



Bateman Civil Survey Company, PC

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

November 11, 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 60
338 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 60 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 60. 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...



Thomas Speight, P.E
(seal)

11/28/2023

Birchwood Grove Lot 60

	Item		Gal/min. or flush	Number of Fixures	Base Flow From 1982	Percent Water Savings
Master	Shower Head	Moen T2842EP	1.8 gal/minute	1	5.5 gal/minute	67%
	Lavatory Faucet	Moen 6150	1.2 gal/minute	2	3.0 gal/minute	60%
Kitchen	Kitchen Sink Faucet	Moen 7864	1.5 gal/minute	1	3.0 gal/minute	50%
Bath 2	Shower Head	Moen T2843EP	1.8 gal/minute	1	5.5 gal/minute	67%
	Lavatory Faucet	Moen 6150	1.2 gal/minute	2	3.0 gal/minute	60%
Bath 3	Shower Head	Moen T2842EP	1.8 gal/minute	1	5.5 gal/minute	67%
	Lavatory Faucet	Moen 6150	1.2 gal/minute	1	3.0 gal/minute	60%
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%	100%
GALLONS PER DAY (600 BASE)	144	120	120	72	18	18	12	96	600
PERCENT OF SAVINGS FROM WATER SAVING FIXURES	54%	58% avg	67%	0%	0%	0%	0%	0%	38%
ADJUSTED FLOW (GALLONS)	66	50	40	72	18	18	12	96	372



Buy it for looks. Buy it for life.®

DESCRIPTION

- Metal construction with various finishes identified by suffix
- Includes showerhead, arm, flange and diverter tub spout

OPERATION

- 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 $\pm 3^\circ$


FLOW

- EP suffix models are limited to 2.0 gpm (7.6 L/min) max for products manufactured prior to June 30, 2018. EP suffix models manufactured after June 30, 2018 are limited to 1.75 gpm (6.7 L/min) max.

CARTRIDGE

- 1222 cartridge design
- Accommodates back to back installations
- Nonmetallic, nonferrous and stainless steel material

STANDARDS

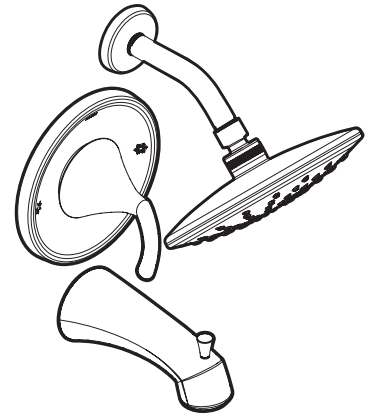
- Third party certified to meet ASME A112.18.1/CSA B125.1 and all applicable requirements referenced therein
- EP suffix models are third party certified to WaterSense®
- **ADA**  for lever handles

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 for complete details and limitations

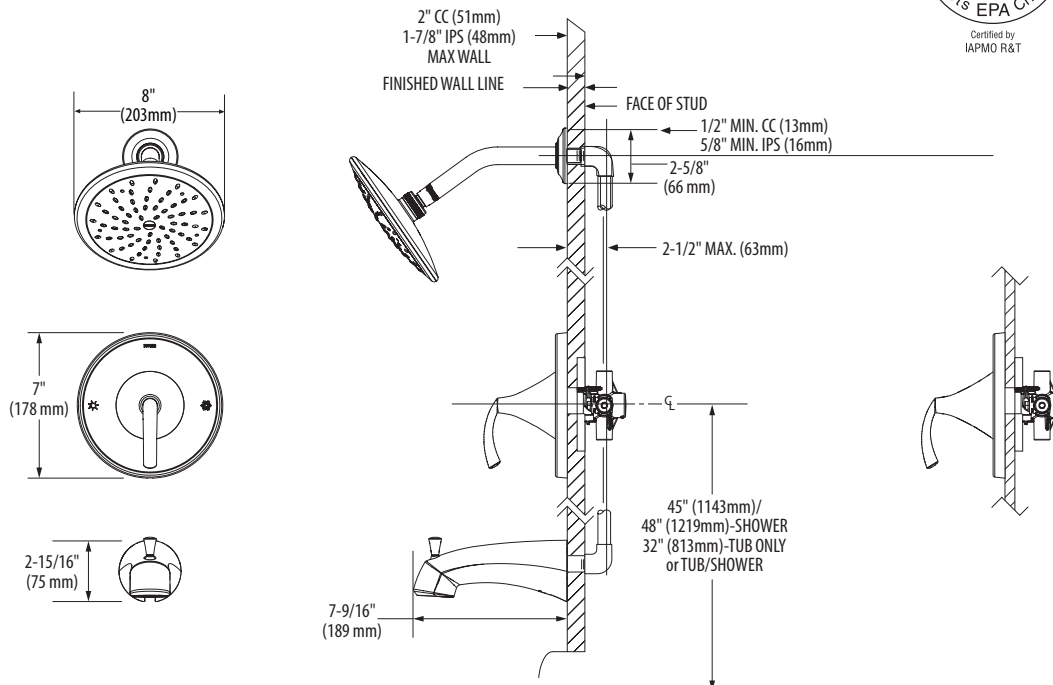
Specifications



Glyde™ Single-Handle Tub/Shower Trim Kit with Rainshower

Models: T2842EP series - shower trim only
T2843EP series - tub/shower trim

Valves: 62300 series
2500 series



MOEN®

Specifications

DESCRIPTION

- Metal construction with chrome plated finish
- ½" IPS connections will accept standard ball nose connection for 3/8" tubing
- 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)
- Rotating spout

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 Duralast® cartridge
- Nonmetallic and stainless steel material

STANDARDS

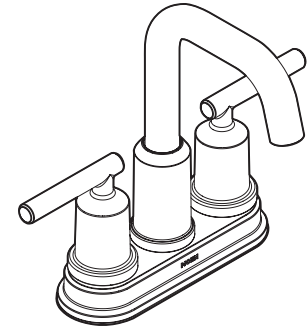
- Third party certified at WaterSense®, ASME A112.18.1/CSA B125.1, and all applicable requirements referenced therein including NSF 61/9 & 372
- Products marked with 1.2 gpm are compliant with California water efficiency regulations
- Complies with California Proposition 65 and with the Federal Safe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

WARRANTY

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

OPTIONS (See Illustrated Parts page)

- Thin and thick deck mounting hardware kits available

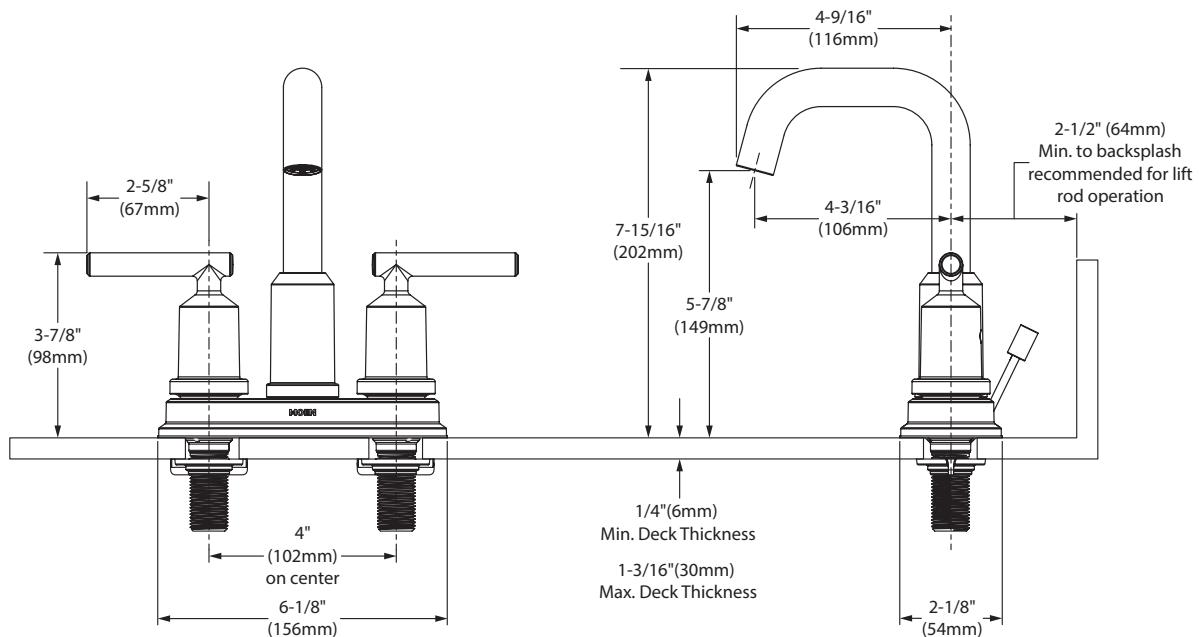


GIBSON™

Two-Handle 4" Centerset Lavatory Faucet

Models:

6150 includes metal waste



CRITICAL DIMENSIONS

(DO NOT SCALE)

MOEN®

Specifications

DESCRIPTION

- Versatile, hands-free convenience in the kitchen
- Optimized cleaning force with PowerClean™
- Allows users to control the faucet in 2 unique ways: Wave Sensor and familiar handle
- Powered by 6 AA batteries or optional AC adapter with power splitter
- High arc spout provides height and reach to fill or clean large pots while pull down wand provides the maneuverability for cleaning or rinsing
- Reflex™ pulldown system offers smooth operation, easy movement and secure docking
- Metal construction with various finishes identified by suffix
- Pulldown spray with 68" braided hose
- Flexible supply lines with 3/8" compression fittings
- Quick connect installation - Duralock™
- 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 pulldown or retracted position

FLOW

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

CARTRIDGE

- 1255™ Duralast™ cartridge for Single-Handle Faucets

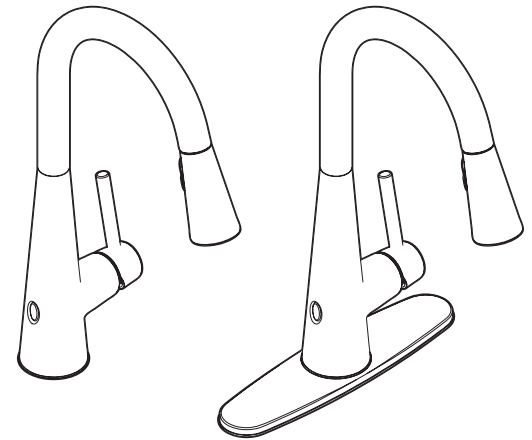
STANDARDS

- Third party certified to ASME A112.18.1/CSA B125.1 and all applicable requirements referenced 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 for complete details and limitations



Sleek™ MotionSense Wave™ Single Handle High Arc Pulldown Kitchen Faucet

Models: 7864EW series

NOTE: THIS FAUCET IS DESIGNED TO BE
INSTALLED THROUGH 1 OR 3 HOLES,
1-1/2" (38mm) MIN. DIA.



See pages 2 and 3 for dimensions

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



COMPONENTS

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

