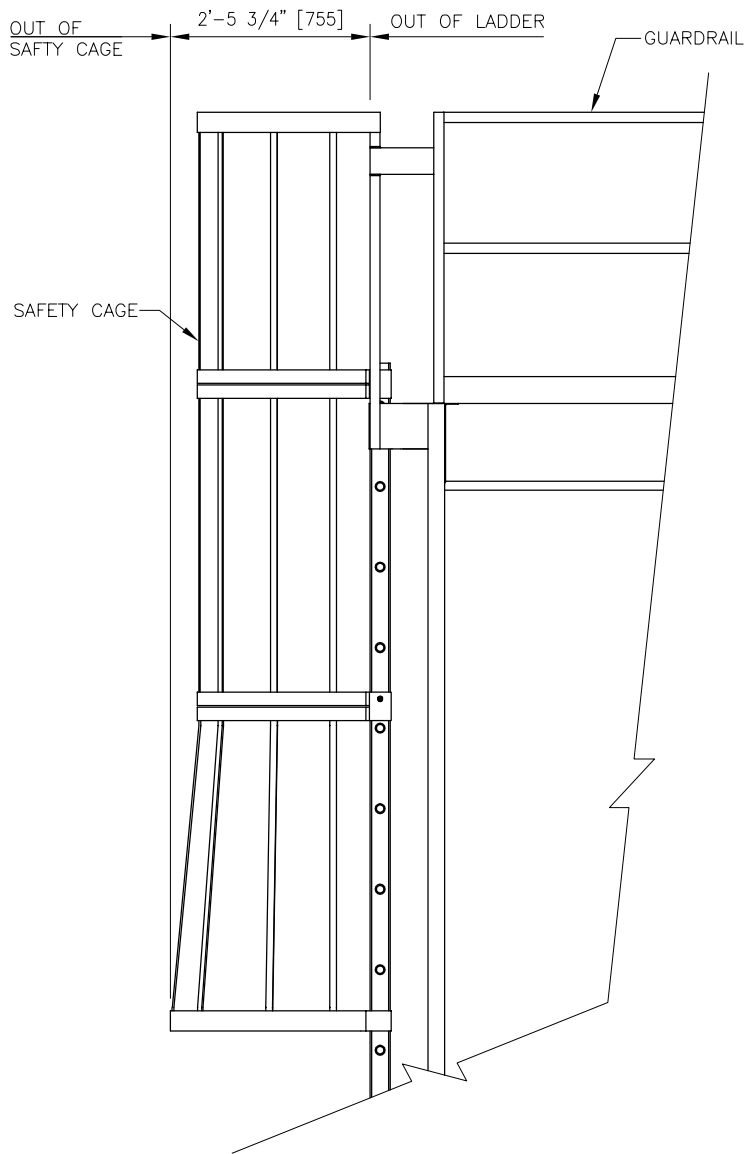
TOWER MODEL	TOWER WIDTH	TOWER LENGTH	TOWER HEIGHT	MINIMUM SLING LENGTH	HOIST CLIP SPACING
8401	6'-7" [2007]	12'-10" [3912]	10'-2 1/2" [3105]	5'-6" [1676]	5'-10" [1778]
8402	8'-5" [2565]	14'-2" [4318]	10'-3" [3124]	6'-0" [1829]	6'-6" [1981]
8403	8'-5" [2565]	18'-2" [5537]	11'-11 1/4" [3639]	8'-0" [2438]	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:

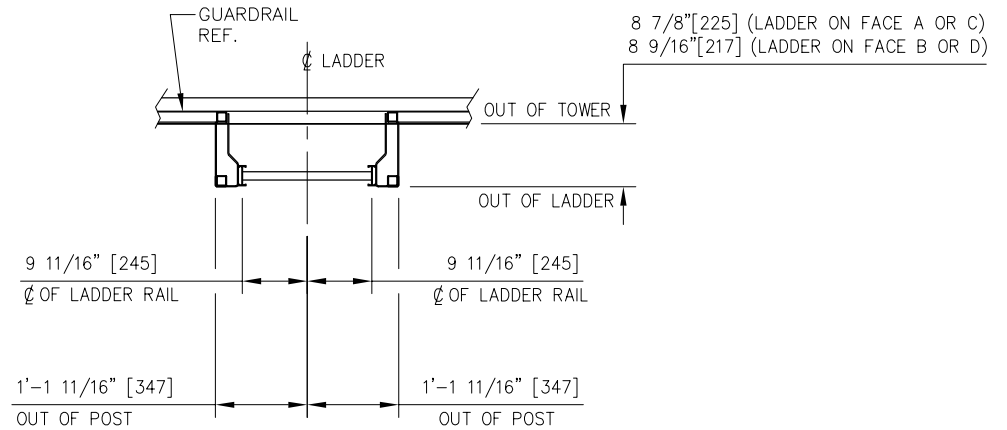
1. ALL HOISTING CLIP HOLES ARE 1 1/4" [32].
2. OVERALL LENGTH OF SHACKLE PIN SHOULD NOT EXCEED 5 1/4" [133].
3. FOR OVERHEAD LIFTS OR WHERE ADDITIONAL SAFETY IS REQUIRED, ADD SLINGS BENEATH THE TOWER UNIT.
4. ALL DIMENSIONS SHOWN INSIDE OF BRACKETS [ ] ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
5. REFERENCE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



LADDER WITH CAGE 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. LADDER IS ALL ALUMINUM CONSTRUCTION CONSISTING OF 3" [76] X 1 1/8" [29] I-BEAM SIDE RAILS AND 1 1/4" [32] DIAMETER SERRATED RUNGS.
4. 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.
5. TOLERANCE APPLICABLE TO DIMENSIONS SHOWN ARE DEPENDENT UPON FABRICATION, ASSEMBLY AND CONSTRUCTION TOLERANCES. FABRICATION TOLERANCE IS ±1/16" [2] & ASSEMBLY TOLERANCE IS ±1/8" [3]. CONSULT SUPPLIERS OF SUPPORTING STRUCTURE FOR CONSTRUCTION TOLERANCE. ALL OF THE DIMENSIONS SHOWN ARE IN INCHES UNLESS OTHERWISE NOTED.
6. PER O.S.H.A. STANDARDS, SAFETY CAGE IS RECOMMENDED WHEN THE DIFFERENCE IN ELEVATION BETWEEN TOWER FAN DECK AND GRADE EXCEEDS 20' [6096].
7. LADDER EXTENSION IS PROVIDED IN A NOMINAL LENGTH OF 11' [3353]. FIELD MODIFICATION, BY OTHERS, IS REQUIRED FOR AN EXTENSIONS OF A DIFFERENT LENGTH. PER O.S.H.A. STANDARDS, AN ACCESS DOOR PLATFORM IS RECOMMENDED IF TOWER IS ELEVATED.
8. THE ACTUAL LADDER EXTENSION LENGTH (BASE OF TOWER TO GRADE) MUST BE SPECIFIED TO ASSURE THE PROPER BOTTOM ELEVATION OF SAFETY CAGE.
9. ALL DIMENSIONS SHOWN INSIDE OF BRACKETS [ ] ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

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DRAWN BY QIAN_STD		DRAWN DATE 12/12/2017		LADDER DETAILS WITH SAFETY CAGE					
CHECKED BY Morby		CHECKED DATE 01/15/2018							
RELEASED BY Morby		RELEASED DATE 01/15/2018		ECM NUMBER 23298	ORDER NUMBER -/-	FORMAT ANSI A	PLOT 1=30	DRAWING NUMBER Z0628293	REV. A