



*Civil & Environmental Engineering Consultants  
174 Main Street, Beacon, New York 12508  
Phone: 845-440-6926 Fax: 845-440-6637  
[www.HudsonLandDesign.com](http://www.HudsonLandDesign.com)*

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August 27, 2019

Mr. Dave Buckley  
City of Building Inspector  
1 Municipal Center  
Beacon, NY 12508

Re: Infiltration and Inflow Investigation  
2 Cross Street Site Plan  
4 Cross Street & 172 Main Street  
City of Beacon, New York  
Tax ID: 5954-36-798971 (4 Cross Street)  
5954-36-799966 (172 Main Street)

Dear Mr. Buckley,

Hudson Land Design (HLD) has completed an infiltration and inflow investigation (I&I) at the above referenced parcels as required by the City of Beacon. The investigation was conducted on August 23, 2019 at the existing buildings located at 172 Main Street and 4 Cross Street. 172 Main Street consists of a two-story masonry building that is occupied by a commercial space on the ground floor and residential apartments on the second floors. 4 Cross Street is a two-story masonry building that consists of residential apartment units.

The first phase of the study consisted of an exterior inspection of the buildings on August 23, 2019 to determine the location of roof leader discharge points.

The building at 4 Cross Street has a gable roof with no gutters or downspouts. Runoff travels via sheet flow and falls off the roof to existing grade.

172 Main Street has a flat roof with parapet walls. Stormwater falls on the flat roof and is collected by a downspout on the eastern side of the roof which conveys the runoff through the interior of the building and connects to the sanitary sewer lateral within the building then to the sanitary sewer system located in Main Street. The existing downspout that is connected to the interior sanitary sewer lateral will be removed as part of the project. See Table 1 below for volumes of stormwater to be removed from the sanitary sewer system for the 1, 10, 25 and 100-year storm events. The hydraulic model can be found within Appendix A.

**TABLE 1**  
**STORMWATER VOLUME REMOVED FROM SANITARY SEWER SYSTEM**

<b>Designation</b>	<b>1-Year 2.61 inches</b>	<b>10-Year 4.70 inches</b>	<b>25-Year 5.90 inches</b>	<b>100-Year 8.34 inches</b>
Volume (acre-feet)	0.006	0.012	0.015	0.021
Volume (gallons)	1,956	3,910	4,888	6,843



**Figure 1: View of Interior Roof Leader in 172 Main Street Basement**

The second phase of the study consisted of interior inspection of the buildings on August 23, 2019 to determine if there are any illicit connections to the building sewer line from sump pumps, floor drains and the like.

At both 172 Main Street and 4 Cross Street HLD personnel located the last section of the interior sanitary sewer plumbing. At 172 Main Street the sanitary sewer lateral flows south out of the building and is assumed to connect to the sanitary sewer collection system in Main Street. At 4 Cross Street the sanitary sewer lateral flows westerly out of the building to the sanitary sewer connection in Cross Street. At this time, no dye tests were conducted to verify flow direction.

At 172 Main Street a single sump pump was observed along the eastern basement wall with a discharge to the building sewer lateral. It was observed that the sump pump discharges directly into the sewer lateral, and ultimately to the City of Beacon's sanitary sewer system. The photo on the next page shows the sump pump and force main pipe discharging to the sanitary sewer lateral.



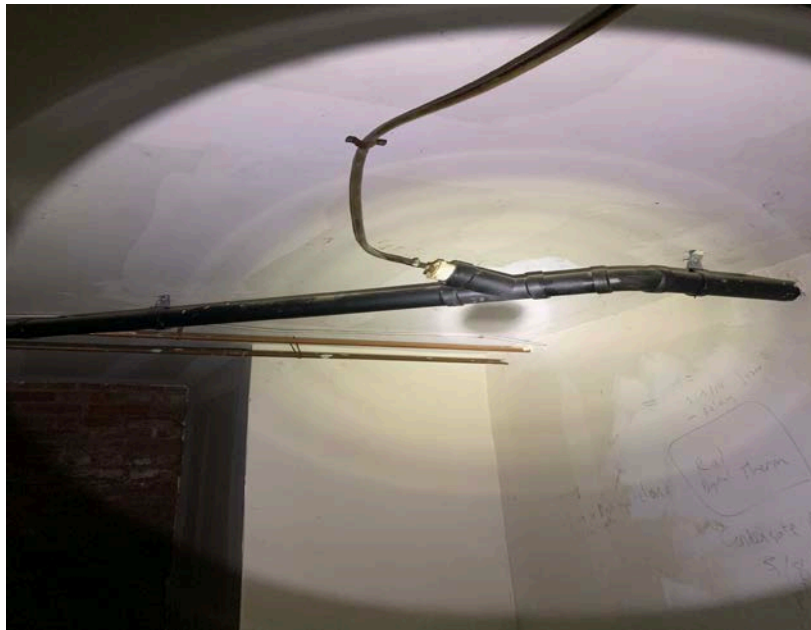
**Figure 2: View of Basement Sump Pump and Connection to Sanitary Sewer in 172 Main Street Basement**

On an average day, during a 1-year storm event, it is assumed that the existing sump pump will cycle approximately 20 times, discharging 120 gallons of water to the City of Beacon's sanitary sewer system.

At 4 Cross Street a single furnace condensate pump was observed along the western basement wall with a discharge to the building sewer lateral. It was observed that the condensate pump discharges directly into the sewer lateral, and ultimately to the City of Beacon's sanitary sewer system. The photo below shows the condensate pump and 3/8" copper tubing discharging to the sanitary sewer lateral.



**Figure 3: Furnace Condensation Pump in 4 Cross Street**



**Figure 4: 3/8" Copper Tubing from Condensate Pump to Sewer Lateral in 4 Cross Street**

Based on our observations, HLD believes that there are illicit connections from the buildings located at 172 Main Street and 4 Cross Street to the City of Beacon's sanitary sewer collection system. The sump pump and internal roof leader in 172 Main Street will

be disconnected from the sanitary sewer and redirected to the stormwater sewer system during project construction and building renovation. The furnace condensate pump in 4 Cross Street discharges an insignificant amount of furnace condensation and is proposed to remain in the current configuration. See Appendix B for Inspection Sketch.

We recommend that the following mitigation notes be placed on the plans for the project:

- The interior roof leader at 172 Main Street will be removed from the sanitary sewer lateral and rerouted to the proposed stormwater conveyance system after design.
- The sump pump at 172 Main Street will be removed and rerouted to the proposed stormwater conveyance system after design.

Should you have any questions, please feel free to call me at 845-440-6926.

Sincerely,



Eric S. Rogge, P.E.  
Senior Engineer

cc: Joseph Donovan; Hudson Todd, LLC (via Email)  
Michael A. Bodendorf, P.E. (HLD file)

APPENDIX A:  
HydroCAD Report and Calculations

**I&I ROOF DRAINAGE**

Prepared by Hudson Land Design, P.C.

Printed 8/27/2019

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**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
0.034	98	Roofs, HSG B (1S)
<b>0.034</b>	<b>98</b>	<b>TOTAL AREA</b>

**I&I ROOF DRAINAGE**

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2 Cross Street I&I

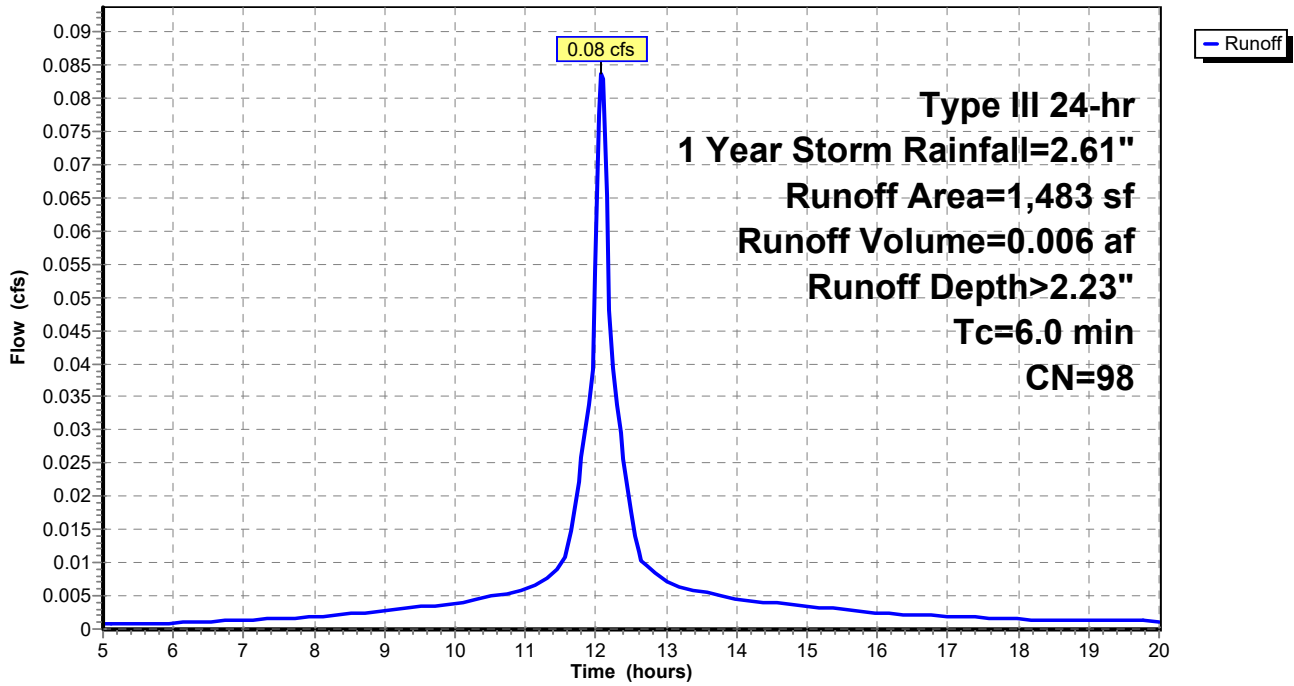
Type III 24-hr 1 Year Storm Rainfall=2.61"

Printed 8/27/2019

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**Subcatchment 1S: ROOF DRAINAGE**

Hydrograph





# I&I ROOF DRAINAGE

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2 Cross Street I&I

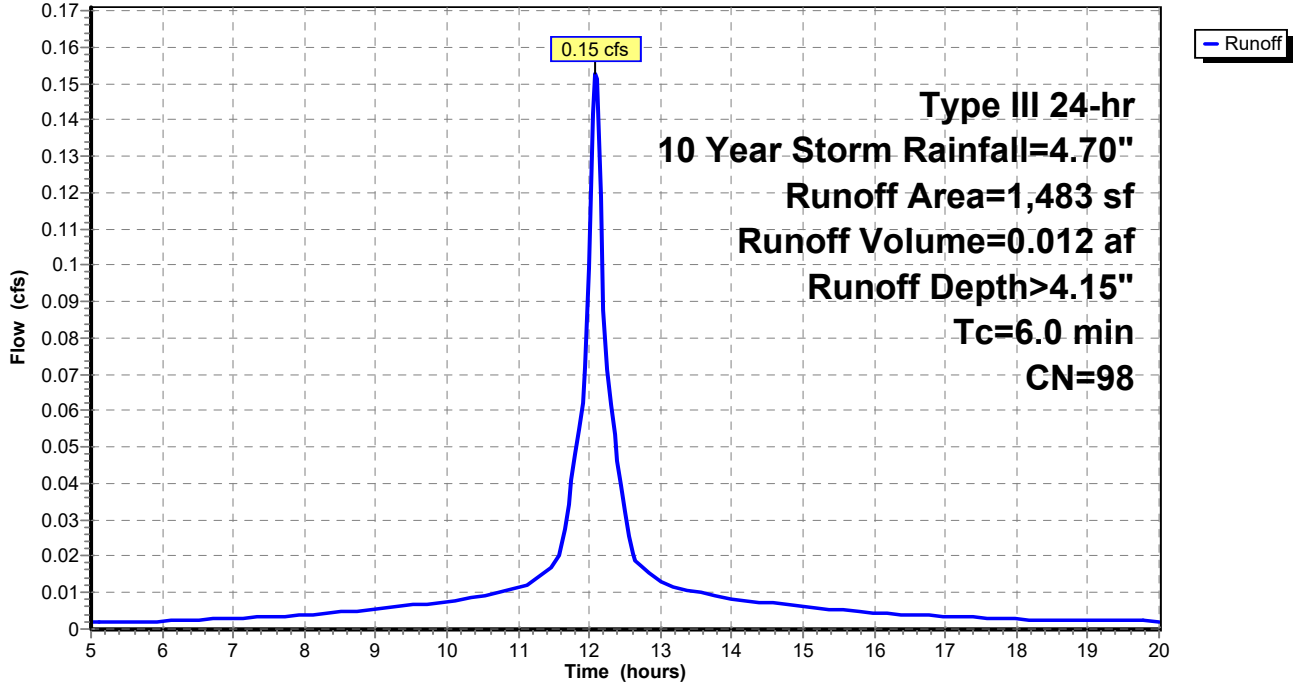
Type III 24-hr 10 Year Storm Rainfall=4.70"

Printed 8/27/2019

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## Subcatchment 1S: ROOF DRAINAGE

Hydrograph



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2 Cross Street I&I

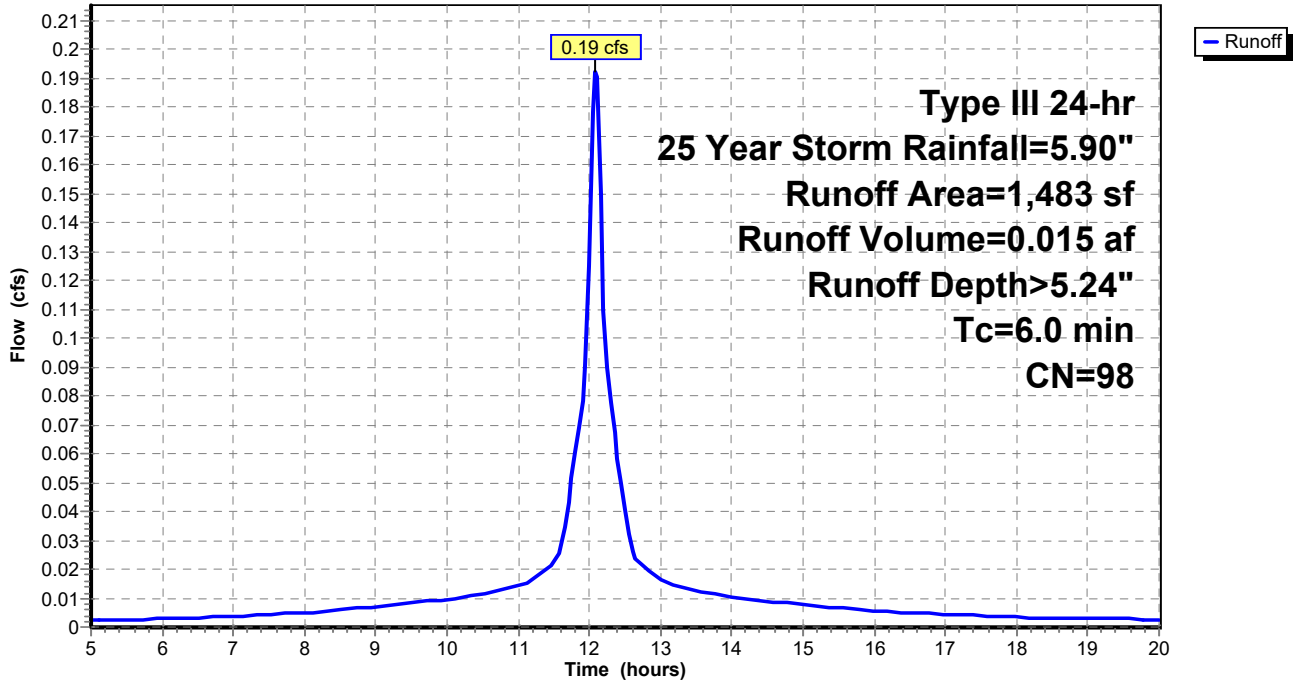
Type III 24-hr 25 Year Storm Rainfall=5.90"

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## Subcatchment 1S: ROOF DRAINAGE

Hydrograph



# I&I ROOF DRAINAGE

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2 Cross Street I&I

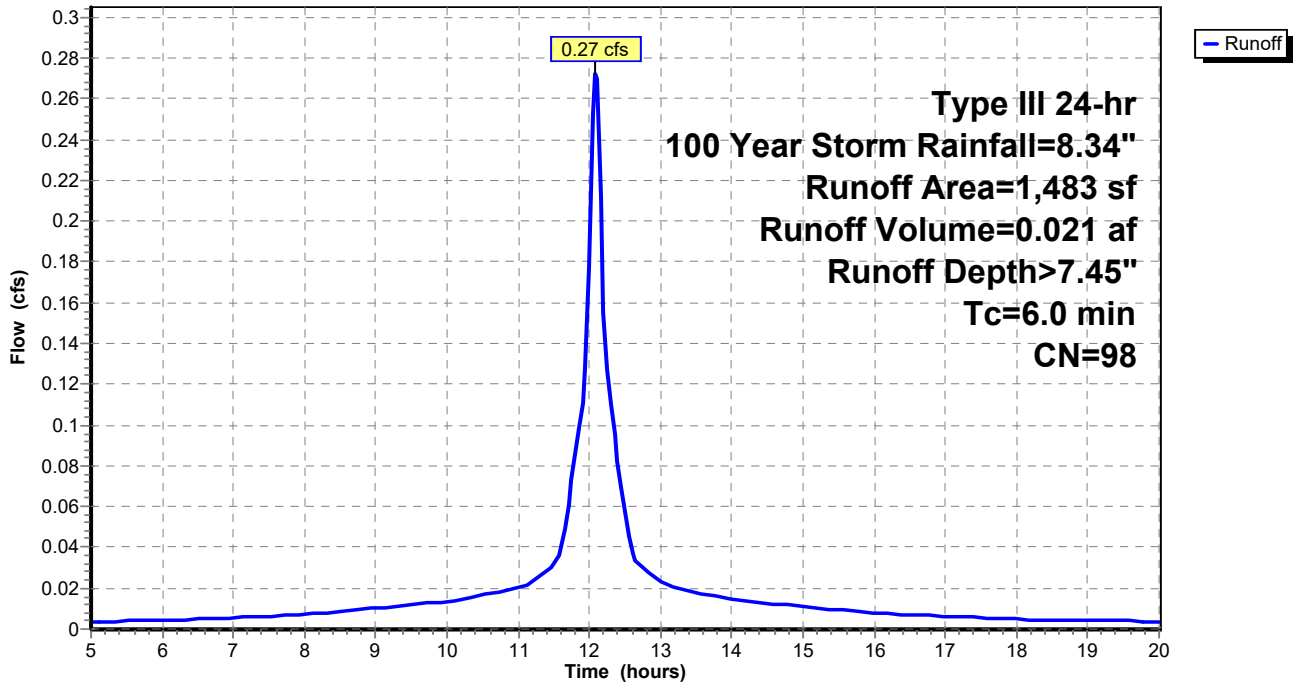
Type III 24-hr 100 Year Storm Rainfall=8.34"

Printed 8/27/2019

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## Subcatchment 1S: ROOF DRAINAGE

Hydrograph



APPENDIX B:  
Inflow and Infiltration Inspection Sketch



**SURVEY NOTES**

1. Copyright TEC Land Surveying. All Rights Reserved. Reproduction or copying of this document may be a violation of copyright law unless permission of the author and / or copyright holder is obtained.
2. Unauthorized alteration or addition to a survey map bearing a licensed land surveyor's seal is a violation of section 7209, sub-division 2, of the New York State Education Law.
3. Only boundary survey maps with the surveyor's embossed or red inked seal are genuine true and correct copies of the surveyor's original work and opinion. A copy of this document without a proper application of the surveyor's embossed or red inked seal should be assumed to be an unauthorized copy.
4. Certifications on this boundary survey map signify that the map was prepared in accordance with the current existing Code of Practice for Land Surveys adopted by the New York State Association of Professional Land Surveyors, Inc. The certification is limited to persons for whom the boundary survey map is prepared, to the title company, to the governmental agency, and to the lending institution listed on this boundary survey map.
5. The certifications herein are not transferable.
6. The location of underground improvements or encroachments are not always known and often must be estimated. If any underground improvements or encroachments exist or are shown, the improvements or encroachments are not covered by this certificate.
7. Subject to the findings of a current title search.
8. Subject to covenants, easements, restrictions, conditions and agreements of record.
9. Subject to any right, title or interest the public may have for highway use.
10. Bearings and North shown hereon are referenced to NAD 83-NY East using NYSNET RTN GPS.
11. Contour interval is one foot. Elevations shown hereon are referenced to NAVD 88 using NYSNET RTN GPS.

**FILED MAP REFERENCE**

Map entitled "Lot Line Re-Alignment Prepared For The City of Beacon" prepared by Dennis E. Walden and filed in the Dutchess County Clerks office on November 2, 2001 as Map No. 11271

**DEED REFERENCE**

Document No. 02-2014-5997  
Dutchess County Community Action Agency Inc  
Conveyed To  
Hudson Todd LLC  
On October 3, 2014

**TAX PARCEL NUMBER**

City of Beacon, Dutchess County, New York  
130200-5954-27-793967-0000  
130200-5954-27-798971-0000  
130200-5954-27-799966-0000

**AREA**

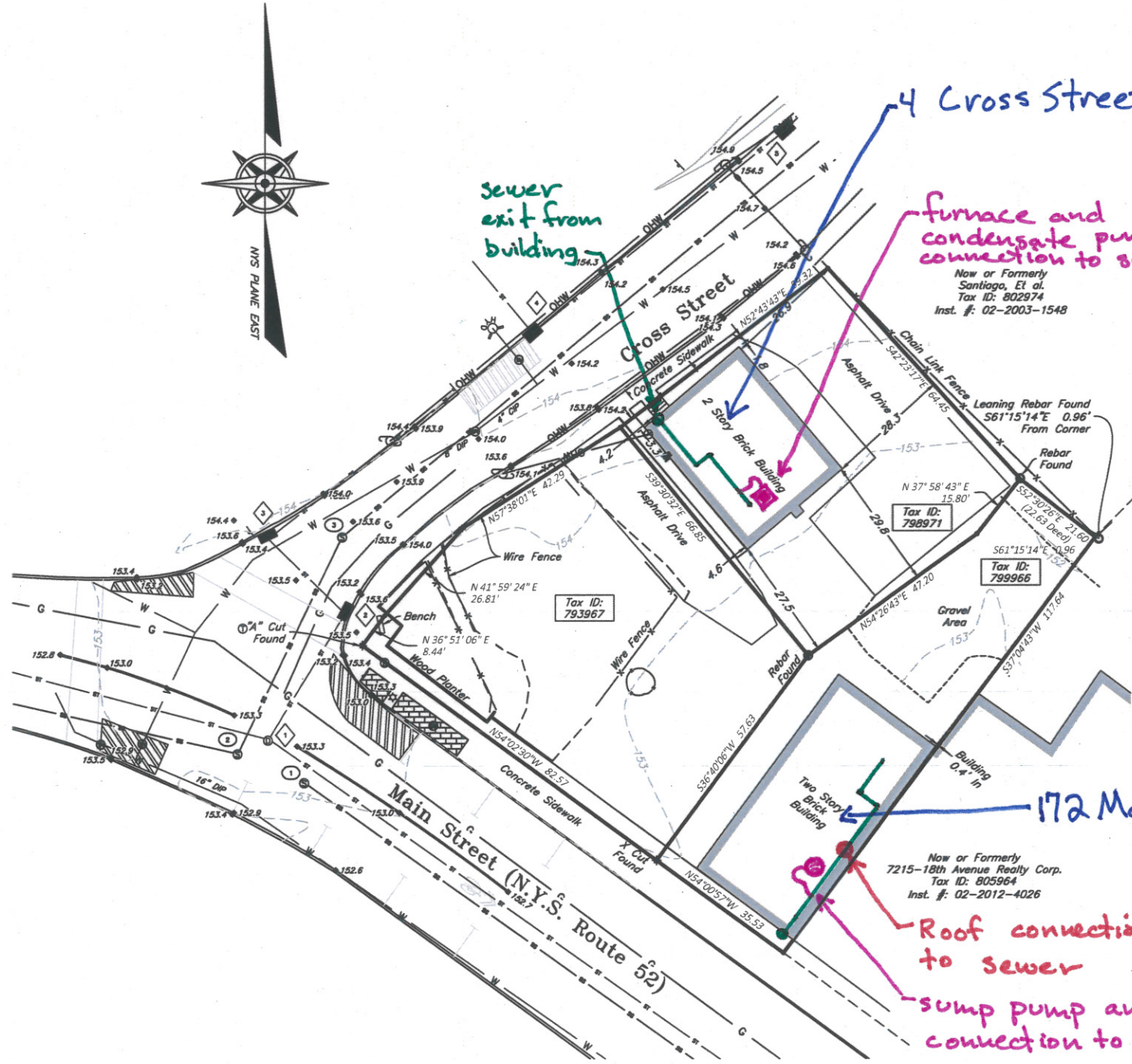
13,017 Square Feet  
0.299 Acres

**CERTIFICATIONS**

The Lindley, LLC

**DATE OF SURVEY**

Field Completion: 10/5/2017



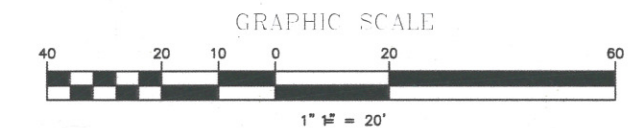
**Storm Sewer Information**

Top of Structure	Invert	Invert	Invert	Invert
153.3'	144.6' 24" RCP	140.7' 36" RCP	140.5' 36" RCP	
153.0'	149.0' 15" RCP	148.9' 30" RCP		
153.4'	149.3' 15" RCP	149.3' 15" CPP		
154.2'	149.5' 15" CPP	149.5' 15" CPP		
154.3'	149.8' 15" CPP	149.7' 15" CPP		

**Sanitary Sewer Information**

Top of Structure	Invert	Invert	Invert	Invert
153.0'	144.1' 8" CIP			
153.1'	140.3' 12" ACP*	140.1' 12" ACP*		
153.6'	146.4' 12" ACP*	146.3' 12" VCP		
155.8'	148.7' 12" VCP	148.6' 12" VCP		

\*Pipe material from City of Beacon Sewer mapping.



rev.	date	description

**TEC LAND SURVEYING**  
150 TIORONDA AVE. BEACON, NY 12508  
PH: 845.445.6590 FX: 845.445.6591



THOMAS E. CERCHIARA, P.L.S.  
P.L.S. No. 50732

I+I observations  
8/23/19

172 MAIN & 4 CROSS  
**BOUNDARY / TOPOGRAPHIC SURVEY PREPARED OF 172 MAIN ST & 4 CROSS ST**  
CITY OF BEACON, COUNTY OF DUTCHESS, STATE OF NEW YORK

tax id	MULTIPLE
address	172 MAIN / 4 CROSS
date	11/2/2017
drawn	RHC
scale	1" = 20'
checked	TEC
project no.	17-070
project name	172 MAIN / 4 CROSS
sheet	1 OF 1