



**Bateman Civil Survey Company, PC**

2524 Reliance Avenue  
Apex, NC 27539  
(919) 577-1080/fax (919) 577-1080

November 10, 2023

Harnett County Environmental Health Department  
Harnett County Environmental Health,  
900 S 9th St.  
Lillington NC 27546

**RE: Wastewater Daily Flow Calculations**

Birchwood Grove Lot 56  
256 Robert Howe Dr, Fuquay Varina, Harnett County, North Carolina  
Project #3753

Dear Harnett County Staff:

Bateman Civil Survey Company in conjunction with Central Carolina Soil Consulting (CCSC) are proposing wastewater daily flow calculations for a single-family home located at Birchwood Grove Lot 56 pursuant to session law 2014-120 and 2013-413. The proposed home will have **5** bedrooms and under the current flow calculations provided in the state rules would have a daily flow of **600** gallons per day. That would be based on 120 gallons per bedroom.

Household flow rates from the 15 NCAC 18A section of the state rules relied on fixture flow rates from 1982 and calculated the flows for common fixtures to established average flows for the purpose of calculating household daily flows and septic system based on those flows. The data for the historic fixture flows was taken from the EPA 2002 Onsite Wastewater Treatment Systems Manual.

The attached spreadsheet contains the flow reducing fixtures that are proposed for Birchwood Grove Lot 56. The table includes flow rates for the flow reducing fixtures as well as flow rates from the state rules and the percentage of water savings. On average the proposed fixtures provide a 38% savings.

We are requesting a reduction of 20% for the use of low flow fixtures. This will provide an adjusted daily flow of 96 gallons per bedroom per day and a total flow of **480** gallons per day for the proposed 5-bedroom house.

Calculations for effluent strength are shown below based on a 20% reduction in flow with a base flow concentration of 220 mg/l for both BODs and TSS. High strength effluent levels are considered to be higher than 350 mg/l for both BODs and TSS. Based on a reduction in flow of 20% we anticipate the concentration levels of both BODs and TSS to be around 275 mg/l well below the 350 mg/l threshold.

If you need further information or have any questions, please contact Matt Burdette at (919) 422-2827 or Tom Speight at 919-577-1080 2524 Reliance Ave, Apex NC 27539.

Sincerely,

BATEMAN CIVIL SURVEY COMPANY  
NCBELS# C-2378.

DocuSigned by:  
*Thomas Speight, Jr, PE, PLS*  
09838E23DC404AD...



11/28/2023

Thomas Speight, P.E  
(seal)

**Birchwood Grove Lot 56**

	Item		Gal/min. or flush	Number of Fixures	Base Flow From 1982	Percent Water Savings
Master	Shower Head	Moen T5152EP	1.8 gal/minute	1	5.5 gal/minute	67%
	Lavatory Faucet	Moen 5010	1.2 gal/minute	2	3.0 gal/minute	60%
	Tub Trim	Moen T908	Fill & Release	1	Fill & Release	50%
Kitchen	Kitchen Sink Faucet	Moen 5925	1.5 gal/minute	1	3.0 gal/minute	50%
Bath 2	Lavatory Faucet	Moen 5010	1.2 gal/minute	1	3.0 gal/minute	60%
	Shower Head	Moen T5153EP	1.8 gal/minute	1	5.5 gal/minute	67%
Bath 3	Lavatory Faucet	Moen 5010	1.2 gal/minute	1	3.0 gal/minute	60%
	Shower Head	Moen T5152EP	1.8 gal/minute	1	5.5 gal/minute	67%
Toilets	Master, 2, 3	Alto 135-173	1.6 gal /flush	3	3.5 gal/minute	54%

FIXTURES	TOILET	FAUCET	SHOWER	LEAK	BATH	OTHER	DISHWASHER	CLOTHES WASHER	TOTALS
PERCENT OF HOUSE HOLD WATER USE	24%	20%	20%	12%	3%	3%	2%	16%	<b>100%</b>
GALLONS PER DAY (600 BASE)	144	120	120	72	18	18	12	96	<b>600</b>
PERCENT OF SAVINGS FROM WATER SAVING FIXURES	54%	58% avg	67%	0%	0%	0%	0%	0%	<b>38%</b>
ADJUSTED FLOW (GALLONS)	66	50	40	72	18	18	12	96	<b>372</b>

# MOEN®

## Specifications

### DESCRIPTION

- Metal construction with various finishes identified by suffix
- Pressure balancing cycle valve design with an adjustable temperature limit stop
- 1/2" IPS connections
- Includes valve, tub spout, showerhead, arm and flange


### OPERATION

- Lever style handle
- Handle operates counterclockwise through a 270° arc with off at 6 o'clock and maximum hot at the 9 o'clock position. Shut off in clockwise direction
- Adjustable temperature limit stop to control maximum hot water temperature
- Pressure balancing mechanism maintains selected discharge temperature to  $\pm 2^\circ$

### FLOW

- EP suffix models are designed to deliver 1.75 gpm (6.6 L/min) at 45 psi

### STANDARDS

- Third party certified to: WaterSense®, ASME A112.18.1/CSA B-125.1 and all applicable requirements referenced therein
- Products marked with 1.75 gpm are compliant with California water efficiency regulations
- ADA  for lever handle

### WARRANTY

- Lifetime limited warranty against leaks, drips and finish defects to the original homeowner
  - 10 year limited warranty when used in a multifamily installation
  - 5 year limited warranty when used in a commercial installation
- Visit [www.moen.com/support](http://www.moen.com/support) for complete details and limitations

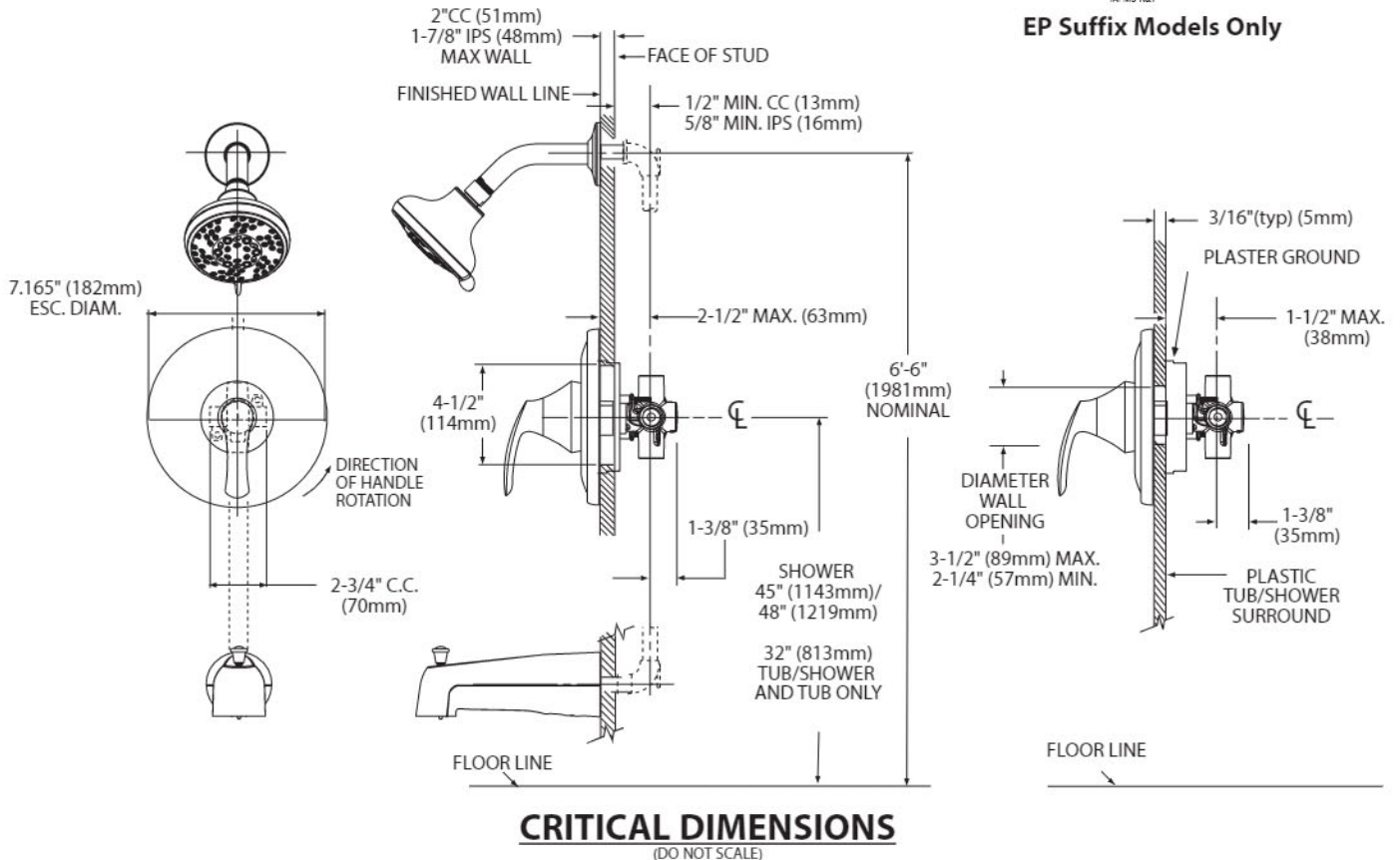


### Seena™ Posi-Temp® Single-Handle Tub/Shower

**Models:** T5152EP series - shower trim only  
T5153EP series - tub/shower trim



**EP Suffix Models Only**



# MOEN®

## Specifications

### DESCRIPTION

- Metal construction with finish identified by suffix
- 1/2" IPS connections for flexible hoses only; not for use with rigid or semi-rigid supply risers (3/8" Copper or Pex) with coupling nuts
- Installation through 3 holes, 1" min. diameter, and 4" on center
- Includes pop-up waste assembly

### OPERATION

- Lever handles
- Maximum handle rotation angle is 90° to full on
- Hot side counterclockwise to open (clockwise to close)
- Cold side clockwise to open (counterclockwise to close)

### FLOW

- Water usage is limited to the maximum flow rates as indicated by the corresponding product markings
  - 1.2 gpm max (4.5 L/min) at 60 psi

### CARTRIDGE

- 1234 cartridge
- Nonmetallic and stainless steel material

### STANDARDS

- Third party certified at WaterSense®, ASME A112.18.1/CSA B125.1, and all applicable requirements referenced therein including NSF 61/9 & 372
- Products marked with 1.2 gpm are compliant with California water efficiency regulations
- Complies with California Proposition 65 and with the Federal Safe Drinking Water Act
- ADA ♿ for lever handles

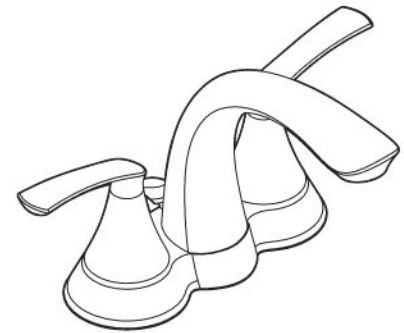
### WARRANTY

- Limited lifetime warranty against leaks, drips and finish defects to the original consumer purchaser
- 10 year warranty when used in a multifamily installation
- 5 year warranty when used in a commercial installation

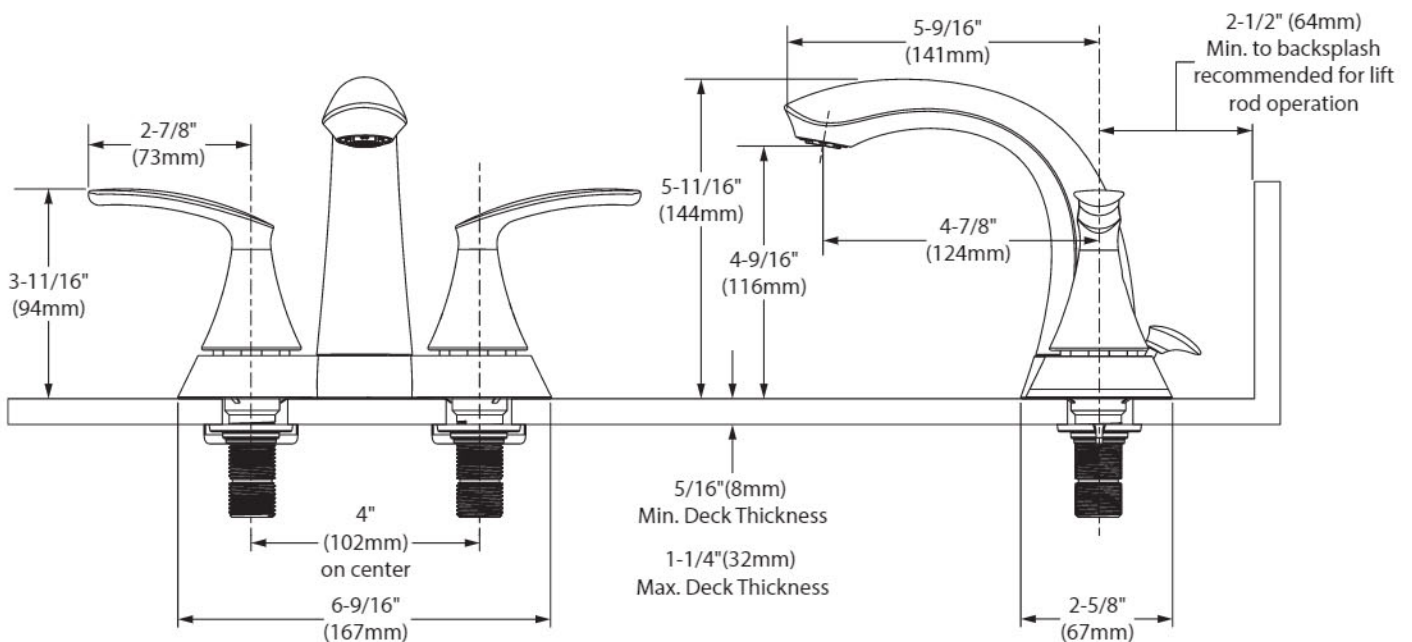
Visit [www.moen.com/support](http://www.moen.com/support) for complete details and limitations

### OPTIONS (See Illustrated Parts page)

- Thin and thick deck mounting hardware kits available

**SEENA™****Two-Handle 4" Centerset Lavatory Faucet****Models:**

5010 series includes pop-up waste



### CRITICAL DIMENSIONS

(DO NOT SCALE)

# MOEN®

## Specifications

### FAUCET DESCRIPTION

- Pulldown system offers smooth operation, easy movement and secure docking
- Metal construction with various finishes identified by suffix
- Quick connect installation - Duralock™
- PowerBoost™ spray technology
- Pulldown spray with 68" braided hose
- Flexible supply lines with 3/8" compression fittings
- High arc spout provides height and reach to fill or clean large pots while pulldown wand provides the maneuverability for cleaning or rinsing
- Faucet designed for handle to be mounted on right side

### OPERATION

- Lever style handle
- Temperature controlled by 100° arc of handle travel
- Operates with less than 5 lbs. of force
- Operates in stream or spray mode in the pullout or retracted position

### FLOW

- Flow is limited to 1.5 gpm (5.7 L/min) max at 60 psi

### CARTRIDGE

- 1255™ Duralast™ cartridge for single handle faucets

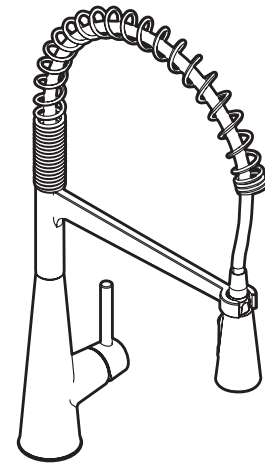
### STANDARDS

- Third party certified to IAPMO Green, ASME A112.18.1/CSA B125.1 and all applicable requirements therein including NSF 61/9 & 372
- Meets CalGreen and Georgia SB370 requirements
- Complies with California Proposition 65 and with the Federal Safe Drinking Water Act
- The backflow protection system in the device consists of two independently operating check valves, a primary and a secondary which prevent backflow
- ADA ♿ for lever handle

### WARRANTY

- Lifetime limited warranty against leaks, drips and finish defects to the original homeowner
- 10 year limited warranty when used in a multifamily installation
- 5 year limited warranty when used in a commercial installation

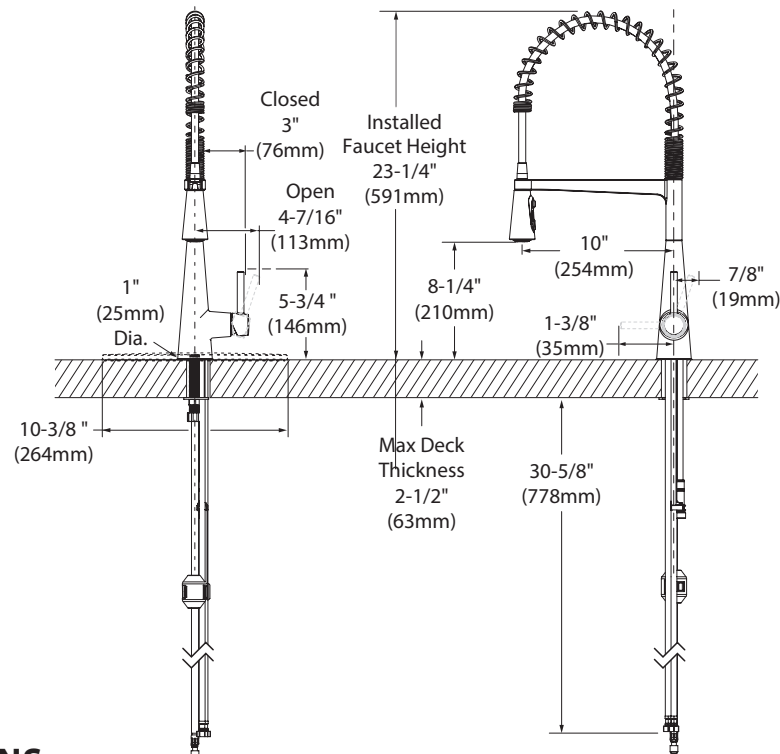
Visit [www.moen.com/support](http://www.moen.com/support) for complete details and limitations



**Sleek™**  
**Single Handle Pre-Rinse Spring**  
**Pulldown Kitchen Faucet**

**Model: 5925 series**

**NOTE:** this faucet is designed to be installed through 1 or 3 holes, 1-1/2" (38mm) min. dia.



### CRITICAL DIMENSIONS

(DO NOT SCALE)

# 135-173 ALTO®

# MANSFIELD®

Elongated Front, Vitreous China, Two-Piece Toilet

## FEATURES

- 3-bolt SmartFasten™ tank-to-bowl connection
- 1.6 gpf / 6.0 lpf low water consumption
- Elongated front bowl
- 2" flapper flush valve
- Fluidmaster® pilot operated anti-siphon fill valve
- 12" rough-in
- Model 31 color match, plastic trip lever
- 2" glazed trapway
- The Mansfield® limited lifetime warranty
- Available in White, Biscuit, and Bone



**MODEL 135-173**

Toilet seat not included



ELONGATED

## COMPONENTS

MODEL #	DESCRIPTION	CODES/STANDARDS
<b>135-173</b>	Elongated front, two-piece toilet.	
<b>135</b>	Elongated front, toilet bowl only. Less toilet seat. Specify color.	
<b>173</b>	Tank and cover only with left hand, front-mount, color match, plastic trip lever. Pilot fill valve and 2" flapper. Less supply. Specify color.	
<b>TANK TRIM &amp; REPLACEMENT PARTS</b>		
<b>31</b>	Trip lever – color-match, plastic trip lever, left hand	
<b>203A</b>	2" Flapper flush valve	
<b>400A</b>	Fluidmaster® anti-siphon pilot fill valve	
<b>2206</b>	Anti-siphon pilot fill valve (compatible replacement)	
<b>630-0173</b>	2" Replacement flapper kit	
<b>160-LID</b>	Tank lid	

