

Hicks, Keith

From: Brent Wright <bwright@cityofflint.com>
Sent: Wednesday, November 04, 2015 2:07 PM
To: Natasha Henderson; Howard Croft;
Subject: Fwd: Corrosion Control Permit
Attachments: PO4 Permit Oct 28th.pdf

Attached is the MDEQ permit for corrosion control, this was mailed to us a week ago but we have not received it. After speaking with Mike Prysby he had it scanned and emailed.

Brent

----- Forwarded message -----

From: Prysby, Mike (DEQ) <PRYSBYM@michigan.gov>
Date: Wed, Nov 4, 2015 at 1:58 PM
Subject: Corrosion Control Permit
To: "bwright@cityofflint.com" <bwright@cityofflint.com>, Michael Glasgow <mglasgow@cityofflint.com>
Cc: "Busch, Stephen (DEQ)" <BUSCHS@michigan.gov>, "Shekter Smith, Liane (DEQ)" <SHEKTERL@michigan.gov>

Brent, Michael

Attached is the Act 399 permit authorizing installation of the corrosion control treatment system at the water treatment plant.

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

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Brent Wright
Water Plant Supervisor
City of Flint
4500 N. Dort Hwy.
Flint, MI. 48505
Ph: 810.787.6537 ext. 3510
Fx: 810.787.3710

PERMIT APPLICATION FOR WATER SUPPLY SYSTEMS
 (CONSTRUCTION - ALTERATION - ADDITION OR IMPROVEMENT) AS DESCRIBED HEREIN
 Required under the Authority of 1976 PA 399, as amended

ENTERED

This application becomes an Act 399 Permit only when signed and issued by authorized Michigan Department of Environmental Quality (DEQ) Staff. See instructions below for completion of this application.

1. Municipality or Organization, Address and WSSN that will own or control the water facilities to be constructed. This permit is to be issued to: City of Flint 4500 N. Dort Highway Flint, MI 48505 WSSN: 02310	Permit Stamp Area (DEQ use only) MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY PERMIT NO. W 001104 OCT 28 2015 EXAMINED AND APPROVED FOR COMPLIANCE WITH ACT 399, P.A. 1976	
2. Owner's Contact Person (provide name for questions): Contact: Brent Wright Title: Water Plant Supervisor Phone: 810.787.6537		
3. Project Name (Provide phase number if project is segmented): Flint WTP Phase II, Segment 4 Corrosion Control	4. Project Location (City, Village, Township): Flint, MI	5. County (location of project): Genesee

ISSUED UNDER THE AUTHORITY OF THE DIRECTOR OF THE DEPARTMENT OF ENVIRONMENT QUALITY

cc: DEQ
 RESOURCE MANAGEMENT DIVISION
 OCT 16 2015
 LANSING DISTRICT

Issued by: Michael Prosser
 Reviewed by: Michael Prosser

If this box is marked see attached special conditions.

Instructions: Complete items 1 through 5 above and 6 through 21 on the following pages of this application. Print or type all information except for signatures. Mail completed application, plans and specifications, and any attachments to the DEQ District Office having jurisdiction in the area of the proposed construction.

Please Note:

- This **PERMIT** only authorizes the construction, alteration, addition or improvement of the water system described herein and is issued solely under the authority of 1976 PA 399, as amended.
- The issuance of this **PERMIT** does not authorize violation of any federal, state or local laws or regulations, nor does it obviate the necessity of obtaining such permits, including any other DEQ permits, or approvals from other units of government as may be required by law.
- This **PERMIT** expires two (2) years after the date of issuance in accordance with R 325.11306, 1976 PA 399, administrative rules, unless construction has been initiated prior to expiration.
- Noncompliance with the conditions of this permit and the requirements of the Act constitutes a violation of the Act.
- Applicant must give notice to public utilities in accordance with 1974 PA 53, (MISS DIG), being Section 460.701 to 460.718 of the Michigan Compiled Laws, and comply with each of the requirements of that Act.
- All earth changing activities must be conducted in accordance with the requirements of the Soil Erosion and Sedimentation Control Act, Part 91, 1994 PA 451, as amended.
- All construction activity impacting wetlands must be conducted in accordance with the Wetland Protection Act, Part 303, 1994 PA 451, as amended.
- Intentionally providing false information in this application constitutes fraud which is punishable by fine and/or imprisonment.
- Where applicable for water withdrawals, the issuance of this permit indicates compliance with the requirements of Part 327 of Act 451, Great Lakes Preservation Act.

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

Permit Application for Water Systems (Continued)

6. **Facilities Description** – In the space below provide a detailed description of the proposed project. Applications without adequate facilities descriptions will be returned. SEE EXAMPLES BELOW. Use additional sheets if needed.

The project entails installation of phosphate feed systems at both Control Station #2 (CS#2) and Pump Station #4 (PS#4). Feed at CS#2 will provide the ability to add phosphate for corrosion control to finished water supplied from the Detroit Water & Sewer Department (DWSD). Feed at PS#4 will provide the ability to add phosphate to finished water to supply from either the Flint River or Lake Huron via the Karegondi Water Authority (KWA). Both feed systems are temporary systems until the planned filter transfer pump station is constructed. A permanent phosphate feed system will be constructed as part of that contract.

The feed rate will be proportionally controlled based on the water flow rate and will be tied to the existing SCADA system. See attached basis of design for more detailed information.

EXAMPLES – EXAMPLES – EXAMPLES – EXAMPLES – EXAMPLES – EXAMPLES

Water Mains	500 feet of 8-inch water main in First Street from Main Street north to State Street. OR 250 feet of 12-inch water main in Clark Road from an existing 8-inch main in Third Avenue north to a hydrant.
Booster Stations	A booster station located at the southwest corner of Third Avenue and Main Street, and equipped with two, 15 Hp pumps each rated 150 gpm @ 200 feet TDH. Station includes backup power and all other equipment as required for proper operation.
Elevated Storage Tank	A 300,000 gallon elevated storage tank located in City Park. The proposed tank shall be spherical, all welded construction and supported on a single pedestal. The tank shall be 150 feet in height, 40 feet in diameter with a normal operating range of 130 – 145 feet. The interior coating system shall be ANSI/NSF Standard 61 approved or equivalent. The tank will be equipped with a cathodic protection system, and includes a tank level control system with telemetry.
Chemical Feed	A positive displacement chemical feed pump, rated at 24 gpd @ 110 psi to apply a chlorine solution for Well No. 1. Chlorine is 12.5% NaOCl, ANSI/NSF Standard 60 approved and will be applied at a rate of 1.0 mg/l of actual chlorine.
Water Supply Well	Well No. 3, a 200 foot deep well with 170 feet of 8-inch casing and 30 feet of 8-inch, 10 slot screen. The well will be equipped with a 20 Hp submersible pump and motor rated 200 gpm @ 225 feet TDH, set at 160 feet below land surface.
Treatment Facilities	A 5 million gpd water treatment plant located at the north end of Second Avenue. The facility will include 6 low service pumps, 2 rapid mix basins, 4 flocculation/sedimentation basins, 8 dual media filters, 3 million gallon water storage reservoir and 6 high service pumps. Also included are chemical feed pumps and related appurtenances for the addition of alum, fluoride, phosphate and chlorine.

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

Permit Application for Water Systems (Continued)

General Project Information – Complete all boxes below.	
<p>7. Design engineer's name, engineering firm, address, phone number, and email address:</p> <p>Jeremy Nakashima, PE Lockwood, Andrews and Newnam, Inc. 1311 South Linden Rd, Suite B Flint, MI 48532 jnnakashima@lan-inc.com</p>	<p>8. Indicate who will provide project construction inspection:</p> <p><input type="checkbox"/> Organization listed in Box 1. <input checked="" type="checkbox"/> Engineering firm listed in Box 7. <input type="checkbox"/> Other - name, address, and phone number listed below.</p>
<p>9. Is a basis of design attached? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>If no, briefly explain why a basis of design is not needed.</p>	
<p>10. Are sealed and signed engineering plans attached? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>If no, briefly explain why engineering plans are not needed.</p>	
<p>11. Are sealed and signed construction specifications attached? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>If specifications are not attached, they need to be on file at DEQ.</p>	
<p>12. Were Recommended Standards for Water Works, Suggested Practice for Water Works, AWWA guidelines, and the requirements of Act 399 and its administrative rules followed? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>If no, explain which deviations were made and why.</p>	
<p>13. Are all coatings, chemical additives and construction materials ANSI/NSF or other adequate 3rd party approved? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>If no, describe what coatings, additives or materials did not meet the applicable standard and why.</p>	
<p>14. Are all water system facilities being installed in the public right-of-way or a dedicated utility easement? (For projects not located in the public right-of-way, utility easements must be shown on the plans.) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>If no, explain how access will be obtained.</p>	
<p>15. Is the project construction activity within a wetland (as defined by Section 324.30301(d)) of Part 303, 1994 PA 451? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p> <p>If yes, a wetland permit must be obtained.</p>	
<p>16. Is the project construction activity within a 100-year floodplain (as defined by R 323.1311(e)) of Part 31, 1994 PA 451, administrative rules? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p> <p>If yes, a flood plain permit must be obtained.</p>	
<p>17. Is the project construction activity within 500 feet of a lake, reservoir, or stream? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p> <p>If yes, a Soil and Erosion Control Permit must be obtained <u>or</u> indicate if the owner listed in box 2 of this application is an Authorized Public Agency (Section 10 of Part 91, 1994 PA 451) <input type="checkbox"/> Owner is APA.</p>	

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

Permit Application for Water Systems (Continued)

18. Will the proposed construction activity be part of a project involving the disturbance of five (5) or more acres of land?
 YES NO
If yes, is this activity regulated by the National Pollutant Discharge Elimination System storm water regulations?
 YES: NPDES Authorization to discharge storm water from construction activities must be obtained.
 NO: Describe why activity is not regulated:
Please call 517-241-8993 with questions regarding the applicability of the storm water regulations.

19. Is the project in or adjacent to a site of suspected or known soil or groundwater contamination?
 YES NO
If yes, attach a copy of a plan acceptable to the DEQ for handling contaminated soils and/or groundwater disturbed during construction. Contact the local DEQ district office for listings of Michigan sites of environmental contamination.

20. IF YOU ARE A CUSTOMER/WHOLESALE/BULK PURCHASER, COMPLETE THE FOLLOWING

1) Name and WSSN of source water supply system (seller) _____

2) Does the water service contract require water producer/seller to review and approve customer/wholesale/bulk purchaser water system construction plans?
 YES NO

If yes to #2, the producer/seller approval letter must be attached when submitted to DEQ.

21. **Owner's Certification** The owner of the proposed facilities or the owner's authorized representative shall complete the owner's certification. It is anticipated that the owner will either be a governmental agency (city, village, township, county, etc.) or a private owner (individual, company, association, etc.) of a Type I public water supply.

OWNER'S CERTIFICATION

I, BRENT F WEIGHT (name), acting as the PLANT SUPERVISOR (title/position) for
(print) (print)

CITY OF FLINT WATER PLANT (entity owning proposed facilities) certify that this project has
(print)

been reviewed and approved as detailed by the Plans and Specifications submitted under this application, and is in compliance with the requirements of 1976 PA 399, as amended, and its administrative rules.

[Signature] 10-16-2015 (810) 787-4537
Signature* Date Phone

*Original signature only, no photocopies will be accepted.

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

Permit Application for Water Systems (Continued)

PROJECT BASIS OF DESIGN – FOR WATER MAIN PROJECTS

PROJECT NAME: Flint WTP Phase II, Segment 4 Corrosion Control

For this PROJECT the following information must be provided per Act 399 unless waived by the Department. For projects other than water main installation, or if additional space is needed, attach separate sheet(s) with detailed Basis of Design calculations.

- A. A general map of the initial and ultimate service areas
 Included on engineering plans Attached separately
- B. Number of service connections served by this permit application all customers
- C. Total number of service connections ultimately served by entire project all customers
- D. Residential Equivalent Units (REUs) served by this permit application _____
- E. Total Residential Equivalent Units (REUs) ultimately served by entire project _____
- F. Water flow rates for proposed project based on REUs listed in "D" and "E" above

- 1. Initial design average day flow (mgd) 18.3
- 2. Initial design maximum day flow (mgd) 25.4
- 3. Total design average day flow (mgd) 24.0
- 4. Total design maximum day flow (mgd) 36.0
- 5. Required fire flows: ⁽¹⁾ _____ gpm for _____ hours

- G. Actual flows and pressures of existing system at the connection point(s) ⁽²⁾
_____ gpm at _____ psi
_____ gpm at _____ psi
_____ gpm at _____ psi
_____ gpm at _____ psi

- H. Estimated minimum flows and pressures within the proposed water main system ⁽³⁾ _____ gpm at _____ psi

(1) Every water system must decide what levels of fire fighting flows they wish to provide. Fire flow should be appropriate for the area (residential, commercial, industrial) being served by the project. Typical fire flow rates can be obtained from the water supply, local fire dept., ISO or AWWA. The water system must then be designed to be able to provide the required fire flows while maintaining at least 20 psi in all portions of the distribution system.

(2) Flows and pressures at the connection points must be given to determine if the existing water main(s) are able to deliver water to the new service area. These numbers can be obtained from a properly modeled and calibrated distribution system hydraulic analysis or hydrant flow tests performed in the field. If more than one connection is proposed, list as needed.

(3) List what the estimated minimum flows can be expected in the proposed water mains based on estimated water demands, head losses, elevation changes and other factors that may affect flows, such as dead end mains.

City of Flint

Phase II, Segment 4 Corrosion Control

Basis of Design

Given that Flint will require lead and copper corrosion control and given that Detroit utilizes orthophosphate for their corrosion control methodology, and that Flint will be receiving Detroit water for the immediate future, orthophosphate is the appropriate corrosion control methodology for Flint. A dosage of 0.8 mg/l as PO_4 has been recommended for the Detroit water. Numerous utilities utilizing Lake Michigan water have a target dosage of 0.9 mg/l as PO_4 . Therefore, a target dosage in the range of 0.8 to 0.9 mg/l appears appropriate.

It is expected that initially there will be a significant PO_4 demand in the system. This will require a significantly higher dosage until this demand is satisfied and the target residual can be maintained. We are therefore designing for capability of a maximum dosage of 1.5 mg/l.

The arriving Detroit water will likely have some residual PO_4 when it arrives at Flint. It has been reported that this residual will be approximately 0.4 mg/l. The system must therefore be capable of a minimum dosage of 0.4 mg/l.

Based upon the usage of 75% Phosphoric Acid and a flow range of 4 MGD to 25 MGD, with an average day of 16 MGD, the expected feed rate will be 1.35 to 32 gpd. Average Phosphoric Acid feed is expected to be 10.8 gpd, requiring 30 days storage of 325 gal. Phosphoric acid will be stored in delivered totes and will be placed with containment pallets for dual containment.

Orthophosphate will need to be applied at two locations. Detroit water will enter the Flint system at Control Station CS2, and supplementary phosphate will be applied there. However, on occasion some incoming water may need to be diverted to the Dort Reservoir, bypassing CS2. This water would then be introduced to the system through High Service Pump Station PS4 and phosphate would be introduced at this location.



**Lockwood, Andrews
& Newnam, Inc.**

TRANSMITTAL

Filing Data Code 1-07

PLANNING
ENGINEERING
PROGRAM MANAGEMENT

- UPS
 FEDEX
 DELIVERY SERVICE
 HAND DELIVER
 OVERNIGHT
 REGULAR MAIL
 PICK-UP
 OTHER Extranet(To PM)

Est. 1935
AUSTIN, TX
CHICAGO, IL
CLEARWATER, FL
COLLEGE STATION, TX
DALLAS, TX
FLINT, MI
FORT WORTH, TX
HOUSTON, TX
HUNTINGTON BEACH, CA
LAS VEGAS, NV
LOS ANGELES, CA
MIAMI, FL
MILPITAS, CA
PHOENIX, AZ
SACRAMENTO, CA
SAN ANTONIO, TX
SAN MARCOS, TX
WACO, TX

To: Michael Prysby		Date: 10-16-13
Company: MDEQ		Project Number: 130-10701-001
Address: 525 WEST ALLEGAN STREET Lansing, MI 48933		Routing:
Project: City of Flint Water Treatment Plant Improvements.		
We Are Sending You: <input type="checkbox"/> Shop Drawings <input type="checkbox"/> Original Drawings <input checked="" type="checkbox"/> Prints <input type="checkbox"/> Specifications <input type="checkbox"/> <input type="checkbox"/>		These Are Transmitted: <input type="checkbox"/> As Requested <input checked="" type="checkbox"/> For Your Use <input checked="" type="checkbox"/> For Review and Comment <input type="checkbox"/> For Your Signature <input type="checkbox"/> <input type="checkbox"/>

Quantity	Description
3	Full Set of Plans for Ph2-Seg4 Corrosion Control
1	Act 399 Permit Application
1	11x17 Set of Plan for Ph2-Seg4 Corrosion Control

Remarks

These plans have been modified slightly from the set electronically submitted last night.

We look forward to your comments and approval.

Thanks.

DEQ
 RESOURCE MANAGEMENT DIVISION
 OCT 16 2015
 LANSING DISTRICT

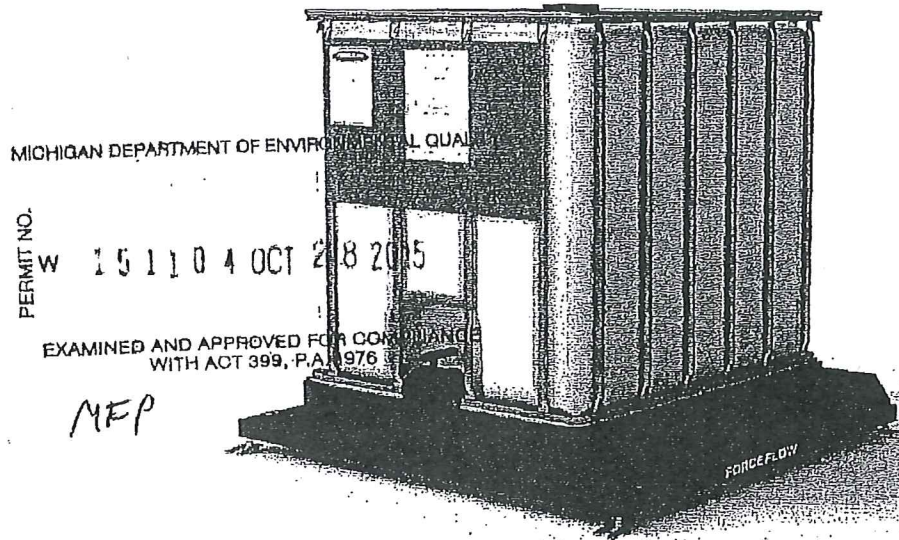
1311 SOUTH LINDEN ROAD
SUITE B
FLINT, MI 48532
TEL 810.820.2682
FAX 810.820.2703
www.lan-inc.com

Distribution	Prepared By
1- Mike Glasgow 2- Brent Wright 3- File	

IBC TOTE SCALE

FOR CHEMICAL IBC TOTES

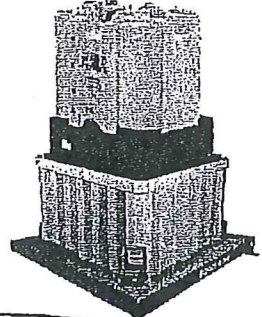
<p>Safely track chemical usage and tank levels</p>	<p>Warn of dangerous over and under- feed conditions</p>	<p>Prevent system from running empty</p>	<p>4-20mA remote monitoring reduces operator exposure to chemicals</p>
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Strict federal and state reporting requirements have created a need for water and wastewater plant operators to easily and accurately track chemical feed rates and usages. The IBC Tote Scale gives you this information along with the assurance that your chemical supply will not unexpectedly run out.

The heavy duty steel platform is protected with our advanced 80 mil thick TUF-COAT™ Environmental Armor. Tuf-Coat is highly resistant to chemicals, abrasion, impact and ultraviolet light degradation making the IBC Tote Scale ideal for even the harshest environments. Options include 316 stainless steel and MaxSense™ high accuracy models.

The IBC Tote Scale utilizes weighing technology to create a highly reliable, non-contacting chemical monitoring system that avoids problems other sensor technologies face caused by irregular tank shapes, corrosive chemical fumes, fluctuating temperatures and changes in specific gravity.



IBC TOTE SCALE

MODELS AND ORDERING INFORMATION

IBC Tote Scales do not include weight Indicating Instrument. Select from the following: Wizard 4000® Advanced Digital Display (Bulletin 518), the SOLO® G2 Digital Weight Display (Bulletin 516), the SOLO XT® Hydraulic Digital Display (Bulletin 514), the Century Hydraulic dial (Bulletin 519) or Hypo Track® (Bulletin 517). Please order Indicator separately.

ELECTRONIC - Single Load Cell Platform (Includes platform with backstop and electronic load cell with 20 ft. cable. Lengths up to 100 ft. available; request when ordering.)

MODEL	MATERIAL	X	Y	Z	H	ACCURACY
54-DR**TB	TUF-COAT® STEEL	54"	54"	58"	3.25"	1/4 of 1% FS
54-DR**TBS	316 STAINLESS STEEL	54"	54"	58"	3.25"	1/4 of 1% FS
60-DR**TB	TUF-COAT® STEEL	60"	60"	64"	3.25"	1/4 of 1% FS
60-DR**TBS	316 STAINLESS STEEL	60"	60"	64"	3.25"	1/4 of 1% FS



ELECTRONIC - HI Accuracy 4-Load Cell Platform (Includes platform and (4) electronic load cells with 20 ft. of cable. Lengths up to 100 ft. available; request at time of purchase. Backstop not included or necessary on these models but available upon special request.)

MODEL	MATERIAL	X	Y	Z	H	ACCURACY
54-DR**TB-HA4	TUF-COAT® STEEL	54"	54"	N/A	3.25"	1/10 of 1% FS
54-DR**TBS-HA4	316 STAINLESS STEEL	54"	54"	N/A	3.25"	1/10 of 1% FS
60-DR**TB-HA4	TUF-COAT® STEEL	60"	60"	N/A	3.25"	1/10 of 1% FS
60-DR**TBS-HA4	316 STAINLESS STEEL	60"	60"	N/A	3.25"	1/10 of 1% FS

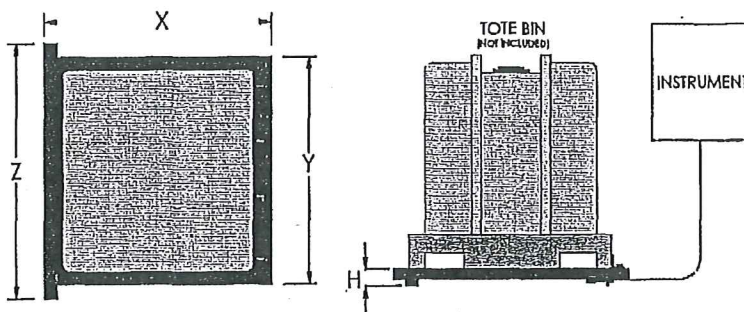


HYDRAULIC - Single Load Cell Platform (Includes platform with backstop, and hydraulic load cell with 12 ft. Hose and quick connect. Hose/lubing lengths up to 100 ft. available to allow remote mounting of indicator; request at time of purchase.)

MODEL	MATERIAL	X	Y	Z	H	ACCURACY
54-HY**TB	TUF-COAT® STEEL	54"	54"	58"	3.25"	1/2 of 1% FS
54-HY**TBS	316 STAINLESS STEEL	54"	54"	58"	3.25"	1/2 of 1% FS
60-HY**TB	TUF-COAT® STEEL	60"	60"	64"	3.25"	1/2 of 1% FS
60-HY**TBS	316 STAINLESS STEEL	60"	60"	64"	3.25"	1/2 of 1% FS



** = CAPACITY: 1000 lbs = "10", 2000 lbs = "20", 3000 lbs = "30", 4000 lbs = "40", 5000 lbs = "50"



SPECIFYING GUIDELINES:

- A. For maximum accuracy, size scale capacity to match the gross weight (chemical plus tote tare weight).
- B. Tote size should not exceed platform size.
- C. Supply connections must be flexible and preferably connected to tote over pivoted side of platform.

Please visit www.forceflow.com for drawings, engineered specifications and manuals.

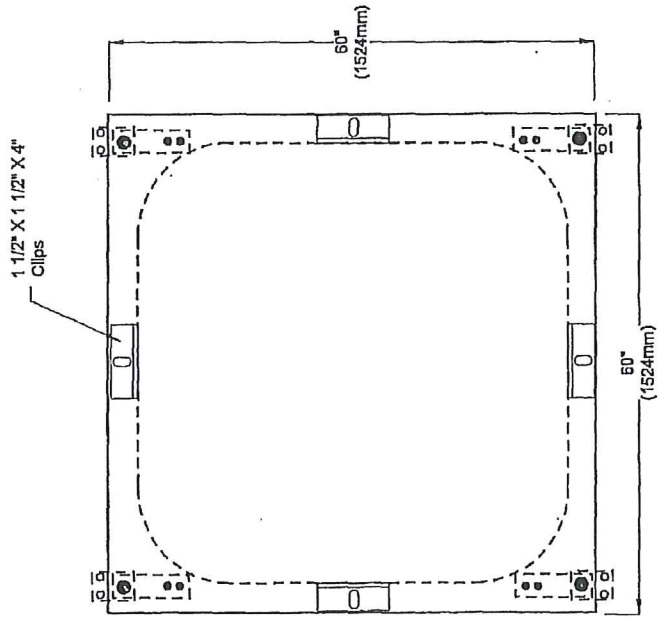


MODEL NUMBERS (for Load Cell & Platform)
 60-DR30TC-HA4 (3,000 Lbs.) 60" x 60" x 3.25"
 60-DR40TC-HA4 (4,000 Lbs.) 60" x 60" x 3.25"
 60-DR50TC-HA4 (5,000 Lbs.) 60" x 60" x 3.25"
 60-DR60TC-HA4 (6,000 Lbs.) 60" x 60" x 3.25"

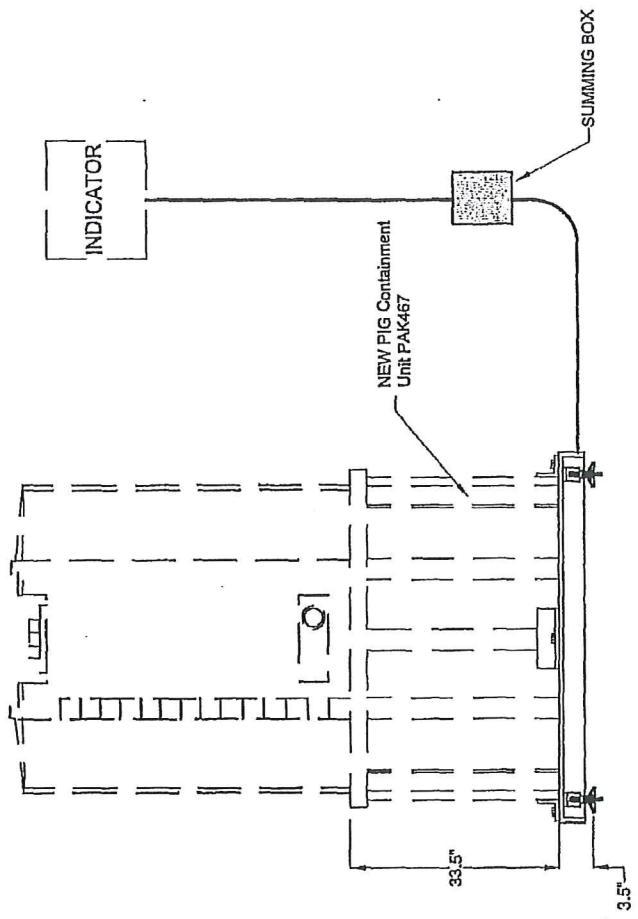
For Stainless Steel platform, as "S" after "TC", i.e. 60-DR30TCS-HA4.
 For other capacities and platform sizes, consult factory.

MODEL NUMBER (for SOLO 1000 Indicator)
 SR-1000-1 1-Channel SOLO 1000 Indicator
 SR-1000-2 2-Channel SOLO 1000 Indicator

MODEL NUMBER (Containment Unit)
 PAK467 400 gal. NEW PIG Poly IBC Containment Unit



- ___ Scale Model Number
- ___ Pounds or Kilogram Indication
- ___ Feet of Cable (20' Standard)
- ___ Tote Skid Size
- 400 ___ Containment Size (Gallons)



INSTALLATION NOTE:

We recommend using a forklift to load/unload totes.
 If a pallet jack is to be used, scale platform must be pilt mounted so deck is flush with floor surface.
 Surface mounting with use of inclined load ramps are NOT RECOMMENDED.

2430 Stanwell Dr, Concord, Ca 94520 USA
 1-800-893-6723 US & Canada, Fax 925-686-6713
 WWW.forceflow.com / Info@forceflow.com



PL 00044 SUBMITTAL FORCES/Model Drawing 01/01/10, Tote Bin Scale 60 Containment Unit

Drawn by: KBV

Date: 1/23/09

Revised: 4/13/10

Scale:

HI-ACCURACY ELECTRONIC
 60" TOTE BIN SCALE
 CONTAINMENT

Drawing Number

31431

---NOT SUPPLIED BY FORCE FLOW---
 For use with Force Flow Scale Model 60-DR100TCHA4



New Pig

Your partner for a clean
 and safe workplace.
 1-800-HOT-HOGS® (468-4647)

Product Data Sheet

Item Number: PAK467

Item Name: PIG® Poly IBC Containment Unit

Load Capacity UDL:

- 12000 lbs./each (5443.2 kg/each)

Sump Capacity:

- 400 gal./each (1514 L/each)

Options Available:

Item #	Size	Color	Misc. Features	Amount	Length	Width	Height	Depth	Int. Dia.	Ext. Dia.	Weight	Qty/Pallet
PAK467	—	—	—	1 each	58" (147.3cm)	58" (147.3cm)	33.5" (85.1cm)	—	—	—	415lbs. (188.2kg)	1

Color: White/Black

Description:

Polyethylene containment unit used to help meet containment regulations when storing IBCs.

Application:

Used to help meet containment regulations when storing IBCs of 400 gallons or less containing materials compatible with polyethylene. IBCs can be stacked two high.

Product Features:

Super-strong Containment Unit helps you comply with regulations and store IBC tanks safely. Capture leaks, drips and spills to keep floors dry and workers safe.

- Heavy-duty construction permits double-stacking of IBCs to save space
- Solid anti-slip deck holds a variety of IBC sizes; if tank has feet or pegs, be sure to use proper support pads or plates
- Positioning pegs in pedestals keep deck from shifting
- Polyethylene construction resists UV rays, rust, corrosion and most chemicals
- Translucent white sidewalls allow easy visual inspection
- Arrives ready to use with no assembly required

Composition:

- Sump - Polyethylene
- Grates - Injection Molded Polyethylene

This product helps you comply with:

Regulatory Citation	Summary
40 CFR 264.175	Hazardous waste containment systems must be free of structural cracks or gaps, be designed to keep spilled liquids from remaining in contact with the container, prevent run-on and "have sufficient capacity to contain 10% of the volume of the containers, or the volume of the largest container, whichever is greater."

Additional Specifications:

- Dimensions (Grate): 52" L x 52" W

Disclaimers:

- **Flammables Notice:** If using this product with flammable liquids, please consider the regulations that apply to storage and handling of flammable liquids and the safety of this application, specifically flammable vapors, static discharge and heat sources. For further assistance, please call Technical Services.

PDS generated: Jul 14, 2008

One Pork Avenue, Tipton, PA 16684-0304 • 1-800-HOT-HOGS® (468-4647)
Fax: 1-800-621-PIGS® (621-7447) • Email: hothogs@newpig.com • Web: newpig.com

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Flint Phosphate Calculations

Chemical will be 75% NSF certified Phosphoric acid

75% acid has a density of 13.17 #/gal. (5,974 g/gal) 13.17×453.5923

Of this 75% is Phosphoric acid (H_3PO_4) = 4,480 g H_3PO_4 /gal $5,974 \times 0.75$

Molecular weight of H_3PO_4 is 97.9913 g/mole

Moles H_3PO_4 / gal = 45.72 $4,480/97.9913$

Moles H_3PO_4 = Moles Orthophosphate (PO_4^{-3}) = Moles Phosphorus (P)

Species	Molecular Wt.	Moles / gal	g/gal
H_3PO_4	97.9913	45.72	4,480
PO_4^{-3}	94.9676	45.72	4341.92
P	30.97	45.72	1407.72

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

PERMIT NO.

W 151104 OCT 28 2015

Proposed Operating Parameters

EXAMINED AND APPROVED FOR COMPLIANCE
WITH ACT 399, P.A. 1978

Assumptions per DEQ:

- City of Detroit residual is 0.39 mg/l as P
- MDEQ wants Flint to maintain a residual of approximately 1.0 mg/l as P
- Feed pump capacity should be sized for a max dose of 2.0 mg/l as P

MFP

	Plant Flow	Dosage as PO_4^{-3} *	Dosage as P
Maximum	25 MGD	6.13 mg/l	2.0 mg/l
Average	16 MGD	3.07 mg/l	1.0 mg/l
Minimum	8 MGD	1.53 mg/l	0.5 mg/l

*Equivalent dosage to P dosage

Feed Rate Calculations

Maximum feed rate (Max Flow \times Max Dosage)

$$25 \text{ MGD} \times 3782 \text{ g/gal } H_2O \times 2.0 \text{ ppm} / 1,408 \text{ g/gal} = 134.30 \text{ gpd Phosphoric Acid}$$

Average feed rate (Avg Flow \times Avg Dosage)

$$16 \text{ MGD} \times 3782 \text{ g/gal } H_2O \times (1.0 \text{ ppm} - 0.39 \text{ ppm}) / 1,408 \text{ g/gal} = 26.21 \text{ gpd Phosphoric Acid}$$

Minimum feed rate (Min Flow \times Min Dosage)

$$8 \text{ MGD} \times 3782 \text{ g/gal } H_2O \times (1.0 \text{ ppm} - 0.39 \text{ ppm}) / 1,408 \text{ g/gal} = 13.10 \text{ gpd Phosphoric Acid}$$

Storage Requirements

30 days supply at average flow and dosage = $26.21 \text{ gpd} \times 30 \text{ days} = 786 \text{ gal}$.

Assuming the use of 275 gal semi-bulk totes, 3 totes required (recommend 2 in service, 1 spare)

Four Function Valve
AUTOPRIME™ liquid End
High Viscosity Liquid End
Low Level Float Switch
Digi-Pulse Flow Monitor
Repair & Preventive Maintenance Kits
Calibration Columns

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Sut



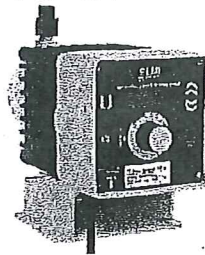
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LMI PRODUCTS Metering Pumps Series C Chemical Metering Pumps

Series C Chemical Metering Pumps

Series C Chemical Metering Pumps

Series C Chemical Metering Pumps have been an industry standard for over 20 years. Designed for Municipal/Industrial applications, the familiar yellow and black pumps have a rugged, totally enclosed, chemically resistant housing for protection in the harshest environments. Encapsulated electronics and a rigid housing and stroke bracket ensure years of precise, repeatable performance.



High Resolution Image

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Features Tab

Information Tab

Options Tab

- Adjustable stroke frequency and the flexibility of up to 1000:1 turndown ratio
 - Manually adjustable stroke length provides accurate pump output adjustment
 - NEMA 4X / IP65 enclosures for protection against corrosive environments
 - Time tested electronics for reliable, repeatable performance
 - Totally encapsulated electronics for protection against moisture and corrosive conditions
 - Inputs for low level switch available on certain models
 - Models with external pacing for flow proportional applications
 - Advanced control options for simplified system integration (pulse multiply/divide, 4-20 mA, remote on/off)
- *UL, *CUL, NSF 50, NSF 61, *CE Certifications

Control Codes:

- 1 - Dual Manual Control (speed and stroke length)
- 7 - Pulse Input / Dual Manual Control
- 9 - Pulse/Analog Input / Dual Manual Control

Output Codes with standard liquid end	
Max Capacity:	Max Pressure:
*CX0 - 1.3 GPH (4.9 l/h)	300 psi (20.7 Bar)
*CX1 - 2.5 GPH (9.5 l/h)	150 psi (10.3 Bar)
*CX2 - 4.0 GPH (15.1 l/h)	100 psi (6.9 Bar)
*CX3 - 6.0 GPH (30.3 l/h)	60 psi (4.1 Bar)
*CX4 - 20 GPH (75.7 l/h)	25 psi (1.7 Bar)
C76 - 4.0 GPH (15.1 l/h)	175 psi (12.1 Bar)
C77 - 10.0 GPH (38.0 l/h)	80 psi (5.5 Bar)
C78 - 25 GPH (95.0 l/h)	30 psi (2.07 Bar)

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MFP