STORMWATER MANAGEMENT REPORT

STATE OF NEW HAMPSHIRE
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10.05.2020

GRANITE ENGINEERING

civil engineering ● land planning ● municipal services

CHANDLER HOUSE

Map 18 Lot 23-1
147 Walnut Street
Manchester, New Hampshire
October 5, 2020

PREPARED FOR:
CURRIER MUSEUM OF ART
150 ASH STREET
MANCHESTER, NH 03104

PREPARED BY:
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GE Project No. 20-0731-1

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1. PROJECT NARRATIVE

I. INTRODUCTION

A. Project Description

The property located at 147 Walnut Street is owned by the Roman Catholic Bishop of Manchester and is currently developed with two existing buildings. On the north side of the property is a large Victorian building known as the "Chandler House", and on the south side of the property is St. Hedwig's Parish. The Currier Museum intends to purchase the Chandler House and subdivide the property to create a separate stand-alone lot for the Chandler House. Post subdivision of the property, the Currier Museum will undertake the restoration and repurposing of the historical structure. The new use of the Chandler House will include a museum on the first floor, classroom space on the basement floor and museum office space on the second and third floors.

Proposed civil site improvements on the property of the building are limited to the construction of an ADA parking space, ADA access to the building, and new access to the basement floor. Parking that will support the proposed future use of the Chandler House will be provided by existing on-street public parking and existing off-street private parking owned by the Currier Museum.

The purpose of this report is to evaluate the pre-development drainage conditions of the site versus the post-development drainage conditions of the site.

B. Existing Site Conditions

Tax Map 18 Lot 23 is approximately 1.11 acres in area and is developed with St. Hedwig's Church and the Chandler House. A proposed subdivision divides the lot into two lots, Lot 23 with St. Hedwig's church (0.607 acres) and Lot 23-1 with the Chandler House (0.508 acres). The ground cover on the properties consists of grass and impervious cover.

According to the USDA Natural Resources Conservation Service, the predominant onsite soil type is Windsor-Urban land complex, with 3-15% slopes. The Windsor-Urban land soils belong to a Hydrological Soil Group of 'A' soils.

II. STORM DRAINAGE ANALYSIS & DESIGN

A. Methodology

In accordance with the City of Manchester Site Plan Regulations, the 25-year frequency storm has been used in the stormwater analysis for the subject site.

In appreciation of the benefits and limitations related to each of the various methods available to design professionals for estimating peak stormwater discharge rates for use in analysis and design, the TR-20 computer model was used. Values for Time of Concentration used in the analysis were estimated using the methodology contained within USDA-S.C.S. publication Urban Hydrology for Small Watersheds Technical Release No. 55 (TR 55). All design and analysis calculations performed using the referenced methodologies are attached to this report. The minimum time of concentrations used for the analysis is 6 minutes. These calculations document each catchment area, a breakdown of surface type, time of concentration, rainfall intensity, peak discharge volume, Manning's "n" value, peak velocity, and other descriptive design data for each watershed evaluated. In addition, the "Pre/Post Development Drainage Area Plans" graphically define and illustrate the extent of each watershed or catchment area investigated.

B. Pre-Development Drainage Conditions

In order to evaluate the impact of the proposed development, one (1) Point of Analysis (POA) was analyzed to demonstrate that the peak rates of runoff would not increase from the proposed project.

The POA, Link A, represents all of the water from the site that drains off the site and into the closed drainage system in the adjacent streets.

Pre-development peak rates of discharge are identified in Table 1. For a more visual description of the information presented in this section, please refer to the attached "Pre-Development Drainage Areas Plan" attached in the appendix of this report.

C. Post-Development Drainage Conditions:

The same POA from the Pre-Development scenario was used in the Post-Development analysis.

The post-development site improvements include the new ADA parking space, the ADA access ramp to the first floor, and the ADA walkway to the basement level. Cumulatively, these improvements add 430-sf of impervious surface to the lots. This small increase in impervious surface had no effect on the weighted curve number , and thus there is no reported increase in discharge off of the property.

Minor drainage improvements are proposed near the new basement level access. The elevation of the basement floor relative to the adjacent grades along Myrtle Street and the lawn area forces the need for a small trench drain near the door entrance. To discharge the trench drain, a small diameter pipe outlets within the lawn area between the House and Walnut

Street. The flow tributary to the trench drain is negligible, but a discharge point is necessary in order to keep the basement level access area dry.

The peak stormwater runoff rate for the specific storm frequency is presented and analyzed in the subsequent summary section of this report, for the points of analysis (Table 1).

D. Summary:

The subject project complies with the City of Manchester Subdivision and Site Plan Regulations as well as the Standard Specifications regarding peak stormwater discharge. The results are reported below in Table 1.

Since the curve number did not change between the pre-development and the post-development analyses, it has been concluded that the proposed site improvements will not have any adverse effect on the stormwater management of the site.

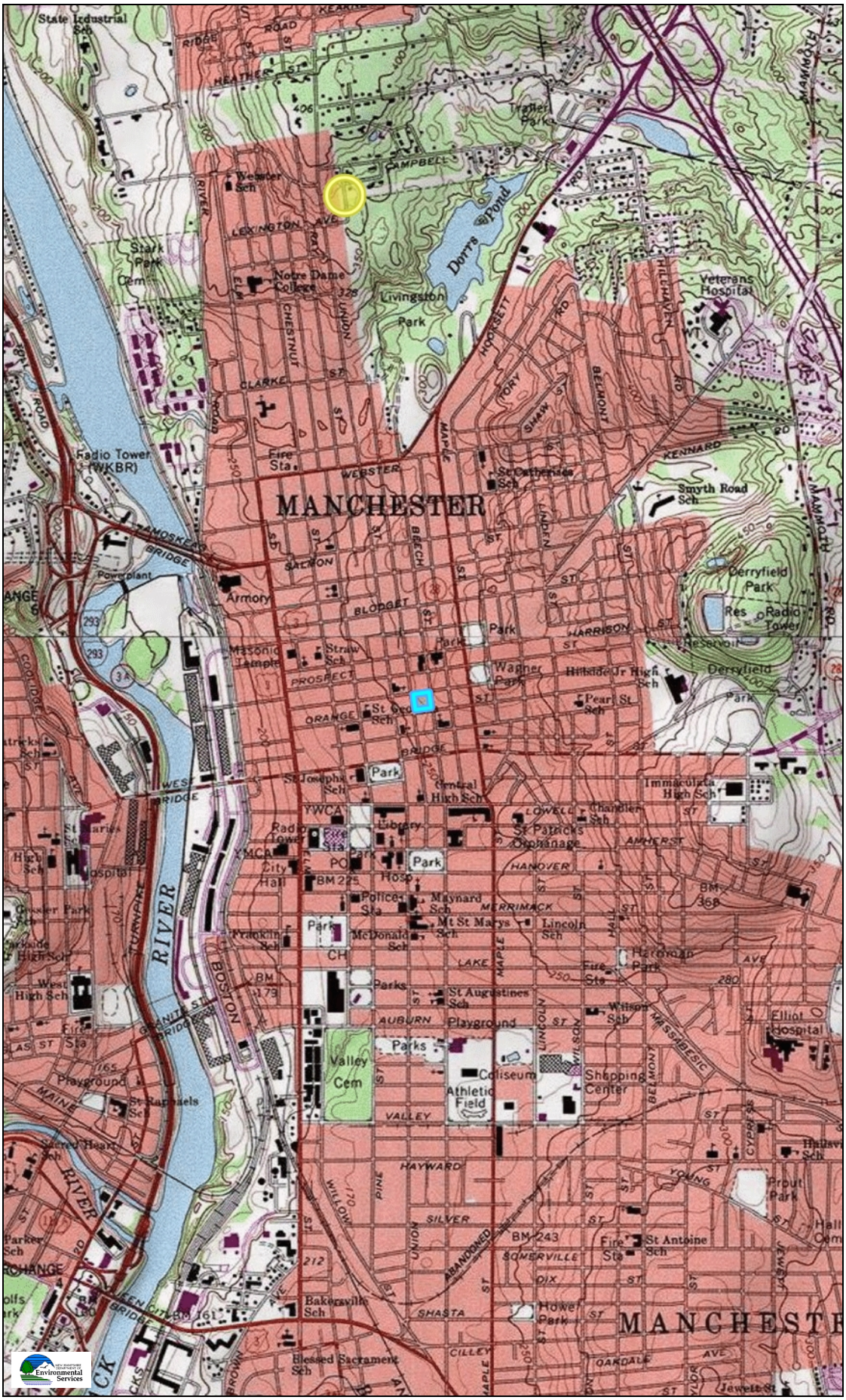
The results of the model conclude that the proposed improvement of these properties will not generate post-development peak rates of stormwater discharge exceeding pre-development rates.

TABLE 1: PRE VS. POST PEAK RUNOFF

Site Pre-Development vs. Post Development (Peak Discharge Rate in cfs)		
Description	**25-Year**	
24-hr Rainfall	5.40 in	
	Pre (cfs)	Post (cfs)
A	3.97	3.97

2. USGS MAP

USGS Topographic Map



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Map Scale

1: 24,000

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Map Generated: 9/28/2020

Notes

3. WEB SOIL SURVEY

Hydrologic Soil Group—Hillsborough County, New Hampshire, Eastern Part

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hillsborough County, New Hampshire, Eastern Part
Survey Area Data: Version 22, May 29, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 1, 2014—Jun 26, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Ur	Urban land		0.1	0.6%
WnC	Windsor-Urban land complex, 3 to 15 percent slopes	A	20.6	99.4%
Totals for Area of Interest			**20.7**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

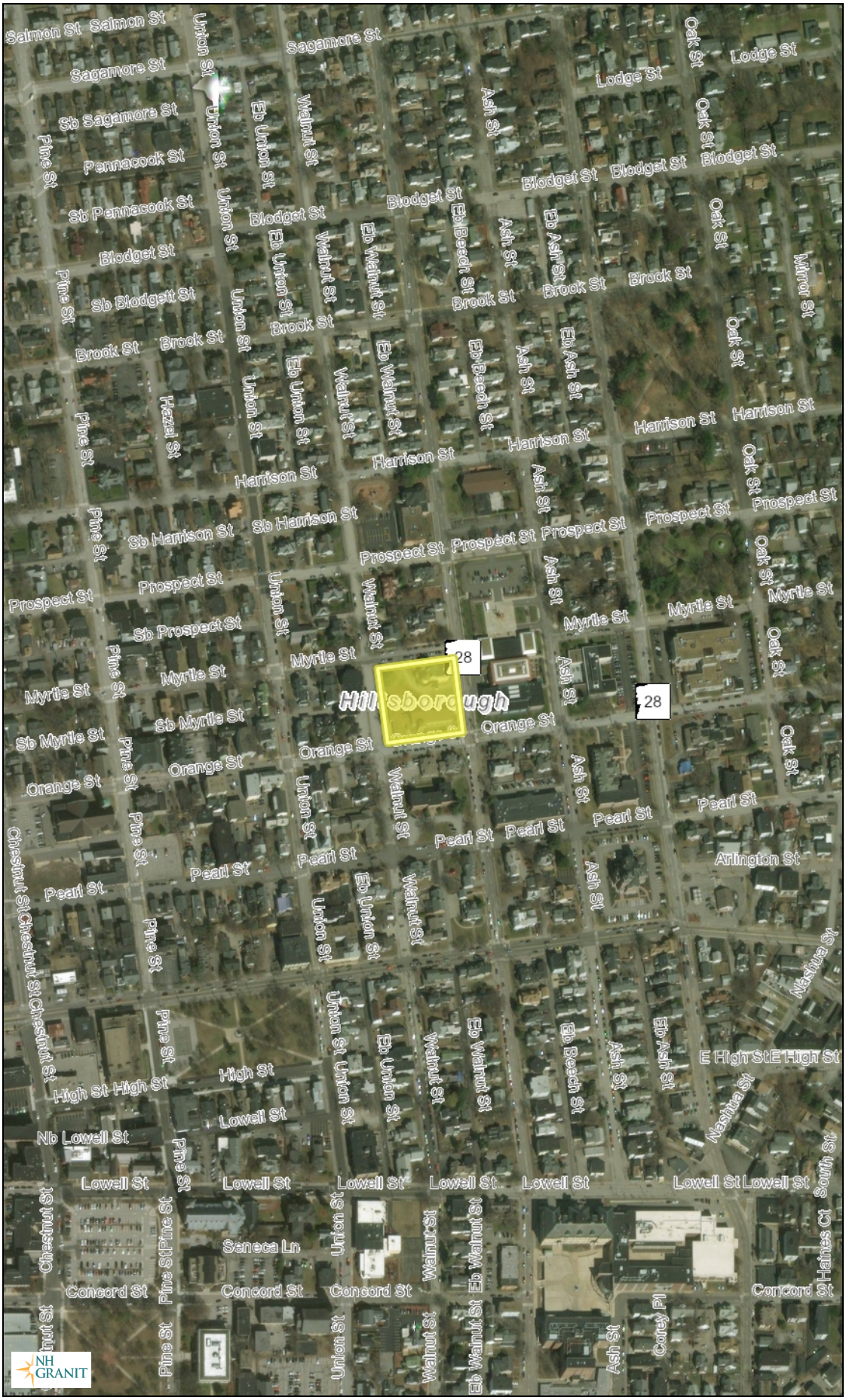
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

4. AERIAL PHOTOGRAPH

Aerial Photograph



Legend

Map Scale

1: 5,000

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Map Generated: 9/28/2020

Notes

5. EXTREME PRECIPITATION TABLES

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	71.457 degrees West
Latitude	42.997 degrees North
Elevation	0 feet
Date/Time	Mon, 28 Sep 2020 14:13:04 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.66	0.82	1.03	**1yr**	0.71	0.99	1.20	1.51	1.90	2.40	2.62	**1yr**	2.12	2.52	2.92	3.60	4.17	**1yr**
2yr	0.32	0.49	0.61	0.81	1.02	1.28	**2yr**	0.88	1.17	1.48	1.84	2.29	2.86	3.18	**2yr**	2.53	3.06	3.54	4.23	4.82	**2yr**
5yr	0.38	0.59	0.74	0.99	1.27	1.61	**5yr**	1.10	1.47	1.87	2.33	2.90	3.60	4.05	**5yr**	3.18	3.90	4.50	5.30	5.97	**5yr**
10yr	0.43	0.67	0.85	1.16	1.50	1.92	**10yr**	1.30	1.73	2.24	2.80	3.47	4.29	4.87	**10yr**	3.79	4.68	5.40	6.28	7.03	**10yr**
25yr	0.51	0.80	1.02	1.41	1.88	2.42	**25yr**	1.62	2.16	2.82	3.54	4.40	5.40	6.22	**25yr**	4.78	5.98	6.87	7.87	8.72	**25yr**
50yr	0.58	0.92	1.18	1.65	2.22	2.89	**50yr**	1.92	2.56	3.38	4.24	5.26	6.44	7.48	**50yr**	5.70	7.19	8.26	9.33	10.27	**50yr**
100yr	0.65	1.06	1.36	1.93	2.63	3.45	**100yr**	2.27	3.03	4.05	5.08	6.29	7.69	9.01	**100yr**	6.80	8.66	9.92	11.08	12.10	**100yr**
200yr	0.74	1.21	1.57	2.26	3.12	4.12	**200yr**	2.70	3.60	4.84	6.09	7.52	9.17	10.86	**200yr**	8.12	10.44	11.92	13.15	14.26	**200yr**
500yr	0.90	1.48	1.93	2.80	3.92	5.20	**500yr**	3.38	4.51	6.12	7.70	9.52	11.60	13.90	**500yr**	10.26	13.36	15.21	16.52	17.74	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.22	0.33	0.41	0.55	0.67	0.84	**1yr**	0.58	0.83	1.05	1.33	1.63	2.21	2.48	**1yr**	1.96	2.38	2.67	3.20	3.62	**1yr**
2yr	0.31	0.47	0.58	0.79	0.97	1.16	**2yr**	0.84	1.14	1.33	1.74	2.23	2.76	3.06	**2yr**	2.44	2.94	3.41	4.09	4.67	**2yr**
5yr	0.35	0.54	0.67	0.91	1.16	1.38	**5yr**	1.00	1.35	1.56	2.03	2.59	3.28	3.71	**5yr**	2.91	3.57	4.09	4.87	5.53	**5yr**
10yr	0.38	0.59	0.73	1.02	1.32	1.56	**10yr**	1.14	1.53	1.77	2.28	2.91	3.74	4.28	**10yr**	3.31	4.12	4.67	5.56	6.26	**10yr**
25yr	0.44	0.67	0.83	1.18	1.56	1.82	**25yr**	1.34	1.78	2.08	2.66	3.37	4.42	5.16	**25yr**	3.91	4.96	5.54	6.61	7.35	**25yr**
50yr	0.48	0.73	0.91	1.30	1.75	2.05	**50yr**	1.51	2.01	2.36	3.00	3.78	5.01	5.95	**50yr**	4.43	5.72	6.28	7.52	8.29	**50yr**
100yr	0.53	0.80	1.00	1.45	1.99	2.32	**100yr**	1.72	2.27	2.68	3.39	4.24	5.66	6.85	**100yr**	5.01	6.59	7.10	8.57	9.34	**100yr**
200yr	0.58	0.88	1.12	1.61	2.25	2.61	**200yr**	1.94	2.55	3.03	3.83	4.77	6.39	7.89	**200yr**	5.65	7.59	8.01	9.75	10.50	**200yr**
500yr	0.67	1.00	1.28	1.87	2.65	3.06	**500yr**	2.29	2.99	3.58	4.52	5.60	7.46	9.49	**500yr**	6.60	9.12	9.32	11.57	12.26	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.30	0.46	0.56	0.76	0.93	1.10	**1yr**	0.80	1.07	1.21	1.61	2.04	2.59	2.81	**1yr**	2.29	2.70	3.27	4.15	4.58	**1yr**
2yr	0.34	0.52	0.64	0.86	1.07	1.27	**2yr**	0.92	1.24	1.43	1.86	2.37	2.98	3.33	**2yr**	2.64	3.21	3.71	4.39	5.01	**2yr**
5yr	0.42	0.64	0.80	1.10	1.40	1.60	**5yr**	1.20	1.56	1.82	2.33	2.94	3.96	4.42	**5yr**	3.50	4.25	4.92	5.76	6.50	**5yr**
10yr	0.50	0.77	0.96	1.34	1.73	1.94	**10yr**	1.49	1.90	2.19	2.77	3.49	4.93	5.53	**10yr**	4.36	5.32	6.14	7.09	7.91	**10yr**
25yr	0.65	0.98	1.22	1.75	2.30	2.51	**25yr**	1.98	2.45	2.80	3.48	4.34	6.61	7.44	**25yr**	5.85	7.15	8.26	9.32	10.33	**25yr**
50yr	0.78	1.18	1.47	2.12	2.85	3.05	**50yr**	2.46	2.98	3.38	4.15	5.14	8.26	9.33	**50yr**	7.31	8.97	10.35	11.48	12.63	**50yr**
100yr	0.95	1.43	1.79	2.59	3.55	3.72	**100yr**	3.06	3.63	4.09	4.95	6.08	10.34	11.68	**100yr**	9.15	11.23	12.95	14.16	15.49	**100yr**
200yr	1.14	1.72	2.18	3.16	4.41	4.52	**200yr**	3.80	4.42	4.93	5.89	7.21	12.95	14.68	**200yr**	11.46	14.12	16.27	17.49	19.00	**200yr**
500yr	1.49	2.21	2.85	4.14	5.88	5.87	**500yr**	5.08	5.74	6.34	7.44	9.04	17.44	19.86	**500yr**	15.44	19.09	22.01	23.10	24.96	**500yr**

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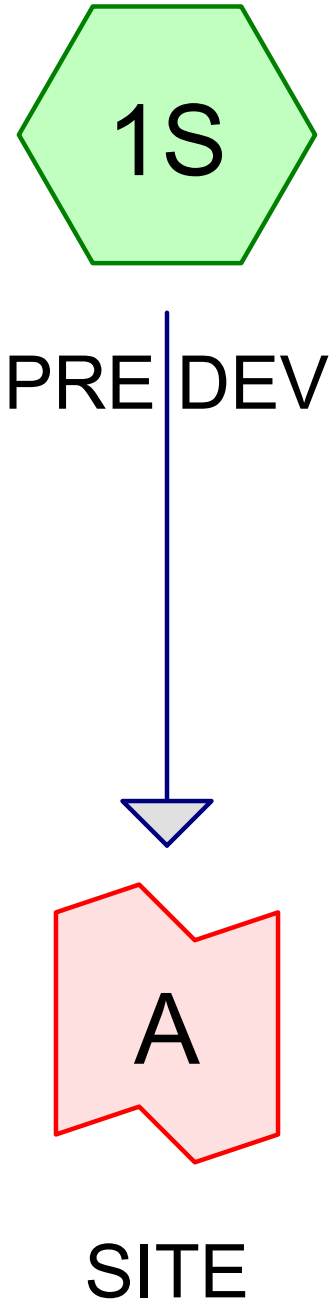
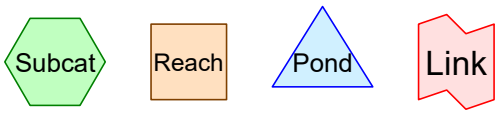
6. HYDROCAD DRAINAGE ANALYSIS





Routing Diagram for 2007311-PRE DEVELOPMENT
Prepared by Granite Engineering, LLC, Printed 9/30/2020
HydroCAD® 10.00-25 s/n 11075 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.573	39	>75% Grass cover, Good, HSG A (1S)
0.761	98	Paved parking, HSG A (1S)
1.334	**73**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.334	HSG A	1S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
1.334		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.573	0.000	0.000	0.000	0.000	0.573	>75% Grass cover, Good	1S
0.761	0.000	0.000	0.000	0.000	0.761	Paved parking	1S
1.334	**0.000**	**0.000**	**0.000**	**0.000**	**1.334**	**TOTAL AREA**	

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: PRE DEV Runoff Area=58,105 sf 57.08% Impervious Runoff Depth>2.60"
Tc=6.0 min CN=73 Runoff=3.97 cfs 0.289 af

Link A: SITE Inflow=3.97 cfs 0.289 af
Primary=3.97 cfs 0.289 af

Total Runoff Area = 1.334 ac Runoff Volume = 0.289 af Average Runoff Depth = 2.60"
42.92% Pervious = 0.573 ac 57.08% Impervious = 0.761 ac

Summary for Subcatchment 1S: PRE DEV

Runoff = 3.97 cfs @ 12.09 hrs, Volume= 0.289 af, Depth> 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.40"

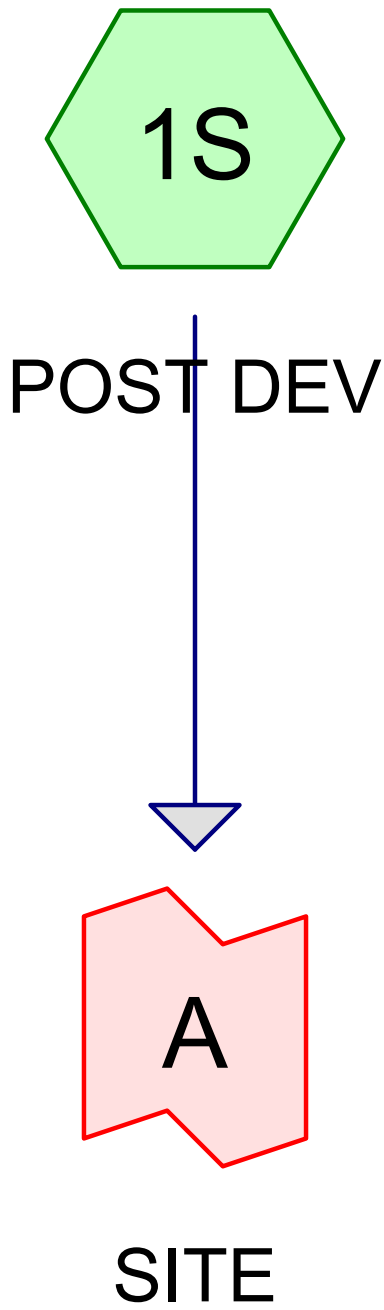
Area (sf)	CN	Description
33,166	98	Paved parking, HSG A
24,939	39	>75% Grass cover, Good, HSG A
58,105	73	Weighted Average
24,939		42.92% Pervious Area
33,166		57.08% Impervious Area

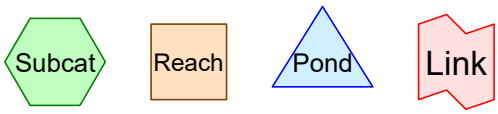
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Link A: SITE

Inflow Area = 1.334 ac, 57.08% Impervious, Inflow Depth > 2.60" for 25-YR event
Inflow = 3.97 cfs @ 12.09 hrs, Volume= 0.289 af
Primary = 3.97 cfs @ 12.09 hrs, Volume= 0.289 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs





Routing Diagram for 2007311-POST DEVELOPMENT
Prepared by Granite Engineering, LLC, Printed 9/30/2020
HydroCAD® 10.00-25 s/n 11075 © 2019 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.563	39	>75% Grass cover, Good, HSG A (1S)
0.771	98	Paved parking, HSG A (1S)
1.334	**73**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.334	HSG A	1S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
1.334		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.563	0.000	0.000	0.000	0.000	0.563	>75% Grass cover, Good	1S
0.771	0.000	0.000	0.000	0.000	0.771	Paved parking	1S
1.334	**0.000**	**0.000**	**0.000**	**0.000**	**1.334**	**TOTAL AREA**	

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: POST DEV Runoff Area=58,105 sf 57.82% Impervious Runoff Depth>2.60"
Tc=6.0 min CN=73 Runoff=3.97 cfs 0.289 af

Link A: SITE Inflow=3.97 cfs 0.289 af
Primary=3.97 cfs 0.289 af

Total Runoff Area = 1.334 ac Runoff Volume = 0.289 af Average Runoff Depth = 2.60"
42.18% Pervious = 0.563 ac 57.82% Impervious = 0.771 ac

Summary for Subcatchment 1S: POST DEV

Runoff = 3.97 cfs @ 12.09 hrs, Volume= 0.289 af, Depth> 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.40"

Area (sf)	CN	Description
33,596	98	Paved parking, HSG A
24,509	39	>75% Grass cover, Good, HSG A
58,105	73	Weighted Average
24,509		42.18% Pervious Area
33,596		57.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Link A: SITE

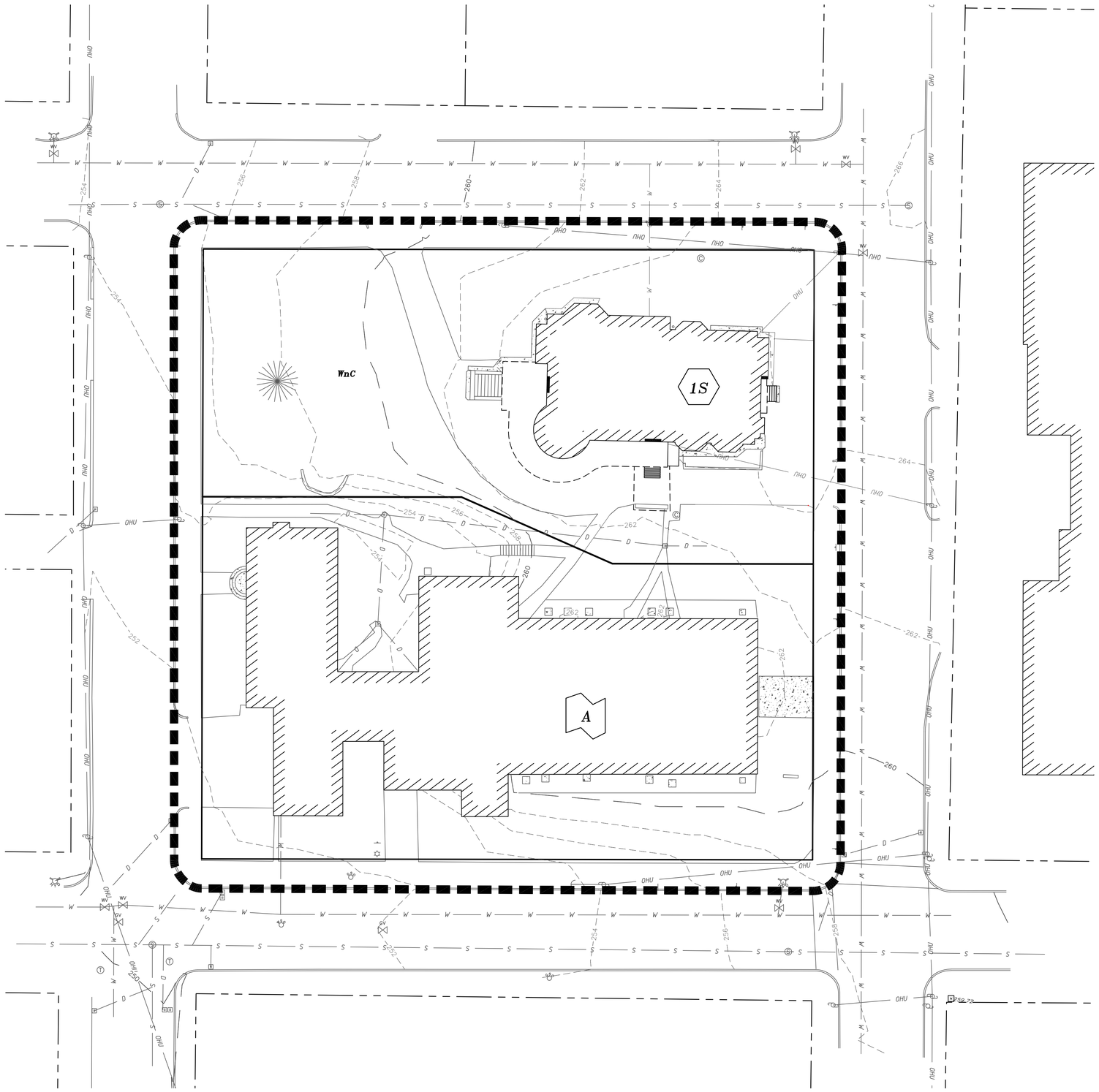
Inflow Area = 1.334 ac, 57.82% Impervious, Inflow Depth > 2.60" for 25-YR event
Inflow = 3.97 cfs @ 12.09 hrs, Volume= 0.289 af
Primary = 3.97 cfs @ 12.09 hrs, Volume= 0.289 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

7. PLANS

I. PRE-DEVELOPMENT DRAINAGE AREAS PLAN (11”X17”)

II. POST-DEVELOPMENT DRAINAGE AREAS PLAN (11”X17”)



DRAINAGE LEGEND:

THE LEGEND BELOW REFLECTS THE HYDROCAD MODEL USED FOR DRAINAGE CALCULATIONS.

140B	DENOTES SOIL TYPE
S	DENOTES SUBCATCHMENT AREA
L	DENOTES POINT OF INTEREST
	LIMIT OF SUBCATCHMENT AREA

SCS LEGEND

WnC	WINDSOR–URBAN LAND COMPLEX, 3–15% SLOPES

NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE AREA CONSIDERED FOR THE STORM WATER ANALYSIS ASSOCIATED WITH THE SUBJECT PARCEL BEFORE DEVELOPMENT.
2. THE VERTICAL DATUM IS NAVD 1988 AND THE HORIZONTAL DATUM IS NHSPC 1983/1992 (CITY DATUM). THE DATUMS WERE ESTABLISHED USING STATIC GPS OBSERVATIONS PERFORMED BY JOSEPH M. WICHERT LLS, INC. IN SEPTEMBER OF 2020.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

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REVISIONS

No.	DATE	COMMENTS	BY

OWNER:
ROMAN CATHOLIC BISHOP OF MANCHESTER
153 ASH STREET
MANCHESTER, NH 03104

APPLICANT:
CURRIER MUSEUM OF ART
150 ASH STREET
MANCHESTER, NH 03104

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STAMP:
STATE OF NEW HAMPSHIRE
JEFFREY D. MERRITT
No. 11778
LICENSED PROFESSIONAL ENGINEER
10.05.20

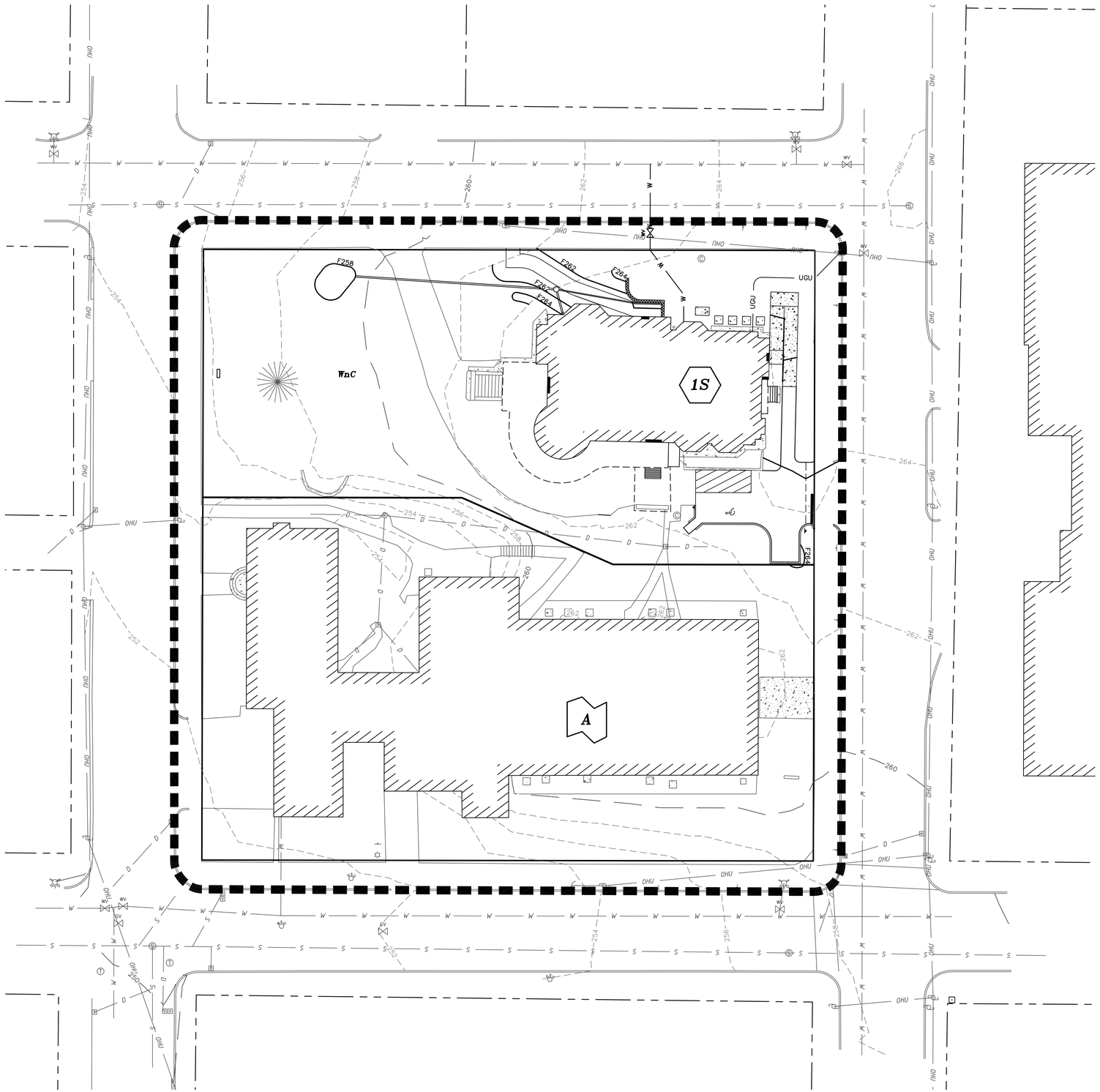
LOCATION:
TAX MAP 18 LOT 23-1
147 WALNUT STREET
MANCHESTER, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

PROJECT:
CHANDLER HOUSE

TITLE:
PRE-DEVELOPMENT DRAINAGE PLANS

PROJECT No.	DATE:	SCALE:
20-0731-1	OCTOBER 5, 2020	HORIZ. 1"=20'
SHEET: 1 OF 2		

P:\O\2007311\dwg\Predatione Plans\2007311-DRAINAGE.dwg, PREDEV, 10/3/2020 10:19:55 AM, pwright, Bluebeam PDF, ANSI_D_(22.00_x_34.00_Inches), 1:1



DRAINAGE LEGEND:

THE LEGEND BELOW REFLECTS THE HYDROCAD MODEL USED FOR DRAINAGE CALCULATIONS.

140B	DENOTES SOIL TYPE
S	DENOTES SUBCATCHMENT AREA
L	DENOTES POINT OF INTEREST
	LIMIT OF SUBCATCHMENT AREA

SCS LEGEND

WnC	WINDSOR–URBAN LAND COMPLEX, 3–15% SLOPES

NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE AREA CONSIDERED FOR THE STORM WATER ANALYSIS ASSOCIATED WITH THE SUBJECT PARCEL AFTER DEVELOPMENT.
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LOCATION:
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147 WALNUT STREET
MANCHESTER, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

PROJECT:
CHANDLER HOUSE

TITLE:
POST-DEVELOPMENT DRAINAGE PLANS

PROJECT No.	DATE:	SCALE:
20–0731–1	OCTOBER 5, 2020	HORIZ. 1"=20'
SHEET: 2 OF 2		

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