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To: Mr. Thomas Solfaro - Township Engineer

From: Bryan Waisnor, PE
Amy Beri

Info: John Dionis - Connell

Date: 20 April 2023

Re: Drainage Improvements for 400 Connell Entry Improvements
400 Connell Drive
Block 4102, Lot 1
Berkeley Heights, New Jersey
Langan Project No.: 100656201


4/20/2023

This memorandum provides an overview of the drainage improvements associated with the proposed 400 Connell building entry improvements on Block 4102, Lot 1 in Berkeley Heights, New Jersey. The improvements are located at the northern entrance of the 400 Connell building, where there is presently one entry door/sidewalk and landscape areas.

The proposed 400 Connell entry improvements include a new (second) entry door, sidewalk widening, and a canopy on the northern side of the existing building. The 400 Connell building is part of the 'The Park' and at the western end District project, which received approval from the Planning Board through a resolution of approval for SP-2-22 adopted on November 2, 2022. We note that the proposed improvements included in this application are separate from the District project, and the approved improvements for the District project are considered the 'existing baseline' condition for this entry improvements project.

The proposed entry improvements will increase impervious coverage by approximately 250 SF above the District project baseline. This is a de minimis increase in impervious area on the 49.48 acres site, and it does not have any appreciable impact on the functionality or operation of the site drainage system

The additional sidewalk area has been graded towards the adjacent grass area, and stormwater runoff will sheet flow overland in a western direction towards the inlets proposed by the approved District project⁽¹⁾. Stormwater runoff from the proposed canopy will be directed to the ground via a proposed scupper. The stormwater runoff will combine with the runoff from the District project and be conveyed via a series of pipes to the existing aboveground detention basin south of Connell Drive. Ultimately, the water from the basin discharges to the Green Brook on the south edge of the subject lot.

The following summarizes stormwater details of this project:

Quantity

The proposed entry improvements for the 400 Connell building will increase the impervious coverage from the approved District project by approximately 250 square feet. To evaluate the

(1) Please refer to the previously approved stormwater management report for the District project prepared by our office dated July 7, 2022, last revised December 21, 2022 for more detail regarding the District drainage design.

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impact of this additional area, we modeled the flows discharging from the existing aboveground basin with this additional area, and summarized the peak elevations and flow rates in Table 1 and Table 2, respectively, below.

Table 1 – Peak Elevation Within Existing Basin			
	2-Year	10-Year	100-Year
<i>Pre-Construction Existing Condition</i>	<i>El. 259.45</i>	<i>El. 260.18</i>	<i>El. 261.67</i>
Previously Approved District Project (SP-2-22)	El. 259.43	El. 260.16	El. 261.67
400 Connell Entry Improvements Project	El. 259.43	El. 260.16	El. 261.67

Table 2 – Peak Discharges From Existing Basin			
	2-Year (cfs)	10-Year (cfs)	100-Year (cfs)
<i>Pre-Construction Existing Condition</i>	<i>46.91</i>	<i>82.10</i>	<i>120.93</i>
Previously Approved District Project (SP-2-22)	46.24	80.73	120.88
400 Connell Entry Improvements Project	46.24	80.74	120.89

As shown in Table 1, the additional impervious area will not increase the peak elevations from those approved for the District project. As shown in Table 2, the additional impervious area will have a negligible impact (additional 0.01 cfs) on the peak discharge rates from the existing aboveground basin for 10- and 100-year storm events, as compared to the District project. Moreover, the peak discharges and elevations in the basin will still be lower than what currently exists in the pre-District Project condition. Refer to Attachment A for calculations.

Quality

Stormwater runoff quality standards are applicable when a development results in an increase of one-quarter acre or more of regulated motor vehicle surface. The increased impervious area includes a building canopy and sidewalk, which are not regulated motor vehicle surfaces. Therefore, given the nature of the proposed improvements, water quality treatment is not required.

Groundwater Recharge

The subject site is located within the Metropolitan Planning Area PA1 as defined by NJ State Planning Area Map and the project will occur in a previously disturbed area of the site. The project is therefore not subject to the groundwater recharge requirements.

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Conveyance

Based on the proposed design, the canopy encompasses a modest area of approximately 60 square feet. As the size of the canopy is relatively small, there are no stormwater conveyance structures proposed. Instead, the runoff from the canopy will be directed to the ground via a scupper. Once on the ground, the runoff will then combine with other sheet flow on the site, ultimately making its way towards the inlet proposed by the District project. The approved District subsurface storm-sewer collection system will still have sufficient capacity and is adequately sized to manage the 25-year storm with the additional 250 SF impervious coverage resulting from the entry improvements. As such, no further modifications are required for the storm-sewer collection system.

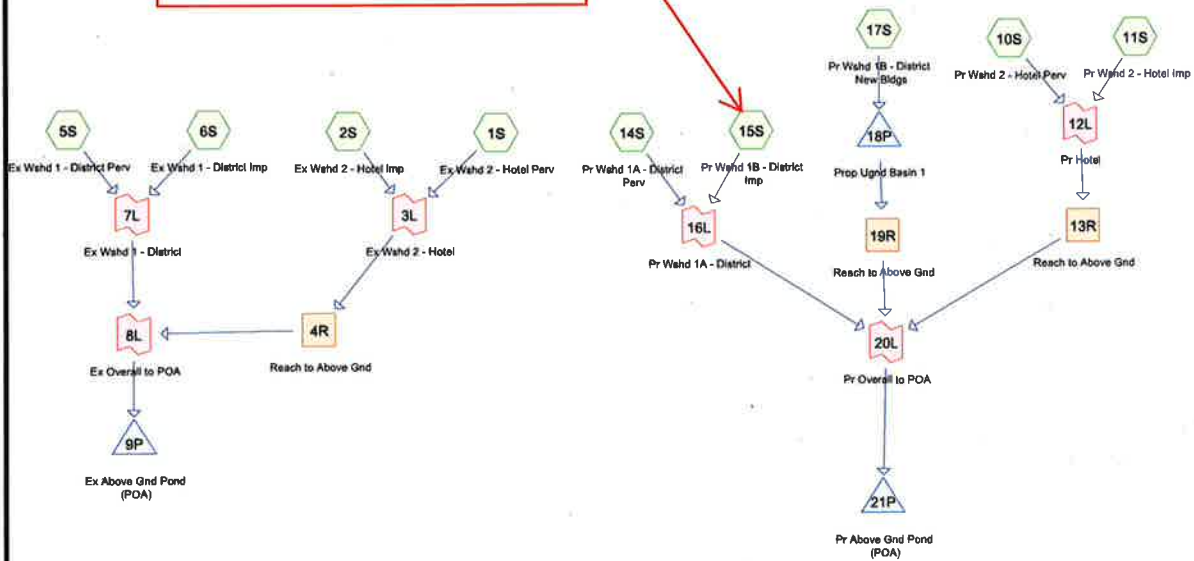
Closing

As outlined above, the proposed drainage condition for the 400 Connell entry improvements project will mimic the drainage condition proposed as part of the previously approved District project. The improvements will not affect the operation and efficiency of the stormwater system proposed as part of the previously approved District project.

If you have any questions, please do not hesitate to contact us.

ATTACHMENT A

Watershed Impacted by Proposed 400 Connell Entry Improvements



Note that the width of the stone for the 4 rows of piping was reduced by 11-inches to account for the shared stone space between the 7 rows and 4 rows. Originally, the width for the stone of the 4 rows was 27.25-ft, but the ends of the stone sections where the 7 rows and 4 rows meet was 18'-x-18"-=36" in that scenario, when in reality the space between these two sections is only 25', or 11" smaller than 27.25-ft=28.33-ft



CURRENT/PRE-DISTRICT PROJECT CONDITION (EXISTING)

The District - Existing and Proposed

NOAA 24-hr D 100 -year Rainfall=8.68"

Prepared by Langan Engineering

Printed 4/19/2023

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Events for Pond 9P: Ex Above Gnd Pond (POA)

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
2 -year	105.71	46.91	46.91	0.00	259.45	88,227
10 -year	172.78	82.10	82.10	0.00	260.18	143,385
100 -year	307.96	128.07	120.93	7.14	261.67	270,683

The District - Existing and Proposed

Prepared by Langan Engineering

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Events for Pond 21P: Pr Above Gnd Pond (POA)

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
2 -year	101.63	46.24	46.24	0.00	259.43	87,052
10 -year	166.02	80.73	80.73	0.00	260.16	141,423
100 -year	307.36	127.46	120.88	6.58	261.67	270,223

400 CONNELL BUILDING ENTRY IMPROVEMENT PROJECT (INCLUDING DISTRICT PROJECT)

The District - Existing and Proposed +250 SF

NOAA 24-hr D 100 -year Rainfall=8.68"

Prepared by Langan Engineering

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Events for Pond 21P: Pr Above Gnd Pond (POA)

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
2 -year	101.64	46.24	46.24	0.00	259.43	87,064
10 -year	166.04	80.74	80.74	0.00	260.16	141,440
100 -year	307.39	127.52	120.89	6.63	261.67	270,252