MACKENZIE.

STORM CALCULATIONS

To
City of Beaverton

For
Pacific Office Automation
Parking

Dated
May 9, 2022

Project Number
2210341.00

MACKENZIE
Since 1960

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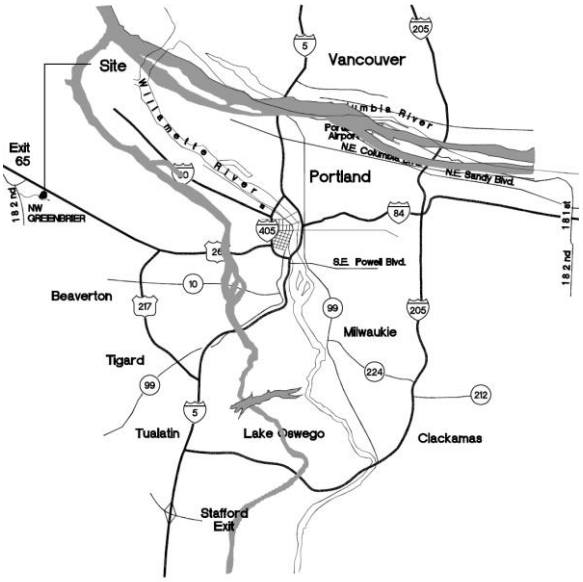
Attachments

UTILITY PLAN

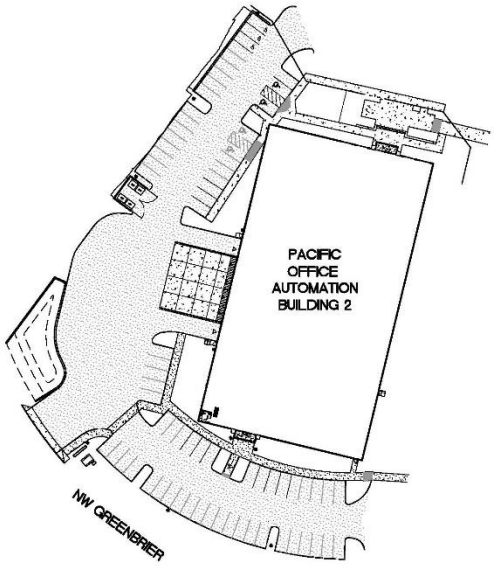
I. PROJECT SUMMARY

Pacific Office Automation is located off the south end of Greenbriar Parkway within the City of Beaverton. They need more parking spaces and are planning to add parking around their south building. Building 2 and the parking and drive aisles for that portion of the site currently drains to a water quality/detention basin at the northwest corner of the site, adjacent to Greenbriar Parkway. The pond has a control structure with orifices that release storm water at existing rates to the public storm system in Greenbriar Parkway.

The building is located on an approximately 2.37-acre lot directly southwest of POA's headquarters building, which was built in 2005. The vicinity map and site map below show the location and layout of the site relative to nearby geographic features.



Vicinity Map
NOT TO SCALE



Project Site Map
NOT TO SCALE

The existing site development included new paved access aisles and parking areas, building with a four-bay loading dock, and concrete sidewalks. Stormwater drainage and treatment was provided in accordance with City of Beaverton standards through an extended dry basin pond located in the southwest corner of the site.

II. STORM WATER QUALITY TREATMENT

Stormwater Quality Treatment is provided at the POA Building Two site through an extended dry basin located at the southwest corner of the site. The existing site development includes approximately 72,350 SF of new impervious area, including asphalt paving, concrete paving, and building roof areas.

When originally desiged, the current site development was configured for the proposed warehouse use, with space on site reserved to expand the parking to accommodate potential future office use on the site, so the pond was originally built with some additional capacity.

The extended dry basin was originally sized to accommodate the design water quality volume for runoff from the impervious area, calculated as 2,281 cf per Clean Water Services guidelines. This number is taken from the original storm report. The water quality facility includes a 0.4-ft deep permanent pool at the bottom of the pond in accordance with Clean Water Services standards.

Pre-treatment for the water quality facility is provided through a sumped water quality manhole located just northeast of the pond. Storm pipes route drainage from across the site to this location. The pre-treatment manhole will trap sediment and other debris before they are discharged to the vegetated pond.

Water quality treatment in the basin is achieved by allowing sediment and pollutants to settle out and get filtered by vegetation in the pond. The pond includes an orifice to meter the detained runoff such that the water quality volume is released within 48 hours.

The redeveloped area created by the new parking stalls is 7,004 SF.

The existing extended dry basin was sized for the existing developed area. Therefore, to treat this redeveloped area, we will replace one of the regular catchbasins on site with a stormfilter catch basin.

III. STORM WATER QUANTITY CONTROL

The POA property is located within the Cornell Oaks Business Park, which includes regional storm piping, wetlands, and stream channels to manage drainage for development within the park. In response to the proposed development, City of Beaverton staff reviewed the existing corporate park detention facility near SW 158th Avenue and determined that the existing facility does not meet City requirements for detention storage and release rates. Therefore, the POA site has been designed to accommodate on-site detention in accordance with City of Beaverton standards.

The detention facility is designed to detain and release the developed site runoff to match peak pre-development runoff. Stored rainfall volume is stored above the expected water quality volume level in the basin. Runoff release from the pond is controlled by an orifice control structure just downstream of the pond.

Detailed runoff and pond detention calculations are attached to this report. The following table summarizes the expected runoff rates for existing, post-development, and pond release flows.

Storm Event Recurrence	Pre-Development Runoff (cfs)	Post-Development Runoff (cfs)	Pond Release Flow (cfs)	Detained Rainfall Volume (cf)
2-yr	0.29	0.97	0.28	4,053
5-yr	0.51	1.31	0.51	4,968
10-yr	0.67	1.54	0.65	5,602
25-yr	0.89	1.82	0.88	6,250

Maximum 25-year release flows are maintained below 0.5 cfs per acre as required by City of Beaverton standards.

Pond Volume

Elevation	Narrative	Depth (ft)	Area (sf)	Volume (cf)	Cumulative Volume (cf)
232.83	Pond bottom	0	745	0	0
233.83		1	1360	1,052	1,052
234.85	WQ top	2.02	1959	1,692	2,744
235.83		3	2165	2,020	4,764
236.83	Detention top	4	2388	2,276	7,040
237.86	Freeboard	5.03	2599	2,568	9,608

FEE-IN-LIEU

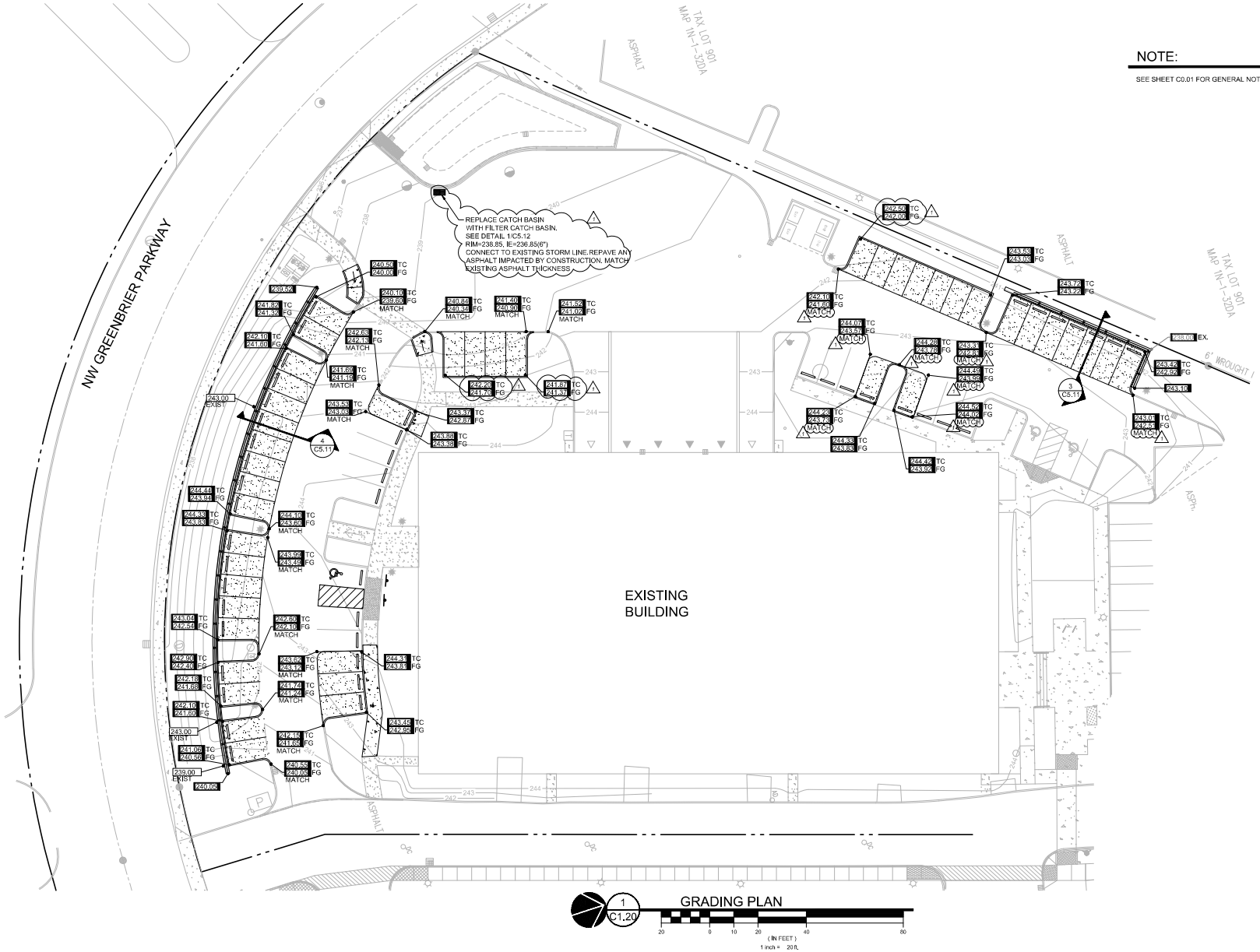
The existing extended dry basin was sized for the existing developed area and there is no available area to increase the size of the extended dry basin. Therefore, to provide the required additional hydromodification and detention for the redeveloped 7,004 SF, the project will request paying a fee-in-lieu for these items.

IV. STORM WATER CONVEYANCE

The proposed POA Building Two drainage system collects runoff from the building roof, paved parking, and concrete sidewalk areas through catch basins and downspout scuppers. A network of storm pipes will convey runoff to the pre-treatment manhole and subsequently to the pond and then to the public storm line in SW Greenbrier Road. The public line drains west from the site.

On-site storm drainage piping has been designed to carry the 25-year storm event rainfall calculated using the SCS Type IA storm model in accordance with City of Beaverton and Clean Water Services design standards. On-site conveyance piping is HDPE or similar drain pipe.

The new parking areas will drain to the existing drive aisles and the existing catch basins. They will then be conveyed through the original storm pipe system to the pre-treatment manhole, and subsequently the extended dry basin.



NOTE:

SEE SHEET C0.01 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.

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Planning • Engineering

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Client
PACIFIC OFFICE AUTOMATION

Project
POA - PARKING EXPANSION

REVISION SCHEDULE

Delta	Issued As	Issue Date
1	RESPONSE 1	05/06/2022

SHEET TITLE:
GRADING PLAN

DRAWN BY: CME

CHECKED BY: RJH

SHEET:
C1.20

JOB NO. **2210341.00**

INCOMPLETENESS RESPONSE: 05-06-2022

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