

4 Turkey Hill Road  
Newtown, CT 06470  
Tel (203) 270-4300  
Fax (203) 426-9968



Fred Hurley,  
*Director*

**TOWN OF NEWTOWN**  
**WATER AND SEWER AUTHORITY**

Marianne Brown,  
*Chairman*  
Richard Zang  
Louis Carbone  
George Hill  
Alan Shepard  
Eugene Vetrano  
Carl Zencey

*THESE MINUTES ARE SUBJECT TO APPROVAL BY THE WATER AND SEWER AUTHORITY*

The Water and Sewer Authority held a special meeting on June 6, 2018 at Public Works, 4 Turkey Hill Road, Newtown, CT. Gene Vetrano called the meeting to order at 7:05pm.

**Present:** Dick Zang, Lou Carbone, Carl Zencey, Gene Vetrano

**Absent:** Alan Shepard, George Hill, Marianne Brown

**Also Present:** Director of Public Work Fred Hurley, Mike Burton, Chris Smith of Shipman & Goodwin, 6 members of the public and 1 members of the press

**Public Participation – None**

**Approval of the Minutes – D. Zang moved to approve the minutes from the 5/10/18 meeting. L. Carbone seconded, motion unanimously approved.**

**Report by Suez Water Environmental Services – None**

**Report by Public Works Director – F. Hurley provided results of a lead study (Attachment A). It has been determined that there is no issue, it was a lab error. The Anoxic mixer have been replaced and everything is working. There was some damage to the solar panels during the storm but they will be repaired.**

**Committee Reports – None**

**UNFINISHED BUSINESS**

***Sewer Benefit Assessment for 10-22 Washington Avenue – F. Hurley provided clarification regarding the benefit assessment. The unit pricing was correct, the amount of units was incorrect. The appraiser had 16 apartments and 58 condo's but in reality it is 46 apartments and 28 condos.***

**D. Zang moved to set the sewer benefit assessment for 10-22 Washington Avenue at \$525,000 contingent on the expansion of the Sandy Hook pump station. L. Carbone seconded, motion unanimously approved.**

Mike Burton asked for a payment schedule. The benefit assessments for the condo's will be payable upon C/O and a 20 year payback on the apartments. D. Zang explained that the previous 20 year paybacks were because of bonding and that is not available not. F. Hurley will work with Mr. Burton to come up with a payment plan that will work for both parties.

*Sewer Application 79 Church Hill Road* – C. Smith presented on behalf of 79 Church Hill Road, LLC. Previously it was determined that 3.8 acres was in the sewer service area but it was just discovered that it is actually only .75 acres. C. Smith read a letter to the WSA aloud and provided a letter from Representative Christopher Rosario (Attachment C). If the .75 acres is an actuality, they are proposing an 830-G which will be 6 stories high with 141 units. The total sewer capacity for that is 20,868. At the April meeting, capacity was put on hold for 79 Church Hill Road and they want to confirm that the capacity is available. There is a question if this proposal is an amendment to the original application or if a new application needs to be on file. The WSA chose to consult with their attorney to determine if a new application needs to be filed.

*Sandy Hook Pump Station* – Fuss & O'Neill provided a cursory evaluation of the Sandy Hook pump station (Attachment D). They will provide costs for various options but it looks like replacing the pumps will be the direction they go.

*WSA Finance and Procedures* – This was handled at the last meeting and should be taken off the agenda.

*2018 Budget* – F. Hurley explained that they have been successful breaking out Haleyville, Central and FFH districts. There are still a few revenue questions. When it is finished it will be distributed to members for review and discussed at the next meeting.

*Water Pollution Control Plan* – This still needs to be reviewed by the WSA Attorney

*Delinquent Sewer Assessment Usage* – All the properties in question were one owner so F. Hurley reached out to them directly. Removing the interest penalty the amount owed is \$57,459.60. The property owner has agreed to pay this in 5 equal payments over 5 years and keep all new bills current.

D. Zang moved to accept \$57,459.60 to rectify the account over 5 years with the stipulation that they keep the payment schedule and keep future billings current or the amount due will revert to the full amount. L. Carbone seconded, motion unanimously approved.

## **NEW BUSINESS**

*St. Rose Project Fee/St. Rose Engineer Report* – Fuss & O'Neill provided a cost estimate for their services for the sewer relocation at St. Rose. This is the amount the permit should be.

C. Zencey moved to the St. Rose permit not to exceed \$22,800. L. Carbone seconded, motion unanimously approved.

Having no further business, the meeting was adjourned at 8:40pm

Respectfully submitted  
Arlene Miles, Clerk

Attachment A



Fred Hurley &lt;fred.hurley@newtown-ct.gov&gt;

**FW: Lead Study**

1 message

Segarra, Julio &lt;Julio.Segarra@suez-na.com&gt;

Wed, Jun 6, 2018 at 1:41 PM

To: "fred.hurley@newtown-ct.gov" <fred.hurley@newtown-ct.gov>, Arlene Miles <arlene.miles@newtown-ct.gov>, "Burke, Michael (Holyoke)" <michael.burke@suez.com>, "Murphy, Beth" <beth.murphy@suez.com>, "Sicurelli, Antoinette" <Antoinette.Sicurelli@suez-na.com>

Hi Fred,

The attached spreadsheet is the results of our in-house three month plant influent and effluent lead study.

We have concluded the study as of June 5<sup>th</sup> 2018.

1. All the three (3) labs since March have had effluent Lead results of: <.005 mg/L or non- detect.
2. The Fuss & O'Neill lead study also has found non-source point of lead.
3. The State Industrial discharge inspector found no significant source of Lead either.

It appears the conclusion points to an occasional lab error which has been brought to their attention and has apparently been corrected.

**From:** Sicurelli, Antoinette**Sent:** Wednesday, June 6, 2018 1:15 PM**To:** Segarra, Julio <Julio.Segarra@suez-na.com>**Subject:** Lead Study

Antoinette Sicurelli

Plant Operator

Newtown, CT

**SUEZ**

24 Commerce Rd

Newtown, CT



# Town of Newtown - WPC - Lead Study

	Hydro	Sample ID#	MDL	Method	Phoenix	Sample ID#	MDL	Method	Aqua	Sample ID#	MDL	Method	Reportable Average
Lead													
3/6/2018	INF	310003	0.001	200.8	0.001	BZ99074	0.001	E200.7	0.007	211217	0.001	EPA 200.5	0.00266667
	EFF	310004	0.001	200.8	<0.001	BZ99073	0.001	E200.7	0.006	211218	0.001	EPA 200.5	0.002
3/13/2018	INF	310155	0.001	200.8	<0.001	CA02259	0.001	E200.7	0.002	211495	0.001	EPA 200.5	0
	EFF	210156	0.001	200.8	<0.001	CA02258	0.001	E200.7	0.002	211496	0.001	EPA 200.5	0
3/20/2018	INF	310383	0.001	200.9	<0.001	CA05892	0.001	E200.7	0.004	211791	0.001	200.5	0.001
	EFF	310384	0.001	200.9	0.0007	CA05893	0.0004	200.8-5.4	0.0029	211792	0.001	200.5	0.0012
3/27/2018	0.003	310541	0.001	200.9	0.002	CA09310	0.001	E200.7	0.003	212051	0.001	200.5	0.006
	EFF	310542	0.001	200.9	<0.0020	CA09309	0.002	200.8-5.4	0.004	212052	0.001	200.5	0.001
4/3/2018	INF	310725	0.001	200.9	<0.001	CA13939	0.001	E200.7	0.0024	212269	0.001	200.5	0.001
	EFF	310726	0.001	200.9	0.0008	CA13938	0.0004	200.8-5.4	0.0026	212270	0.001	200.5	0.001
4/10/2018	INF	310989	0.0005	200.8	<0.001	CA17444	0.001	E200.7	0.0028	212538	0.001	200.5	0.001
	EFF	310990	0.0005	200.8	<0.0020	CA17443	0.002	200.8-5.4	0.0024	212539	0.001	200.5	0.0008
4/17/2018	0.003	311194	0.003	200.9	0.005	CA21420	0.001	E200.7	0.009	212772	0.001	200.5	0.005
	EFF	311195	0.001	200.9	<0.001	CA21419	0.001	E200.7	0.003	212773	0.001	200.5	0.001
4/24/2018	INF	311508	0.001	200.9	0.001	CA35018	0.001	E200.7	0.003	213075	0.001	200.5	0.001
	EFF	311508	0.001	200.9	0.0006	CA35017	0.0002	E200.8	0.002	213077	0.001	200.5	0.0008
5/1/2018	INF	311733	0.001	200.9	0.002	GA39010	0.001	E200.7	0.0029	213368	0.001	200.5	0.002
	EFF	311734	0.001	200.9	0.0008	CA39009	0.0001	E200.8	0.0027	213369	0.001	200.5	0.001
5/8/2018	INF	311970	0.001	200.9	0.002	CA42933	0.001	E200.7	0.004	213785	0.001	200.5	0.002
	EFF	311971	0.001	200.9	0.0012	CA42932	0.0001	E200.8	0.001	213786	0.001	200.5	0.0007
5/15/2018	INF	312235	0.001	200.9	0.001	CA47669	0.001	E200.7	0.004	214070	0.001	200.5	0.002
	EFF	312236	0.001	200.9	0.0003	CA47668	0.0001	E200.8	0.003	214071	0.001	200.5	0.001
5/23/2018	0.001	312529	0.001	200.9	0.001	CA52564	0.001	E200.7	0.005	214481	0.001	200.5	0.002
	EFF	312530	0.001	200.9	0.0005	CA52563	0.0001	E200.8	0.003	214482	0.001	200.5	0.001
5/29/2018	0.001	312673	0.001	200.9	0.002	CA61049	0.001	E200.7	0.005	214632	0.001	200.5	0.003
	EFF	312674	0.001	200.9	0.0003	CA61048	0.0001	E200.8	0.002	214633	0.001	200.5	0.001

**Positive Effects of the Sewer Installation**

The installation of a sewer line has a positive impact on the market value of properties due to the following:

- 1) Land areas required for a septic system and reserve are available for development;
- 2) Septic system operation and maintenance expenses will not be required;
- 3) No reserve fund is necessary to replace existing septic systems at the end of their useful lives;
- 4) The density of a project is not limited by septic system constraints (soil types, sloping topography, wetlands, etc.) after sewers;
- 5) Municipal sewers increase the flexibility of potential uses that a property can physically support, including water-intensive uses such as medical offices and restaurants. These uses often command relatively high rental rates in the market.

**Local Area Analysis and Neighborhood**

The Local Area Analysis and Neighborhood descriptions are the same as in the Before section of this appraisal report.

**Site Analysis**

The Site Analysis in the After scenario is the same as in the Before scenario, with the exception that the subject site now has a sewer system in place.

**Taxes and Zoning**

The taxes and zoning are the same as in the Before section of the appraisal report.

**Highest and Best Use Analysis**

The highest and best use of the subject property after sewers is for construction of the approved 74 unit condominium/apartment complex.

**Description of the Approved Use After the Sewer Installation**

The approved use for the subject property after the sewer installation is for the construction of 11 different buildings totaling 74 condominium/apartment units. The unit mix will be 18 three bedrooms, 40 two bedrooms, and 16 one bedrooms. See the approved site plan in the addendum.

According to discussions with the Newtown WPCA, the one bedroom units in the development are assumed to be rented as apartments, whereas the two and three bedroom units are to be sold as condominiums.

**Appraisal Methodology**

The subject property is comprised of four residences on a total of 11.80 acres of land. In the after section, the land value is being appraised for its potential to construct a 74 unit condominium/apartment complex. In estimating the market value of the subject property After the sewer installation, the Sales Comparison approach is utilized.

**Land Value**

The subject land comprises 11.80 acres in the R-2 zone in Newtown. In arriving at the market value of the land, sales of similar vacant multifamily land in Newtown and nearby towns were studied. Our search returned five sales of vacant land considered comparable to the subject land as if vacant and available for its highest and best use. The comparable land sales are summarized as follows:

MULTI-FAMILY LAND SALES					
Date of Sale	Property Address	Sale Price	Land Area (Acres)	# of Units	Sale Price/Unit
7/31/1998	Washington & North, Stamford	\$6,220,000	3.24	195	\$31,897
3/2/1998	Briar Ridge Road, Danbury	\$3,271,250	32.00	135	\$24,231
1/1/1998	Richards Avenue, Norwalk	\$2,490,000	2.61	60	\$41,500
5/3/1996	Grumman Hill Road, Wilton	\$2,880,000	9.64	48	\$60,000

Range: \$24,231/Unit to \$60,000/Unit  
Average: \$39,407

These sales indicate a sale price range of \$24,231 to \$60,000 per unit, with an average of \$39,407. The sale in Danbury is the closest in proximity to Newtown, and was given the greatest weight. The multifamily projects in Stamford, Norwalk and Wilton are in areas of higher property values compared to Newtown, requiring downward adjustments. The sales in Stamford and Danbury are significantly larger in size (195 units and 135 units respectively), requiring upward adjustments. With consideration to the foregoing, the market value of the subject land after sewers is estimated at a rounded \$25,000 per unit, or \$1,850,000 rounded (\$25,000 per unit x 74 units).

## Summary of Value Conclusions

Based on the foregoing, the special benefit to the subject property due to the installation of sewers is concluded as follows:

Sewer Benefit	
Before Value	\$780,000
After Value -	\$1,850,000
Sewer Benefit	\$1,070,000

## Comparable Assessment Methodology

An alternate methodology examines the historic benefit assessments placed on multifamily property in Newtown since the original installation of sewers in 1998. Details regarding five multifamily projects considered comparable to the subject property are as follows:

Name	Address	Sewer Benefit Assessment Per Unit
Rochambeau Woods	Mt. Pleasant Road	\$ 12,500
Walnut Tree Village - Phase I	Walnut Tree Hill Road	\$ 10,000
Walnut Tree Village - Phase II	Walnut Tree Hill Road	\$ 10,350
The Woods - Townhouses	Mt. Pleasant Road	\$ 11,000
The Woods - Flats	Mt. Pleasant Road	\$ 6,000
	95 Church Hill Road	\$ 11,000

Range: \$6,000-\$12,500

Average: \$10,142

The sewer benefit assessments for the comparable projects range from \$6,000 to \$12,500, and average \$10,142 per unit. The subject property is most comparable to the newer projects built in Town; Rochambeau Woods, The Woods, and 95 Church Hill Road.

As discussed earlier in the "Description of the Approved Use After the Sewer Installation" section of this report, the subject apartment units are assumed to be one bedroom units (most similar to the flat-style units at The Woods development). The condominium units are to be two and three bedroom units. Therefore, based on comparable assessment methodology, the sewer benefit for the subject property is estimated as follows:

Subject Unit Type	Benefit/Unit	# of Units	Total
Apartment	\$6,000	16	\$96,000
Condominium	\$11,000	58	\$638,000
<b>Total Sewer Benefit</b>	<b>\$9,919</b>	<b>74</b>	<b>\$734,000</b>



## Sewer Benefit Conclusion

The before and after sewer benefit analysis concludes a special benefit for the subject property of \$1,070,000. This is supported by the cost to substitute the municipal sewer system with a community septic system, which is estimated at \$1,010,000. Even if a septic system could be approved for the project, it is likely that the unit yield would be reduced, resulting in additional loss in market value.

The comparable assessment methodology indicates a sewer benefit conclusion of \$734,000. This conclusion is below the special benefit indicated by the market, but is in line with comparable multifamily developments in Newtown. Based on the foregoing, the special benefit to the subject property due to the installation of sewers is **\$734,000**, reflecting the proposed new construction. Note that this sewer benefit conclusion does not consider the sewer benefit set previously for the property of \$12,820. This prior sewer benefit assessment should be credited.



## **RIVERWALK AT SANDY HOOK VILLAGE**

### **BENEFIT ASSESSMENT FROM PAST HISTORY**

Townhouses -	28	\$ 9,900.00	\$ 277,200.00
Apartments	46	\$ 5,400.00	\$ 248,400.00
<b>TOTAL</b>			<b>\$ 525,600.00</b>

Payments - Townhouses to be paid on issuance of CO for each unit

Apartments to be paid back over a 20 year period



Christopher J. Smith  
Phone: (860) 251-5606  
Fax: (860) 251-5318  
E-mail: [cjsmith@goodwin.com](mailto:cjsmith@goodwin.com)

June 6, 2018

**VIA HAND-DELIVERY**

Marianne Brown, Chairperson  
Newtown Water and Sewer Authority  
4 Turkey Hill Road  
Newtown, CT 06470

Re: Application for: (1) confirmation of the amount of sewer capacity available to service real property known as 79 Church Hill Road, located in Newtown, Connecticut; and (2) confirmation of the availability of capacity up to 25,900 gallons per day of sewage capacity to service a 175 unit multi-family development located within a designated sewer service area on real property known as 79 Church Hill Road, Newtown, Connecticut.

Applicant: 79 Church Hill Road, LLC.

Dear Chairperson Brown and Members of the Authority:

The undersigned firm represents 79 Church Hill Road, LLC ("Applicant") concerning the above-referenced Application, which was filed with cover letter, dated May 1, 2018. The Application pertains to real property known as 79 Church Hill Road, located in Newtown Connecticut ("subject property"). As you are aware, the Applicant is the contract-purchaser of the subject property.

This Application requests confirmation by the Newtown Water and Sewer Authority ("Authority") of sewer service capacity for a proposed multi-family development on the subject property to be known as "Hunters Ridge." The Authority and your professional staff is well-aware that there is sufficient capacity for the amount requested in the Application. However, your professional staff, in an apparent attempt to minimize the allocation of available capacity for a multi-family development on the subject property with an affordable or workforce housing component, and after a number of years of discussions, meetings, prior applications and a decision by the Authority, now claims that the sewer service area is

substantially and materially different than that which has been used by and discussed between the Applicant, your staff and this Authority. By letter dated May 4, 2018, with an enclosed marked-up map, staff advised the Applicant that instead of the historic 3.8 acres of the subject property being located within the sewer service area, there is only .75 acres. As staff notes in its letter, "[t]his obviously has a major impact on siting of 175 units of multi-family housing on such a small parcel, regardless of the availability of any sewer capacity." (See copy of letter attached hereto as Exhibit A.)

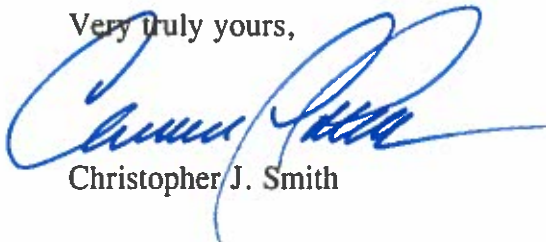
First, this "new" position is substantially and materially different than that taken by your staff and this Authority over the past number of years.

Second, assuming that the alleged new sewer service area is adopted by the Authority, then the Applicant respectfully submits the attached plan depicting a single building within the sewer service area comprised of six stories with 141 units. (This modified "response plan" is attached hereto as Exhibit B.) The capacity for these 141 units, as provided by your Regulations, is 20,868 gallons per day. This amount is well within the amount requested in the Application, and that available pursuant to your own records.

Therefore, if the Authority determines to adopt staff's claimed new sewer service area relative to the Application, then the Authority must act on the attached plan for 141 units, which is submitted in direct response to this new position taken by staff. This is a further reduction in the number of units presented to the Authority over the past number of months, and comprises Applicant's continued effort to confirm capacity available for the development of the property, as provided by law. There is no basis for a new application as you required the Applicant to file after the prior submission just a few months ago. Any such conduct would violate the Applicant's statutory and due process rights to a decision on this requested capacity. Such conduct might also constitute evidence of an effort to prohibit a multi-family housing development, with an affordable or workforce housing component, on the subject property. The Applicant also reserves any and all rights to contest staff's claimed new service area.

Thank you for your anticipated cooperation and assistance concerning this matter.

Very truly yours,



Christopher J. Smith

cc: 79 Church Hill Road, LLC (w/ attachments)

4 TURKEY HILL ROAD  
NEWTOWN, CONNECTICUT 06470  
FAX (203) 426-9968



FREDERICK W. HURLEY, JR  
PUBLIC WORKS DIRECTOR  
(203) 270-4300

## TOWN OF NEWTOWN

PUBLIC WORKS DEPARTMENT  
EMAIL & Overnight Letter

Christopher J. Smith  
Shipman & Goodwin  
One Constitution Avenue  
Hartford, CT 06103-1919

May 4, 2018

Dear Attorney Smith:

We are in receipt of your May 1, 2018 application for sewer system capacity for 79 Church Hill Road, in Newtown. What we have found since your last application review in April is a material "in fact" error of which neither you nor the WSA was aware. We bring it forth now because of your current application and did not think it appropriate to "spring" this on you or your client at the next WSA meeting, on May 10, 2018.

After the WSA meeting, on April 12th, we reviewed the subject property using both the actual "Sewer Service Area" map and the contract drawings of the actual sewer system installation. What became clear was the major discrepancy between the "Sewer Service Area" as indicated by the Town's GIS mapping and the "actual" Sewer Service Area as approved both at the time of original construction of the system and as reconfirmed in 2015, without any change or modification to the property lines, in the project area.

The conclusion is that there is only approximately .75 of an acre and not 3.8 acres that can be construed as in the Sewer Service Area. This obviously has a major impact on siting of 175 units of multi-family housing on such a small parcel, regardless of availability of any sewer capacity.

As the administrator for the WSA, I do not approve or disapprove your application. That decision belongs to the Board. You are welcome to discuss this situation at the next WSA meeting. However, I thought in fairness, this factual information should be shared as soon as it was deemed necessary. Your May 1st application makes this revelation necessary.

For your use and review, I have enclosed copies of the same documents we used to come to the conclusion outlined in this letter. The original construction documents and actual Sewer Service Area mapping is available in my office at your convenience.

Best regards,

Frederick W. Hurley, Jr.

Attachments: Construction Drawing  
Sewer Service Area Map

EXHIBIT A

Actual Sewer Service Line

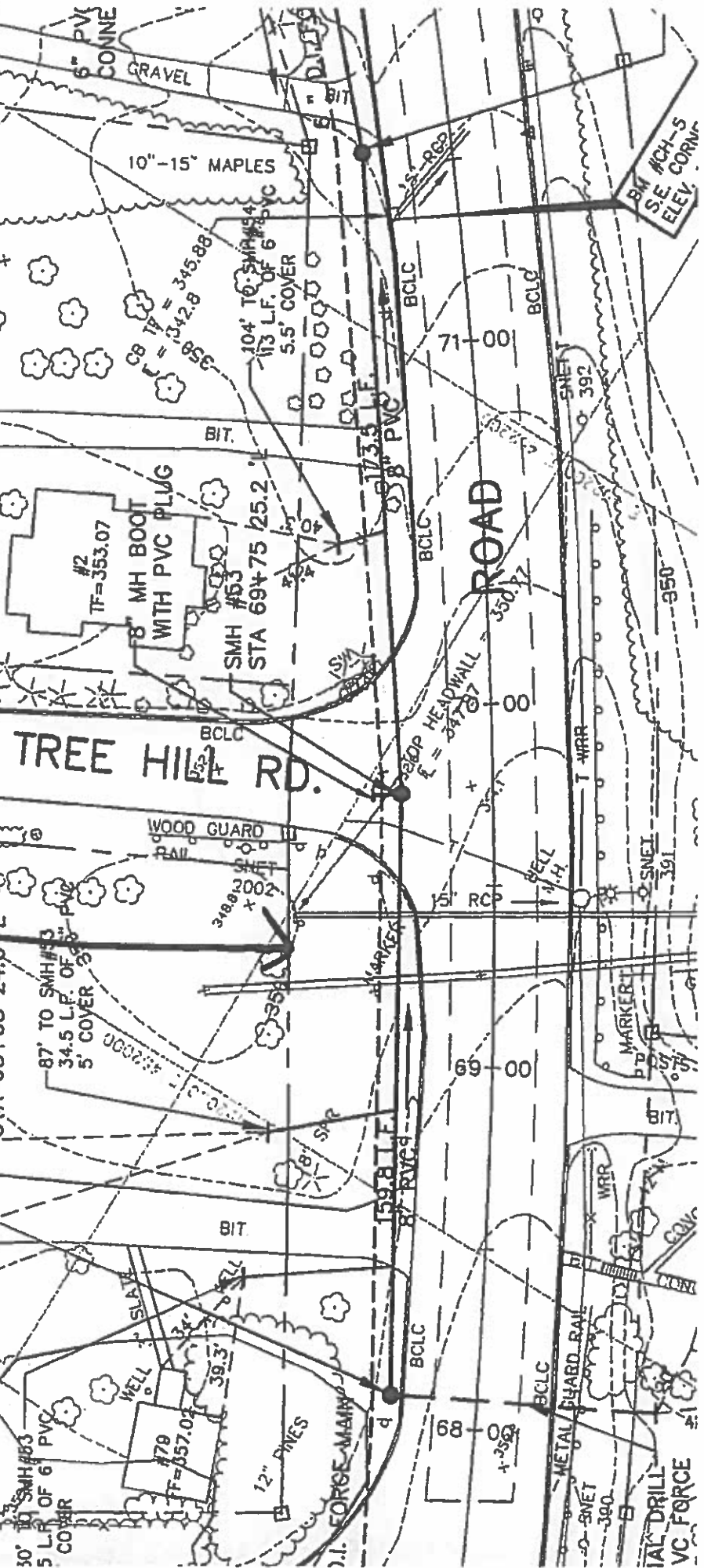
Ares

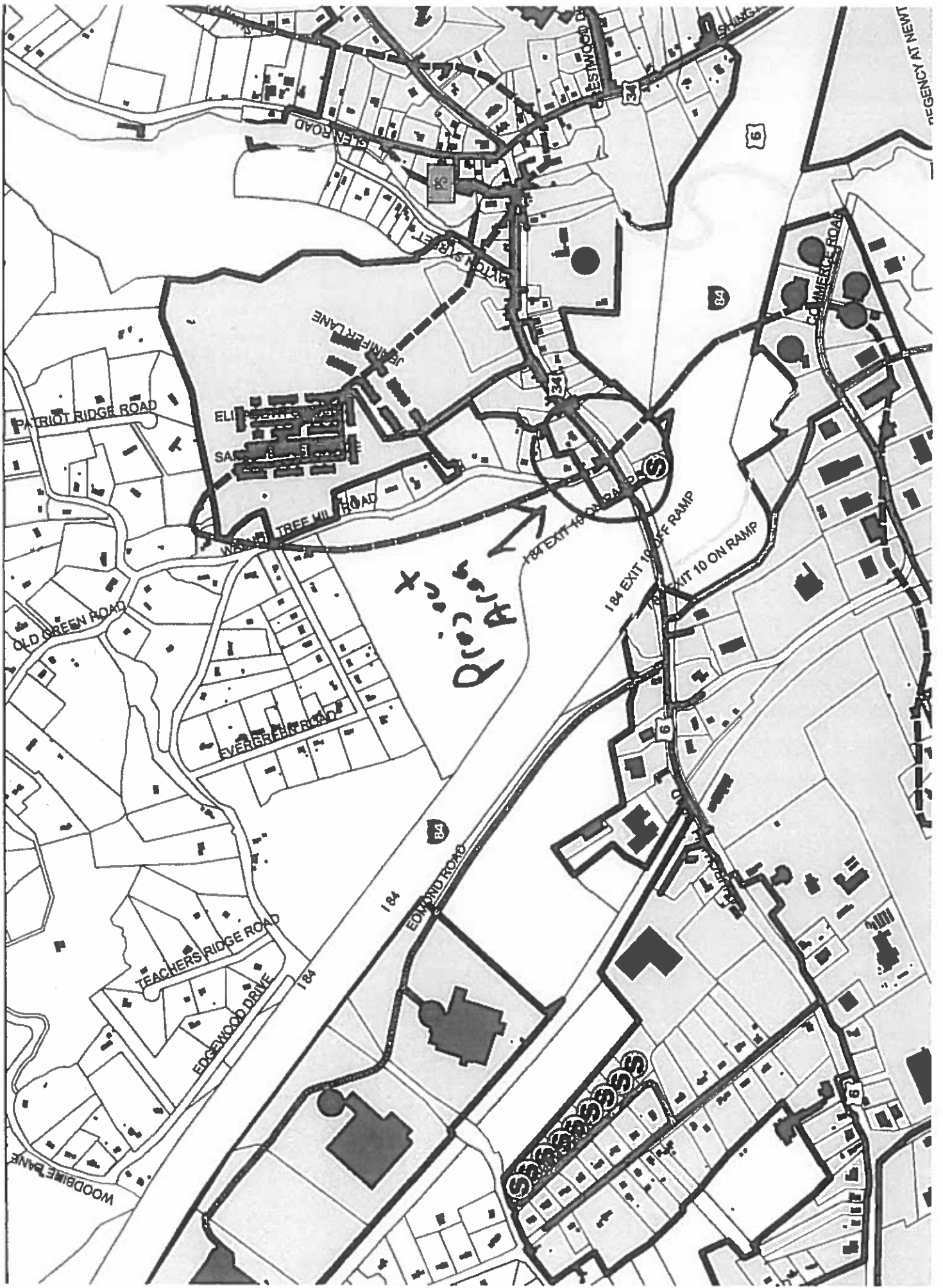
32,870 SF  
75 AC 190'

40' scale  
map

WALNUT TREE HILL RD.

ROAD







SP-1

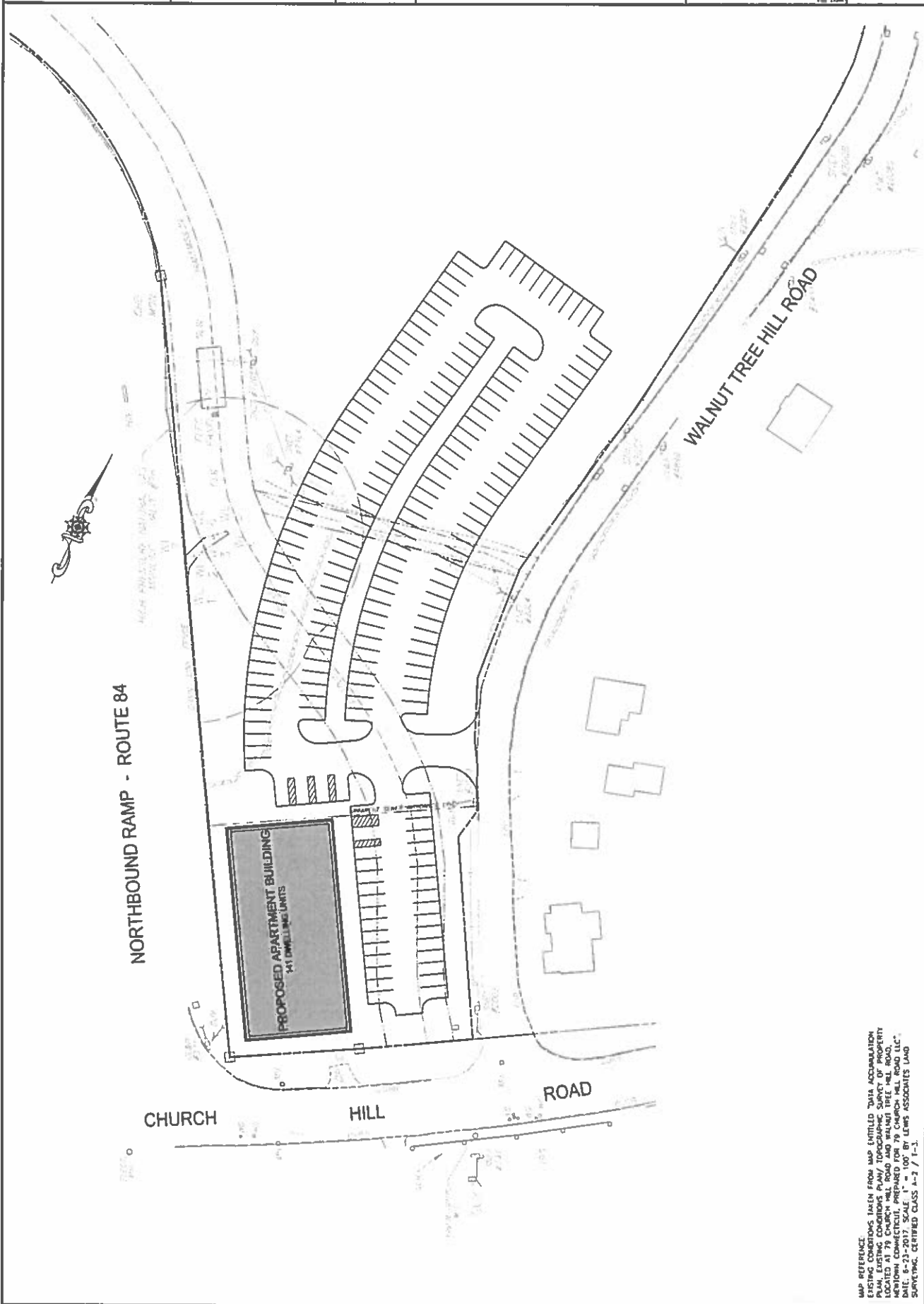
SITE PLAN

DATE: June 8, 2018  
SCALE: 1" = 100'

Stunters Bridge  
79 CHURCH HILL ROAD - NEWTOWN, CONNECTICUT

James R. Swin  
Professional Engineer - Land Surveying  
10 Village Drive - Shelton, CT 06484  
Phone (203) 926-6665  
www.jrswin.com  
jrswin@jrswin.com

NO. 1	NO. 2	NO. 3	NO. 4	NO. 5	NO. 6	NO. 7	NO. 8	NO. 9	NO. 10



MAP REFERENCE:  
EXISTING CONDITIONS TAKEN FROM MAP ENTITLED "DATA ACCUMULATION  
PLAN, EXISTING CONDITIONS PLAN/ TOPOGRAPHIC SURVEY OF PROPERTY  
LOCATED AT 79 CHURCH HILL ROAD, NEWTOWN, CONNECTICUT, PREPARED FOR JAMES R. SWIN, L.L.C."  
DATE: 8-23-2017 SCALE: 1" = 100' BY LEWIS ASSOCIATES (LAND)  
SURVEYING, CERTIFIED CLASS A-2 / 1-3.



**State of Connecticut**  
**HOUSE OF REPRESENTATIVES**  
STATE CAPITOL  
HARTFORD, CONNECTICUT 06106-1591

**Representative Christopher Rosario**

CHIEF MAJORITY WHIP  
CHAIR OF THE LEGISLATIVE BLACK & PUERTO RICAN CAUCUS

128<sup>th</sup> ASSEMBLY DISTRICT  
LEGISLATIVE OFFICE BUILDING  
ROOM 4115  
CAPITOL PHONE (860) 240-8585  
TOLL FREE 1-800-842-8267  
E-MAIL Christopher.Rosario@cga.ct.gov

**VICE CHAIR**

TRANSPORTATION COMMITTEE

**MEMBER**

APPROPRIATIONS COMMITTEE  
EDUCATION COMMITTEE  
LABOR & PUBLIC EMPLOYEES COMMITTEE

June 6, 2018

Marianne Brown  
Chairwoman  
Water & Sewer Authority  
24 Commerce Road  
Newtown, CT 06470

Dear Ms. Brown,

I am in full support of 79 Churchill Road, LLC's efforts to put in 8-30g affordable project at 79 Church Hill Road in Newtown.

There is a critical need for Workforce Housing throughout Connecticut and this project will serve to increase Newtown's affordable inventory towards the state mandated 10%.

I agree with Newtown's Plan on Conservation and Development which identified 79 Churchill Road as an ideal affordable housing location and I also agree with Milone & MacBroom's Affordable Housing Study that was done for Newtown which also identified 79 Churchill Road as an ideal location.

I believe this project will provide economic benefits to both the town and area merchants therefore I strongly support this initiative.

Sincerely,

A handwritten signature in blue ink, appearing to be "CR" followed by a stylized flourish.

Christopher Rosario



## MEMORANDUM

**TO:** Mr. Fred Hurley  
Newtown DPW Director

**FROM:** Douglas Brisee, P.E.  
Kurt A. Mailman, P.E.

**DATE:** May 30, 2018

**RE:** Cursory Sandy Hook Pump Station Capacity Study

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The Newtown Water and Sewer Authority (WSA) solicited the services of Fuss & O'Neill to cursorily evaluate the Sandy Hook Pump Station for increased wastewater flows due to proposed developments and a sewer extension within the sewershed. As part of this evaluation, the following tasks have been performed:

- Record drawings were reviewed to confirm existing infrastructure downstream of the Sandy Hook Pump Station
- Average and peak hour flows were calculated for the proposed developments and sewer extension
- Existing pump station data for the past three years were reviewed
- System hydraulics with potential increased flows were calculated
- Impacts of potential increased flows to the existing Sandy Hook (Glen Road) Pump Station (pumps, electrical, generator, etc.) were evaluated
- Impacts of potential increased flows on the existing force main downstream of the pump station were evaluated

It is noted that this cursory evaluation was limited to a desktop study of the pump station records and potential wastewater flow increases, and did not include a physical evaluation of the pump station or collection system.

**Existing Infrastructure:**

Newtown's sanitary sewer record drawings were reviewed to confirm whether single or parallel force mains exist along Church Hill Road from the Sandy Hook Pump Station to the I-84 Interchange, exit 10 bridge crossing. Pursuant to the Contract No. 4 sanitary sewer record drawings dated May 1995, one (1) 6-inch ductile iron force main exists along Church Hill Road spanning from the Sandy Hook Pump Station to the I-84 Interchange 10 bridge crossing. A second 8-inch ductile iron force main was installed parallel to the 6-inch force main at the crossing of the Pootatuck River and the I-84 Interchange 10 bridge only. See **Exhibit 1** for a copy of the Contract No. 4 sanitary sewer record drawing depicting the existing infrastructure directly downstream of the Sandy Hook Pump Station.



Sandy Hook Pump Station Capacity

May 30, 2018

Page 2 of 4

### Flow Calculations:

For the purposes of estimating flows from the proposed developments, average and peak hourly wastewater flows were calculated using the Newtown Water and Sewer Authority Sewer Use Regulations dated October 29, 2015. Details regarding the expected flows from each source are provided below.

Note that these values include allocation for inflow and infiltration.:

- **79 Church Hill Road** – 196 multi-family units and approximately 50,000 square feet of commercial development is currently proposed for this development pursuant to an email from Fred Hurley dated 4/10/2018. Based upon that development scenario, it is estimated that a flow of 44,000 gallons per day (GPD) will be generated.
- **Riverwalk Development** – 74 units are proposed for this development. It will be composed of 28 condo/townhouses and 46 multi-family units. Using the Newtown WSA Regulations, a flow of 185 GPD was used for each condo/townhouse, and a flow of 148 GPD was used for each multifamily unit. Based on those assumptions, the total flow estimated from this development is 11,988 GPD.
- **Fabric Fire Hose Commercial Building** – Pursuant to an email from Fred Hurley dated 4/10/2018, a previously measured pump flow rate of 5,000 GPD is used for the Fabric Fire Hose Commercial Building.

Please see **Exhibit 2** for a site plan of the developments mentioned above and their location relative to the Sandy Hook Pump Station.

According to TR-16 (*Guides for the Design of Wastewater Treatment Works 2011 edition, as revised in 2016*) by the New England Interstate Water Pollution Control Commission, sanitary sewers should be designed on a peak hourly design flow basis. The ratio of extreme peak hourly flow to average daily flow is typically 4.0-5.6 times the average daily flow for wastewater generation, pursuant to Table 2-1 of TR-16 (**Exhibit 3**). To obtain a peak hour, a representative peaking factor of 4.5 was multiplied by the average daily wastewater flows.

The existing pump data for the past 3-<sup>1</sup>/<sub>4</sub> years has been reviewed (See **Exhibit 4**). See **Table 1** below for existing and proposed wastewater flows to the pump station. A more detailed breakdown of the flow calculations is also provided in **Exhibit 5**.

Sandy Hook Pump Station Capacity  
 May 30, 2018  
 Page 3 of 4

**Table 1 – Existing and Proposed Sandy Hook PS Wastewater Flow**

	Average Daily Flow		Peak Hourly Flow
	GPD	GPM	GPM
2017 Existing Pump Station Flow	60,768	42	185
Proposed 79 Church Hill Road	44,000	31	138
Proposed River Walk	11,988	8	37
Proposed Fabric Fire Hose Commercial Building	5,000	3	16
<b>Total</b>	<b>121,756</b>	<b>85</b>	<b>376</b>

The initial projected flow (calculated in 1994 as part of the Newtown Wastewater Preliminary Design Report) for the Sandy Hook Pump Station was 101 gallons per minute (GPM) and the pump design capacity was 200 GPM. One of the existing pumps is currently pumping below its original rated capacity and is not meeting the cleansing velocity requirement (3.0 feet per second) for the force main. The capacities of Pump #1 and Pump #2 are 215 GPM and 180 GPM, respectively (as presented by the SUEZ Plant Manager). Adding the calculated flows for 79 Church Hill Road development, the River Walk development, and the Fabric Fire Hose Commercial Building to the existing peak flow of 185 GPM that was recorded on August 30, 2016 would increase the design flow to 376 GPM.

Based on the existing pump performance curve in **Exhibit 6** attached hereto, the increased flow of 376 GPM cannot be supported by the existing pumps. The pump station is not designed for the pumps to operate in parallel under normal conditions. However, if that were the case, their combined capacity of 240 GPM would still not be able to support the increase flow of 376 GPM.

#### **Hydraulic Calculations:**

The Hazen-Williams equation is used to determine the head loss through pressurized force mains. A Hazen-Williams coefficient of 120 is recommended for old ductile iron (DI) pipes. The total dynamic head (TDH) for the existing plus proposed flows (rounded up flow of 380 GPM) was calculated to be 209 feet and is presented in **Exhibit 7**.

#### **Cursory Pump Station Evaluation:**

Data indicates that the Sandy Hook Pump Station is currently at its design capacity and existing pumps cannot handle greater flow, particularly due to the reduced pumping capacity of Pump #2. The pump station is currently reportedly over-cycling (exceeding the recommended number of four pump starts per hour) and would not be capable of pumping the proposed additional flows without surcharging. In March 2017 repairs reportedly occurred to fix a clogged lateral at the High School, upstream of the Sandy Hook Pump Station. Once the repairs were complete, the flow rushed into and nearly surcharged

Sandy Hook Pump Station Capacity

May 30, 2018

Page 4 of 4

the pump station. Even with both pumps running in parallel, the pumps could not handle the flow of +/- 250 GPM as estimated by the SUEZ Plant Manager.

#### **Force Main Evaluation:**

Flows from the pump station are pumped through a 6-inch force main (3,120 ft.) into a termination manhole (SMH #51) which is located near the I-84 interstate at Church Hill Road. With an existing pumping rate of 180 GPM from Pump #2, the force main line velocity is 2.04 feet per second (ft/s). The existing velocity does not provide the minimum 3.0 ft/s cleansing velocity required for the force main, pursuant to TR-16. However, the collection system downstream of the Sandy Hook Pump Station is capable of transporting the proposed design flows. Any new pumps will need to be sized for the proposed pumping rate to ensure velocities in the force main are greater than 3.0 ft/s in order to provide enough scour to keep the force main clean. Utilizing the proposed design flow of 380 GPM, the force main line velocity would be 4.31 ft/s, which is above the minimum cleansing velocity of 3.0 ft/s (See Exhibit 7).

#### **Minimum Recommended Pump Station Improvements to Accommodate Proposed Additional Flow:**

At a minimum, the two existing 25 HP submersible pumps would need to be replaced with larger 50 to 75 HP pumps. Exhibit 8 presents the proposed pump data. In addition, the current start-stop controls should be upgraded to variable frequency drives (VFDs) or soft starts-stops to reduce the increased inrush current associated with the larger pump horsepower and reduce electrical costs. Additional improvements would likely be required due to the age and condition of the existing pump station including replacement of the existing check valves, electrical panel, electrical service, and standby exterior mounted generator with sound attenuation. The proposed pumps are appropriate for the diameter of the existing wet well. However, there is potential that the size of the existing access hatch will need to be increased in order to access the new pumps for maintenance purposes. Lastly, it is also recommended that the force main be cleaned to remove any sediment, debris (perhaps via ice slurry) and that the existing air relief/vacuum valve be cleaned/exercised.

In order to determine the full extent of improvements and costs required to upgrade the pump station to accommodate the proposed additional wastewater flows additional design, including a complete pump station evaluation, would be required.





FUSS & O'NEILL

# EXHIBITS



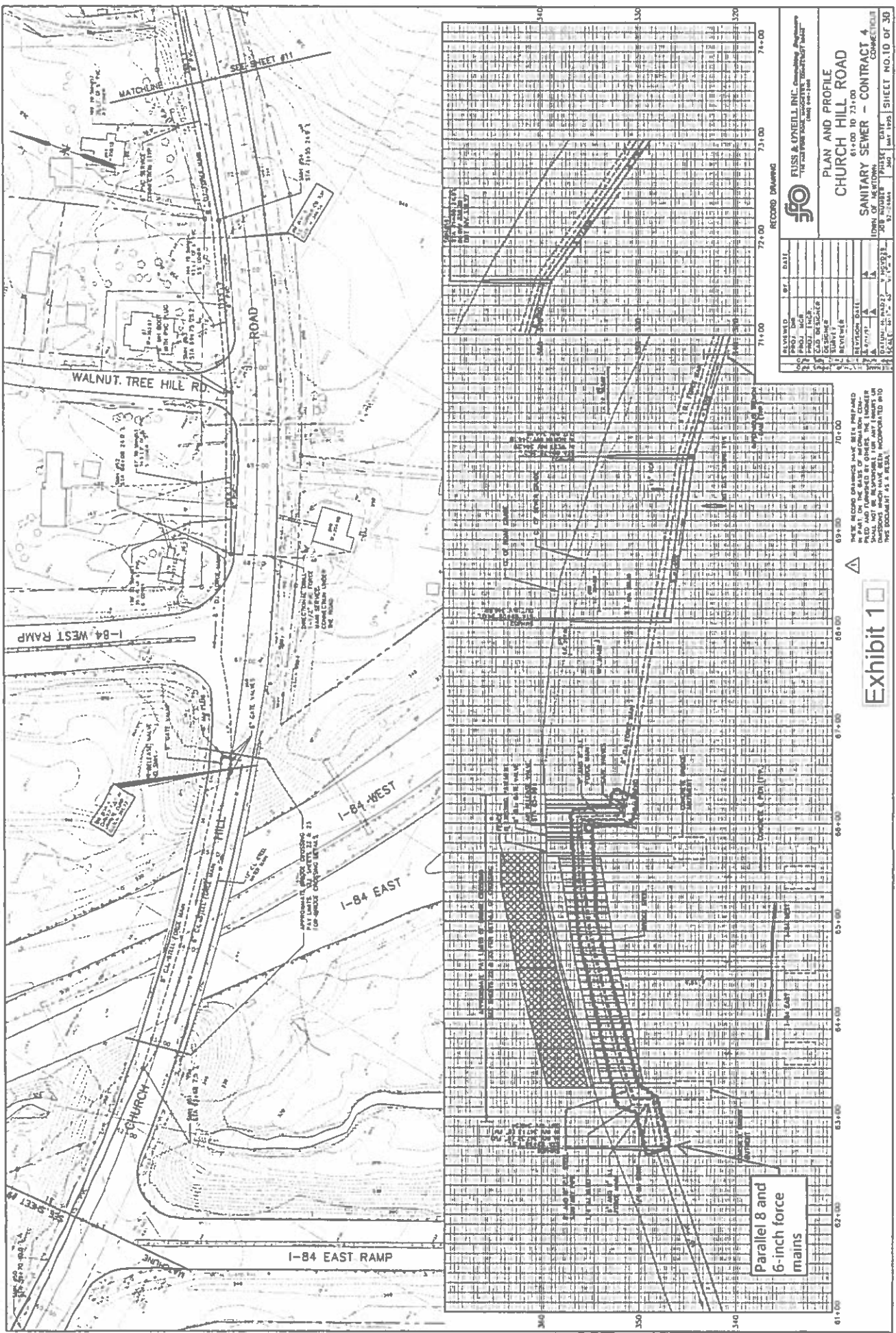


Exhibit 1

**PLAN AND PROFILE**  
**CHURCH HILL ROAD**  
 61+00 TO 73+00  
**SANITARY SEWER - CONTRACT 4**  
 (TOWN OF NEWTON)

**REVISIONS**

NO.	DATE	BY	REVISION
1	10/1/97	...	...
2	...	...	...
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**RECORD DRAWING**

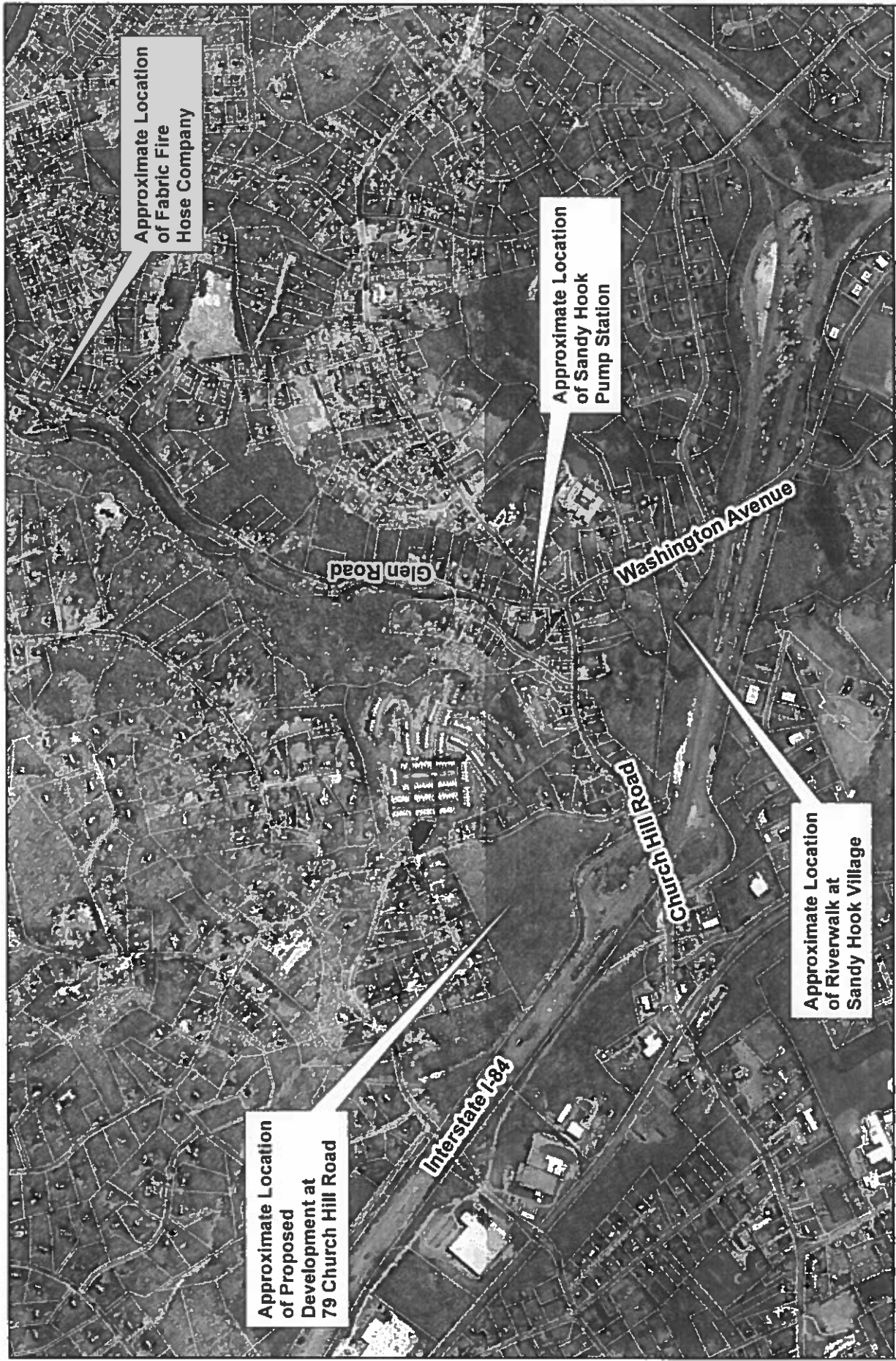
**FO** FUSSELL & O'NEILL, INC. Consulting Engineers  
 1000 WEST 10TH STREET, SUITE 200  
 DENVER, CO 80202  
 (303) 733-1100

**DATE** 10/1/97  
**BY** [Signature]  
**CHECKED** [Signature]  
**APPROVED** [Signature]

**PROJECT NO.** 97-001  
**SHEET NO.** 10 OF 30

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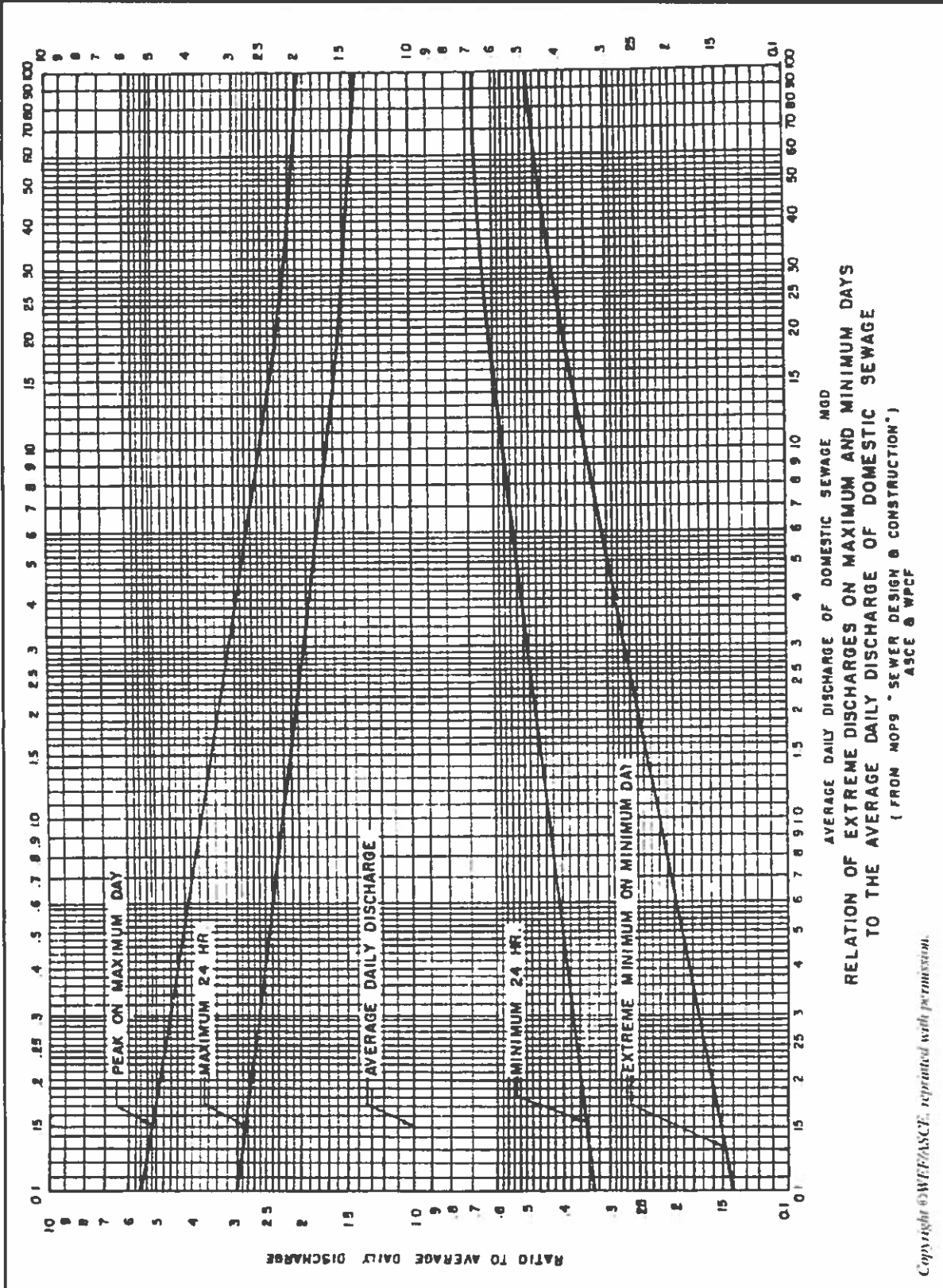


	<b>FUSS &amp; O'NEILL</b> 146 Hartford Road Manchester, CT 06040 860.646.2469   www.fundo.com	
	<b>Exhibit 2</b> <b>Site Plan</b> <b>Sandy Hook Pump Station Evaluation</b> <b>Newtown</b> <b>Connecticut</b>	
<p><b>Data Source(s)</b> 1. CTDEEP 2012 Orthomageary 2. Land cover classes based on photo interpretation</p>		<p><b>Disclaimer:</b> The map is not the product of a Professional Land Survey. It was created by Fuss &amp; O'Neill, Inc. for general reference, informational, planning and guidance use, and it is not a legal authoritative source as to location of land or manmade features. Fuss &amp; O'Neill, Inc. makes no warranty, express or implied, related to the spatial accuracy, reliability, completeness, or currency of this map.</p>
		<p><b>Location Map</b></p>

# Exhibit 3 Ratio of Extreme Flow to Average Daily Flow

Figure 2-1

Ratio of Extreme Flow to Average Daily Flow



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# Exhibit 4

2015 Flow Data						
Date	Total (Gallons)	Average (GPD)	Maximum Day (GPD)		Minimum Day (GPD)	
Jan-15	1,687,088	54,422	1/13/2015	61,631	1/16/2015	50,247
Feb-15	1,496,773	53,456	2/27/2015	59,247	2/1/2015	51,662
Mar-15	1,854,989	59,838	3/13/2015	69,984	3/6/2015	54,446
Apr-15	1,804,089	60,136	4/2/2015	67,523	4/14/2015	49,193
May-15	1,928,273	62,202	5/29/2015	81,341	5/12/2015	54,173
Jun-15	1,722,131	57,404	6/2/2015	83,533	6/30/2015	39,934
Jul-15	1,495,997	48,258	7/7/2015	55,752	7/1/2015	39,934
Aug-15	1,467,234	47,330	8/28/2015	51,467	8/14/2015	44,851
Sep-15	1,552,311	51,744	9/18/2015	55,396	9/8/2015	47,368
Oct-15	1,638,887	52,867	10/2/2015	59,960	10/16/2015	48,201
Nov-15	1,486,089	49,536	11/10/2015	54,576	11/24/2015	42,445
Dec-15	1,562,967	50,418	12/1/2015	53,499	12/11/2015	45,951
Total	19,696,825					
Average	1,641,402	53,968				
Maximum	1,928,273		Maximum	83,533		
Minimum	1,467,234				Minimum	39,934

2016 Flow Data						
Date	Total (Gallons)	Average (GPD)	Maximum Day (GPD)		Minimum Day (GPD)	
Jan-16	1,631,717	52,636	1/8/2016	56,375	1/26/2016	48,679
Feb-16	1,605,347	55,357	2/26/2016	63,428	2/12/2016	47,388
Mar-16	1,821,653	58,763	3/28/2016	81,272	3/24/2016	50,240
Apr-16	1,629,917	54,331	4/8/2016	57,068	4/12/2016	47,934
May-16	1,800,627	58,085	5/31/2016	105,430	5/20/2016	49,055
Jun-16	1,801,566	60,052	6/1/2016	105,430	6/28/2016	51,834
Jul-16	1,738,151	56,069	7/19/2016	63,918	7/5/2016	52,433
Aug-16	2,234,772	72,089	8/30/2016	266,270	8/1/2016	53,634
Sep-16	2,012,213	67,074	9/1/2016	266,270	9/30/2016	56,274
Oct-16	1,812,391	58,464	10/25/2016	62,493	10/18/2016	56,178
Nov-16	1,754,460	58,482	11/1/2016	64,061	11/29/2016	51,534
Dec-16	1,644,940	53,063	12/20/2016	58,445	12/27/2016	45,600
Total	21,487,753					
Average	1,790,646	58,705				
Maximum	2,234,772		Maximum	266,270		
Minimum	1,605,347				Minimum	45,600

2017 Flow Data						
Date	Total (Gallons)	Average (GPD)	Maximum Day (GPD)		Minimum Day (GPD)	
Jan-17	1,750,280	56,461	1/27/2017	71,464	1/1/2017	49,375
Feb-17	1,562,346	55,798	2/3/2017	59,672	2/10/2017	47,485
Mar-17	1,797,123	57,972	3/31/2017	68,257	3/13/2017	46,242
Apr-17	2,096,881	69,896	4/11/2017	82,734	4/13/2017	65,488
May-17	2,122,515	70,750	5/5/2017	79,341	5/30/2017	62,972
Jun-17	2,008,250	66,942	6/9/2017	92,211	6/23/2017	57,806
Jul-17	1,744,907	56,287	7/7/2017	67,328	7/14/2017	21,060
Aug-17	1,813,652	58,505	8/4/2017	64,362	8/15/2017	53,113
Sep-17	1,764,306	58,810	9/5/2017	64,449	9/26/2017	55,160
Oct-17	1,908,896	61,577	10/31/2017	69,107	10/1/2017	56,846
Nov-17	1,808,093	60,270	11/1/2017	69,107	11/21/2017	51,517
Dec-17	1,734,312	55,946	12/19/2017	82,765	12/21/2017	44,407
Total	22,111,561					
Average	1,842,630	60,768				
Maximum	2,122,515		Maximum	92,211		
Minimum	1,562,346				Minimum	21,060

2018 Flow Data						
Date	Total (Gallons)	Average (GPD)	Maximum Day (GPD)		Minimum Day (GPD)	
Jan-18	1,811,814	58,446	1/23/2018	66,972	1/1/2018	53,515
Feb-18	1,819,371	64,978	2/23/2018	74,978	2/1/2018	60,170
Mar-18	2,035,133	65,649	3/8/2018	75,618	3/26/2018	37,644
Total	5,666,317					
Average	472,193	63,024				
Maximum	2,035,133		Maximum	75,618		
Minimum	1,811,814				Minimum	37,644



## Sandy Hook Pump Station Capacity

### Exhibit 5

## **Exhibit 5 - Newtown Flow Calculations**

[illegible]

THIS CURVE IS BASED ON ACTUAL  
TEST PERFORMANCE OF A SIMILAR  
PUMP. ONLY THE INDICATED  
POINT(S) IS GUARANTEED.

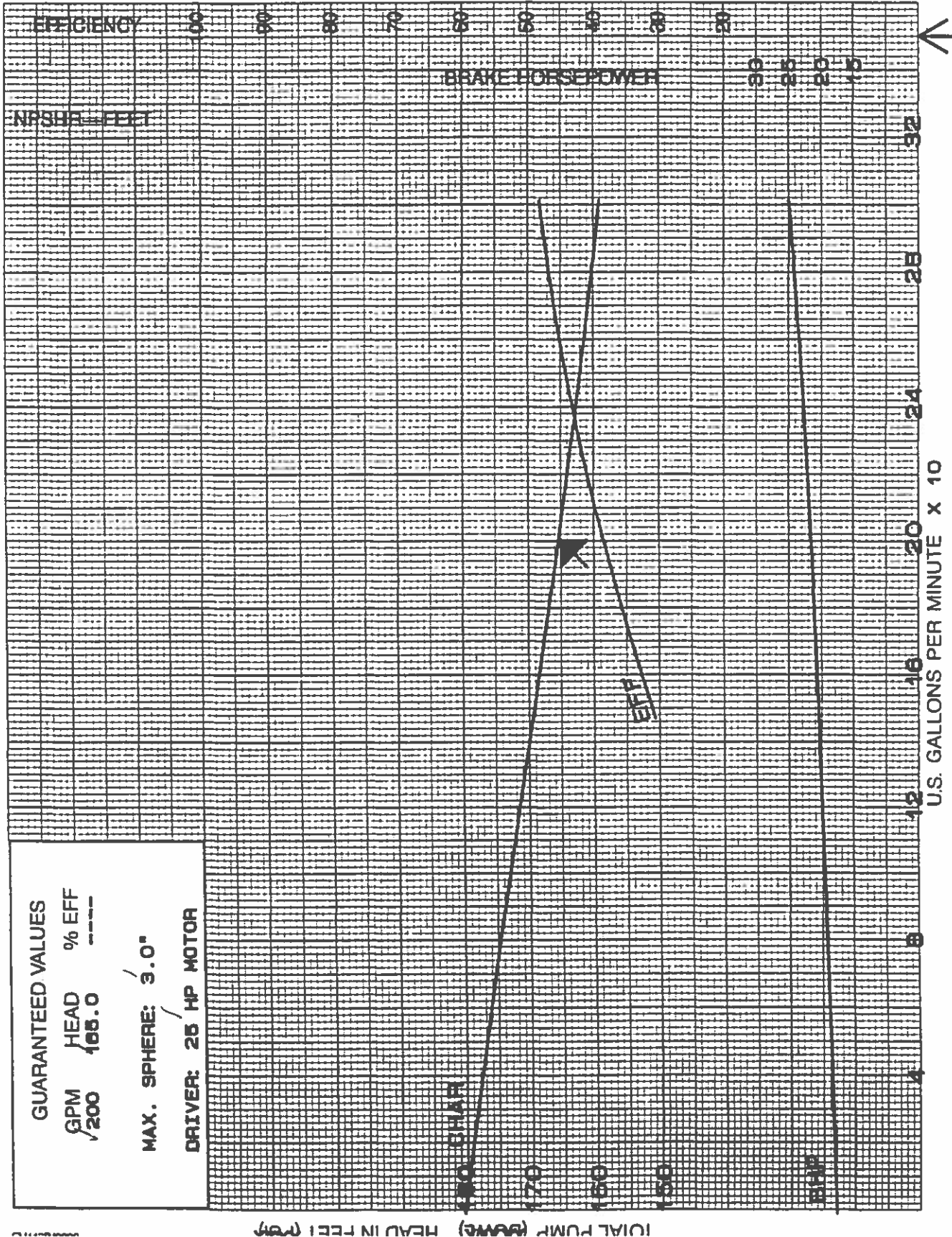
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RPM(S) 1766

**Exhibit 6 - Existing Pump Performance Curve**

**PUMP PERFORMANCE CURVE**

CURVE NO. GK4G1-078230



Note: Proposed flow (350 gpm) is outside the existing pump curve.





# 69 HD SERIES

## TECHNICAL DATA

50 - 100 BHP

### 4" & 6" Flanged Discharge Units

Models: 6925 - 6928



MODEL NUMBER:	<input type="checkbox"/> 6925	<input type="checkbox"/> 6926	<input type="checkbox"/> 6927	<input type="checkbox"/> 6928
PUMP NAME PLATE HORSEPOWER: BHP	50	60	75	100
NEC LOCKED ROTOR CODE:	F	F	G	G
MAXIMUM KW INPUT:	41.86	49.72	60.86	80.31
POWER CORD SIZE	#4 - 4	#4 - 4	#4 - 4	#2 - 4
PUMP HOUSING WEAR RING	Polyurethane	SS	SS	SS
PUMP WEIGHT: lbs. - 4" / 6"	1435 / 1470	1435 / 1470	1435 / 1470	1785 / 1820
DISCHARGE SIZE:	<input type="checkbox"/> 4" FLANGED HORIZONTAL		or	<input type="checkbox"/> 6" FLANGED HORIZONTAL
PERFORMANCE CURVE:	<input type="checkbox"/> 4" DISCHARGE DESIGN - REF ZM2299		<input type="checkbox"/> 6" DISCHARGE DESIGN - REF ZM2300	

SOLID SIZE: in (mm)	3" (75 mm)	TANDEM SEALS:	STANDARD
IMPELLER TYPE:	CAST IRON 2-VANE ENCLOSED	MOTOR DESIGN LETTER:	NEMA
IMPELLER WEAR RING:	SS	CORD LENGTH: ft (m)	50' (15.2 m)
FLANGE:	ANSI B16.1	SENSOR CORD SIZE:	#14 - 4
MOTOR SHAFT:	416 SS	STATOR & LEAD WIRES INSULATION:	CLASS H
RPM:	1725	MAXIMUM STATOR TEMPERATURE:	356 °F / 180 °C
MOTOR TYPE:	STANDARD SUBMERSIBLE	PUMP HOUSING WEAR RING:	OPTIONAL: <input type="checkbox"/> SS
	<input type="checkbox"/> FM LISTED EXPLOSION PROOF		
	<input type="checkbox"/> INVERTER DUTY SUBMERSIBLE		

SHAFT SEAL CONSTRUCTION:	STANDARD	LOWER SILICON CARBIDE/SILICON CARBIDE & UPPER CARBON/SILICON CARBIDE
STANDARD SENSING DEVICES:	MOTOR THERMAL SHUTOFF	THERMAL SENSORS WITH AUTOMATIC RESET
	MOISTURE DETECTION	MOISTURE SENSING PROBES
IMPELLER: SIZE, DESIGN POINT	IMPELLER DIA. _____", DESIGN POINT: _____ GPM @ _____' TDH	
RECOMMENDED FLUID LEVEL FOR CONTINUOUS OPERATIONS:	Refer to Column "F" on ZM2321 (For Continuous Duty, Refer to Warranty)	
MAXIMUM WATER TEMPERATURE:	104 °F (40 °C)	

MODEL	BHP	SERVICE FACTOR	<input type="checkbox"/> 200V / 3 PHASE		<input type="checkbox"/> 230V / 3 PHASE		<input type="checkbox"/> 460V / 3 PHASE		<input type="checkbox"/> 575V / 3 PHASE	
			FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA
6925	50	1.15	CONTACT FACTORY		128.0	690.0	64.0	345.0	CONTACT FACTORY	
6926	60	1.15			142.0	756.0	71.0	378.0		
6927	75	1.15			174.0	1,120.0	87.0	560.0		
6928	100	1.15			232.0	1,524.0	116.0	762.0		



# ENGINEERED PRODUCTS

Zoeller Family of Water Solutions

MAIL TO: P.O. BOX 16347 • Louisville, KY 40256-0347  
SHIP TO: 3649 Cane Run Road • Louisville, KY 40211-1961  
(502) 778-2731 • 1 (800) 928-PUMP • FAX (502) 774-3624

SECTION: Z2.40.160

ZM2321

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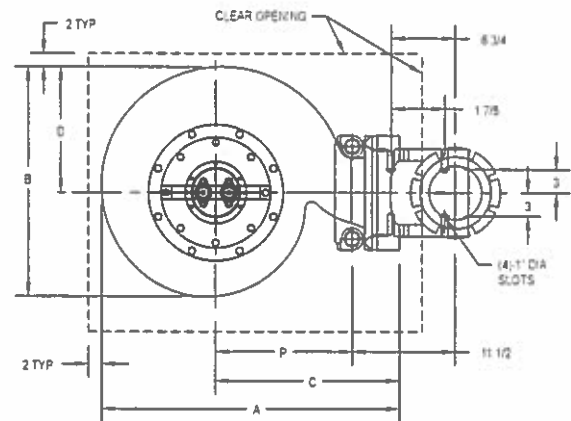
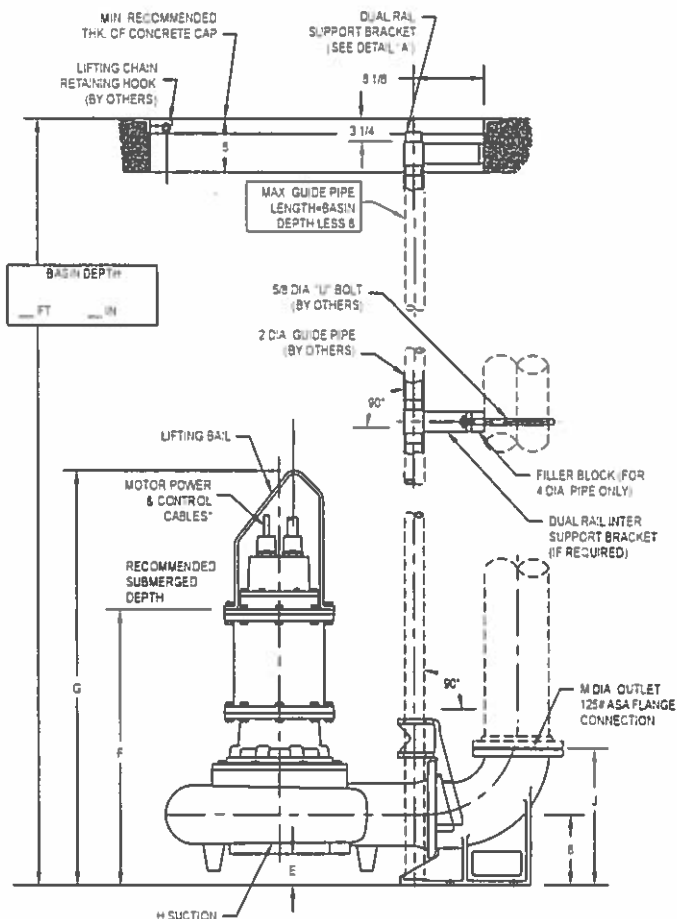
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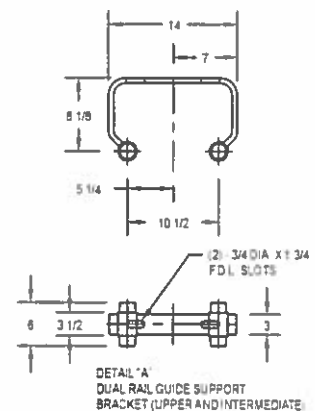
Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.

visit our web site:  
[www.zoeller.com](http://www.zoeller.com)

## 69 HD SERIES DIMENSIONAL DATA 4" Flanged Discharge Units 3" Solids Handling - 1725 RPM Rail Mounted



EL STATIONARY ELBOW	J	M
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4 X 6	16	6



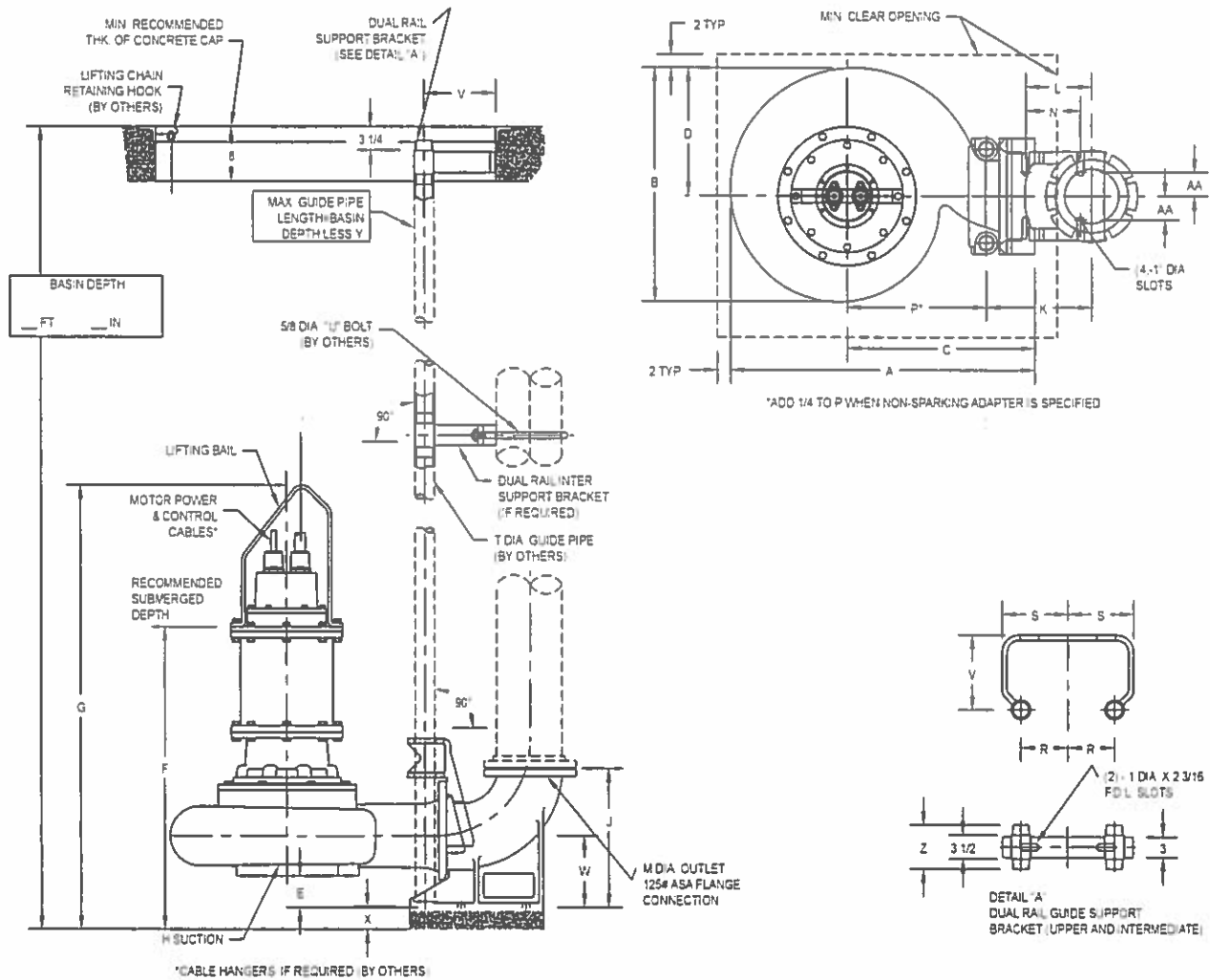
PUMP MODEL	A	B	C	D	E	H	P*	MOTOR FRAME	F	G MAX	ASSY. WT. #	GUIDE PIPE MAX. SECT. LGTH.(FT)	CLEAR OPENING (MIN.)
6921 HH	24 3/4	18 1/4	15 1/2	10	4 1/4	4	12 3/8	25 BHP	34	62 1/8	965	16	30 X 24
6923 HH	24 3/4	18 1/4	15 1/2	10	4 1/4	4	12 3/8	30 BHP	38 1/2	69 1/2	965	12	30 X 24
6920-6924	24 1/2	19 1/2	15	10 1/2	3 7/8	4	10 7/8	20 BHP	32 7/8	61	550	16	30 X 24
								25-40 BHP	37 7/8	68 3/8	985	12	
6925-6928	30 5/8	22 3/4	19 1/4	11 3/4	3 1/4	4	15 1/8	50-75 BHP	39 7/8	74 1/16	1485	10	36 X 28
								100 BHP	46 3/4	87 1/4	1835	10	

\*Add 1/4 to P when non-sparking adapter is specified.

All dimensions are in inches, +/- 1/8.

ASSY. WT. = Pump unit & slide bracket.

**69 HD SERIES**  
**DIMENSIONAL DATA**  
**6" Flanged Discharge Units**  
**3" Solids Handling - 1725 RPM**  
**Rail Mounted**



ZEP40576

PUMP MODEL	A	B	C	D	E	H	MOTOR FRAME	F	G	ASSY. WT. #	GUIDE PIPE MAX. SECT. LGTH.(FT)	CLEAR OPENING (MIN.)	P*	X (MIN.)	Y
6921-6924	32 3/4	21 3/4	21 7/8	12	4 5/8	6	25-40 BHP	39 5/8	70 5/8	1105	12	37 X 28	14 7/8	0	8
6925-6928	37 1/2	24 3/4	25 1/8	13 3/8	5 1/2	6	50-75 BHP	42 5/8	76 13/16	1560	10	42 X 31	18 1/8	2	10
							100 BHP	49 1/2	90	1910	10				

EL STATIONARY ELBOW	J	K	L	M	N	R	S	T	V	W	Z	AA
6 X 6	17 3/8	12 3/4	8 7/8	6	8	6	9 3/4	2	9 3/8	9 1/2	6	3
6 X 8	18 3/8	13 3/4	9 7/8	8	8	6	9 3/4	2	9 3/8	9 1/2	6	3
6 X 10	19 3/4	15 3/4	11 7/8	10	10 1/4	6	10 7/16	2	10 3/8	9 1/2	6	3

\*Add 1/4 to P when non-sparking adapter is specified.

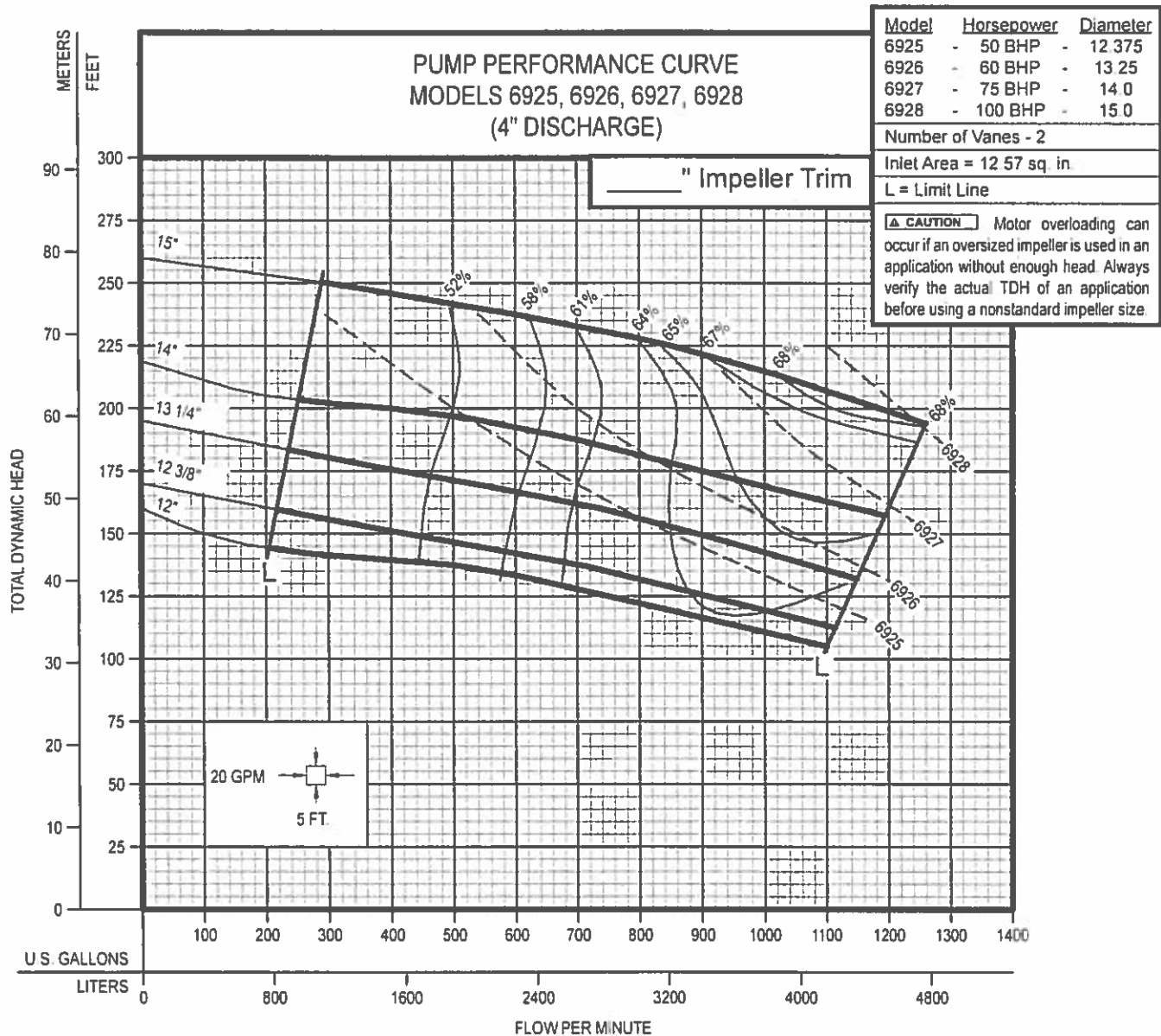
All dimensions are in inches, +/- 1/8.

ASSY. WT. = Pump unit & slide bracket.





# 69 HD SERIES PERFORMANCE DATA 4" Flanged Discharge 3" Solids Passing Capacity 1750 RPM - Enclosed Impeller 50 - 100 BHP



B00612

Zoeller Engineered Products • 3649 Cane Run Road • Louisville, Kentucky 40211-1961 • (502) 778-2731



"SWPA Data Categories Presented -- Data on this sheet supply design information as the minimum recommended by the Submersible Wastewater Pump Association (SWPA) and is defined in accordance with SWPA's Standardized Definitions for Pump and Motor Characteristics. The accuracy of the data is the responsibility of Zoeller Engineered Products."

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Company:  
Name:  
Date: 05/09/2018



**ENGINEERED PRODUCTS**

*Zoeller Family of Water Solutions*

**Pump:**

Size: 50-100 HP, 4" FLG | Dimensions: Suction: 3.12 in  
Type: 69 HD Series Discharge: 4 in  
Synch Speed: 1800 rpm Eye Area: 12.6 in<sup>2</sup>  
Dia: 14.25 in  
Solids Capacity: 3.0"  
Motor Type: STD or EX PROOF

**Fluid:**

Name: Water  
SG: 1 Vapor Pressure: 0.256 psi a  
Density: 62.4 lb/ft<sup>3</sup> Atm Pressure: 14.7 psi a  
Viscosity: 1.1 cP  
Temperature: 60 °F

**Pump Limits:**

Temperature: --- Sphere Size: 3 in  
Wkg Pressure: ---

**Motor:**

Standard: NEMA Size: 100 hp  
Enclosure: TEFC Speed: 1800 rpm  
Frame: 405T  
Sizing Criteria: Max Power on Design Curve

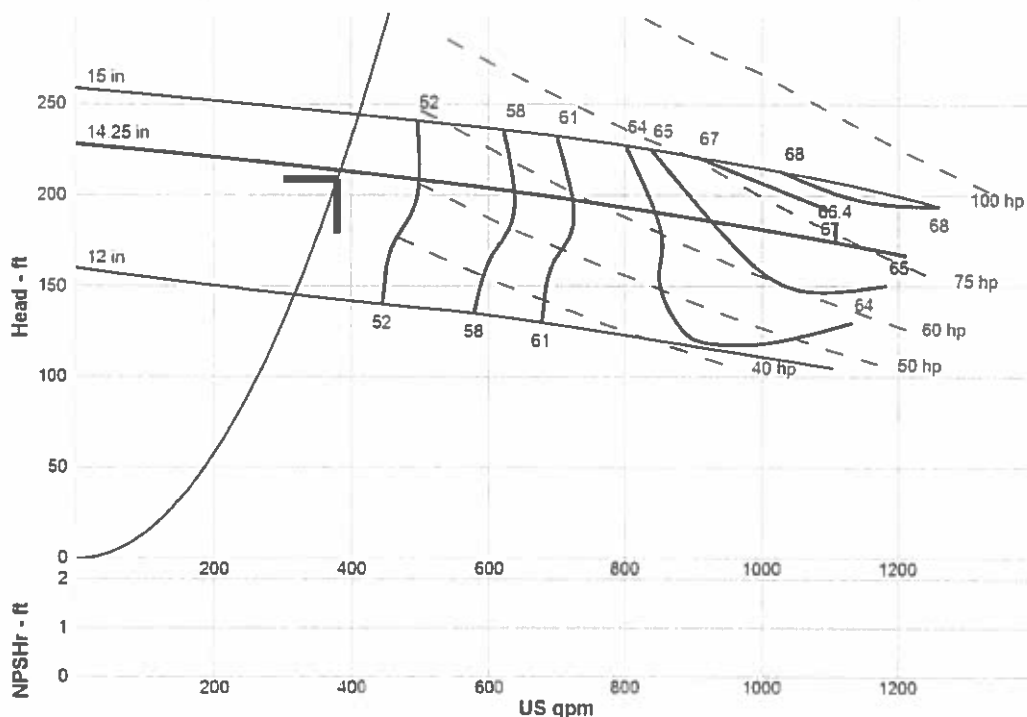
**Search Criteria:**

Flow: 380 US gpm Near Miss: ---  
Head: 209 ft Static Head: 0 ft

**Pump Selection Warnings:**

None

--- Duty Point ---	
Flow:	384 US gpm
Head:	213 ft
Eff:	47%
Power:	45.9 hp
NPSHr:	---
Speed:	1750 rpm
--- Design Curve ---	
Shutoff Head:	228 ft
Shutoff dP:	98.9 psi
Min Flow:	--- US gpm
BEP:	66.4% @ 1105 US gpm
NOL Power:	
	77.3 hp @ 1210 US gpm
--- Max Curve ---	
Max Power:	
	90.7 hp @ 1259 US gpm



verification of voltage compatibility.

**Performance Evaluation:**

Flow	Speed	Head	Efficiency	Power	NPSHr
US gpm	rpm	ft	%	hp	
456	1750	210	50.1	48.8	---
380	1750	213	46.9	45.8	---
304	1750	216	43.6	42.7	---
228	1750	219	40.3	39.7	---
152	1750	---	---	---	---



FUSS & O'NEILL

Attachment E

FUSS & O'NEILL, INC.  
TASK AUTHORIZATION REQUEST

Prepared For: Town of Newtown, DPW

Contact: Mr. Fred Hurley, DPW Director

Prepared By: Douglas Briscoe, P.E.  
Title: Senior Project Engineer

Date: April 24, 2018

F&O Project: Newtown WSA Miscellaneous Engineering Support  
Project No: 1992248.A51 Task No: 00400

Task Title: Saint Rose Church Sewer Relocation CA/RPR

**Task 00400 – Saint Rose Church Sewer Relocation Construction Administration and Part Time Resident Representative Services (3 Days/Week x 3 Weeks)**

Estimated Fee:	F&O Labor	
	Const. Admin	\$8,875.00
	Resident Rep.	\$13,050.00
	Direct Costs	\$0.00
	<u>Travel &amp; Reprographics</u>	<u>\$875.00</u>
	<b>Total Estimated Costs</b>	<b><u>\$22,800.00</u></b>

Estimated Start Date for Additional Tasks: June 20, 2018

Estimated Completion Date for Additional Tasks: July 31, 2018

Fuss & O'Neill Authorized By:  Date: 4/24/2018

Title: Vice President

Town Authorized By: \_\_\_\_\_ Date: \_\_\_\_\_

Title: \_\_\_\_\_

Purchase Order #: \_\_\_\_\_

Please return a signed copy to Fuss & O'Neill to initiate this task and retain one copy for your files. The General Terms and Conditions specified in the Master Service Agreement dated May 12, 2015 will apply to the services described above.

Task Authorization- Fred Hurley, DPW Director

April 24, 2018

Page 2 of 2

### Scope of Work:

#### Task 00400 – Saint Rose Church Sewer Relocation Construction Administration and Part Time Resident Representative Services

We propose to provide Construction Administration and Part Time Resident Representative Services related to the relocation of the sewer main that is currently sited in front of Saint Rose Church along Church Hill Road. The following services will be provided as part of this scope of work.

- Review submittals from the site engineer (Langan Engineering) as they relate to the sewer relocation and proposed building addition at Saint Rose Church. Review of six submittals is expected for this effort, including the bypass pumping plan for the work.
- Visit the site prior to construction to meet and coordinate with representatives from ConnDOT, Town, Site Engineers, other stakeholders and the Contractor selected to perform the work. One meeting is budgeted for this effort
- Discuss RFIs and answer construction questions from the Contractor, site engineer and Resident Representative during the 3 week construction period.
- Conduct part time construction observation of the work, limited to 3 days per week during the anticipated 3 week construction period. 90 hours have been budgeted for this effort.
- Conduct a final site visit to observe general conformance with the Contract Documents.
- Review the Record Drawing mylar submitted by the site engineer.
- Continue to provide support services on an as requested basis by the Town. If the estimated 3 week construction period for the construction work is exceeded, an amendment will be prepared to supplement this Scope of Work.





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1. What is the purpose of the study? The purpose of the study is to investigate the effects of a new educational program on student learning outcomes.
2. What are the research questions? The research questions are:
  - a. How does the program affect student learning outcomes?
  - b. What are the factors that influence the effectiveness of the program?
3. What is the significance of the study? The study is significant because it provides valuable information about the effectiveness of the program, which can be used to improve educational practices.
4. What are the limitations of the study? The limitations of the study are:
  - a. The study is limited to a specific population of students.
  - b. The study is limited to a specific time period.
5. What are the conclusions of the study? The conclusions of the study are:
  - a. The program has a positive effect on student learning outcomes.
  - b. The effectiveness of the program is influenced by several factors.
6. What are the implications of the study? The implications of the study are:
  - a. The program should be implemented in other schools.
  - b. Further research is needed to investigate the long-term effects of the program.

## CONTRACTOR NOTES

- ## CONTRACTOR NOTES

[illegible]

REVISIONS:	
1) WPCO FIELD REV	04-10-18
PROJECT NUMBER	201906005
PHASE II SANITARY SEWER AND UTILITY PLAN	

		DATE	03.05.2018
		DRAWN BY	AMC
SCALE		1:250	
CIVIL			
CONSTRUCTION PERMIT SET			
			
C4.20			

NEWMAN

NOT FOR  
CONSTRUCTION

[illegible]

For the most up to date information  
1.800.862.9771

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 Apt. D, Chicago, IL 60605  
 Tel: 312.462.7737

doi:10.1017/S0022278X12001001

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## EXPANSION

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PHASE II: SAVING  
SEWER AND UTIL

DATE 03/05/2018

NAME \_\_\_\_\_

DATE \_\_\_\_\_

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