Fig. No. 6 – Rendered Elevation View from Fuller Road

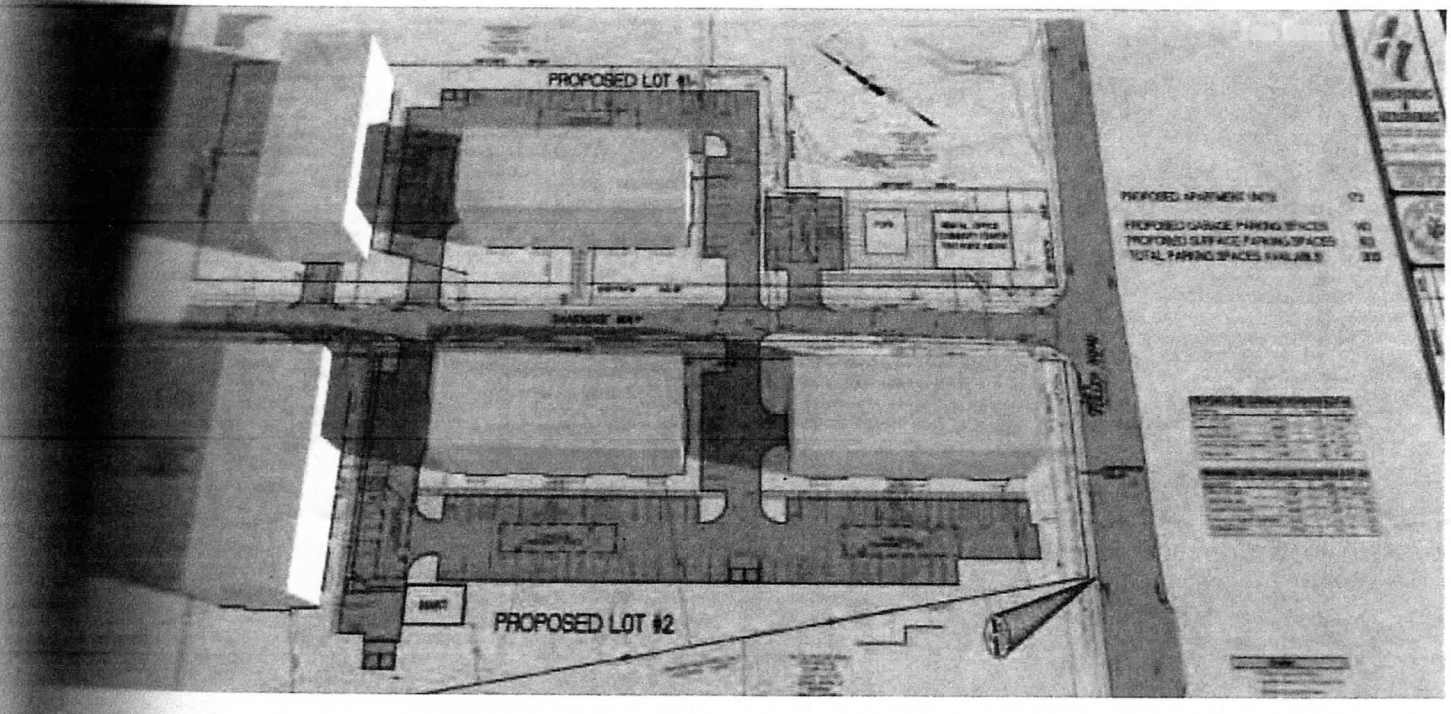

Fig. No. 7 - Shadow Study in January at 9 AM

2016

B. POTENTIAL IMPACT ON WATER

Potentially Large Impact due to a "proposed action will use in excess of 20,000 gallons per day."

Based upon the *New York State Design Standards for Intermediate Sized Wastewater Treatment Systems* (March 5, 2014) the Average Daily Flow for 250 bedrooms based upon 110 GPD per bedroom is 27,500 GPD. Based upon water use figures from similar type of units, figures from Glenville sized units a more likely average daily use is 80 GPD per apartment making the Average Daily Flow 13,840 GPD (See ENGINEER'S REPORT ON ADEQUACY OF WATER SUPPLY by Hershberg & Hershberg in Appendix No. 5). With the actual use of 13,840 GPD the PLAN does not meet the threshold of a ***"proposed action will use in excess of 20,000 gallons per day".***

Test Pit No.	Ground Elevation	Measured Water Level	Average Infiltration Rate (IPH)
1	262.0	Below 254.0	24.4
2	267.0	Below 259.0	18.8
3	264.0	Below 256.0	17.2
4	259.0	251.0	31.2
5	259.0	Below 251.0	15.7
6	262.0	Below 254.0	26.9
7	266.0	Below 258.0	22.7
8	268.0	Below 260.0	38.4

Fig. No. 5 – Infiltration Test Results

The eight infiltration tests show an average infiltration rate of 16.2 inches per hour.

STORM WATER METHODOLOGY

Stormwater infiltration practices were chosen to provide treatment. The design of a porous pavement is used for development of the parking areas. See Appendix #2 for the Porous Pavement Specification. Recharge basins will be utilized to treat roof drainage. See Appendix #3 for Typical Recharge Basin Details. Also deep ripping and decompation (see Appendix #4) is used to maintain the porosity of the soil.

The methods employed will be porous pavement and subsurface infiltration basins (recharge galleries) which take advantage of the soil with the high infiltration rates. The computation of capacity of infiltration

e over the stone layers will be based on a conservative rate of 5.0 :hes per hour. Pre-treatment will be required for the recharge ılleries.

ne average measured infiltration rate for the site is 30.6 inches per our.

The *NYS Stormwater Management Design Manual* is silent on method of correction to be applied to field tests, there are other sources, two of which are quoted below:

Design Permeability Rate

The design permeability rate must be determined by field or laboratory testing. Since the actual permeability rate may vary from test results and may also decrease over time due to soil bed consolidation or the accumulation of sediments removed from the treated stormwater, a ***factor of safety of two*** *must be applied to the tested permeability rate to determine the design permeability rate. Therefore, if the tested permeability rate of the soils is 4 inches/hour, the design rate would be 2 inches/hour (i.e., 4 inches per hour/2). This design rate would then be used to compute the basin's maximum design storm drain time.*[2] (Emphasis added)

[2] New Jersey Stormwater Best Management Practices Manual, Chapter 9.5:, Standard for Infiltration Basins,• February 2004,• Page 9.5-4

Design Infiltration Rate

The design infiltration rate, fd , should be set to equal ***one-half the infiltration rate****, f, determined from the soil analysis.* [3](Emphasis added)

The cited literature recommends that a rate of 50% of the measured infiltration rate could be employed. This design utilizes a smaller ratio at 5 inches per hour or 30.8% of the measured average infiltration rate providing an ample allowance for degradation of the infiltration level over time.

The relationship to groundwater must be assessed. Since a eparation of 4 feet is not required from a sole source aquifer for nfiltration systems. Therefore, clearance from the bottom of the stone ayers beneath the porous pavement or from the stone layers forming the bottom of the infiltration basin cannot be less than 3 feet. This will satisfy the review of *Watershed/ Regional Factors* as per Chapter 7 of the *New York State Stormwater Management Design Manual.*

MATRIX REVIEW

The information below represents the required matrix review as per Chapter 7 of the *New York State Stormwater Management Design Manual.*

The first matrix considered was the "Land Use Selection Matrix" (See Matrix 7.1 reproduced below)[4]. Permeable pavements are not included in this

[3] Regional Water Resource Agency, Minimum Standard 14.01, Infiltration Basin, Page 14.01-3

ix but are recommended in Chapter 5. This will be used for all new ɜments. The Infiltration basin is rated "Depends" under "Commercial/High ɜity", which is defined in Chapter 7 of the NYSSWDM.

SMP Group	SMP Design	Rural	Residential	Roads and Highways	Commercial/ High Density	Hotspots	Ultra Urban
Pond	Micropool ED	○	○	○	◗	①◗	●
	Wet Pond	○	○	○	◗	①◗	●
	Wet ED Pond	○	○	○	◗	①◗	●
	Multiple Pond	○	○	◗	◗	①◗	●
	Pocket Pond	○	◗	○	◗	●	●
Wetland	Shallow Wetland	○	○	◗	◗	①◗	●
	ED Wetland	○	○	◗	◗	①◗	●
	Pond/Wetland	○	○	●	◗	①◗	●
	Pocket Wetland	○	◗	○	◗	●	●
Infiltration	Infiltration Trench	◗	◗	○	○	●	◗
	Shallow I-Basin	◗	◗	◗	◗	●	◗
	Dry Well[1]	◗	○	●	◗	●	◗
Filters	Surface Sand Filter	●	◗	○	○	②◗	○
	Underground SF	●	●	◗	○	○	○
	Perimeter SF	●	●	◗	○	○	○
	Organic SF	●	◗	○	○	②◗	○
	Bioretention	◗	◗	○	○	②◗	○
Open Channels	Dry Swale	○	◗	○	◗	②◗	◗
	Wet Swale	○	●	○	●	●	●

○: Yes. Good option in most cases.
◗: Depends. Suitable under certain conditions, or may be used to treat a portion of the site.
●: No. Seldom or never suitable.
①: Acceptable option, but may require a pond liner to reduce risk of groundwater contamination.

Fig, No. 6 –Land Use Selection Matrix

The "Physical Feasibility Factors Matrix" (See Matrix 7.2 reproduced below)[5]

Permeable pavements are not included in this matrix but are recommended in Chapter 5. This will be used for all new pavements. The six "Infiltration Basins" treated area totals 1.60 acres. The treated area is less than the recommended 10 acre maximum. The clearance from the high groundwater table is 3 feet as required and pretreatment is provided by the basins at connection points of the pipes. The selected treatment mode meets the "Physical Feasibility Factors Matrix Requirements.

[5] Ibid. Page 7-3

Operation, Maintenance and Management Inspection Checklist (Complete in 2 Pages)

ct: Sandidge Way Apartments
on: Sandidge Way
City of Albany, Albany County, NY

ector:

ITENANCE ITEM	SATISFACTORY(S)/ UNSATISFACTORY(U)	COMMENTS
Structural Components (Annual)		
evidence of pavement deterioration	☐ (S) ☐ (U)	
ea around manhole frames are in good condition	☐ (S) ☐ (U)	
o evidence of spalling or cracking of pavement	☐ (S) ☐ (U)	
. Overall Function of Facility (Annual)	**LAWN AND LANDSCAPE AREAS**	
/egetation condition OK	☐ (S) ☐ (U)	
No replacement required	☐ (S) ☐ (U)	
Evidence of flow bypassing facility	☐ (S) ☐ (U)	
No noticeable odors outside of facility	☐ (S) ☐ (U)	
3. Porous Pavement (Quarterly)	**POROUS PAVEMENT**	
Vacuum sweep porous pavement (after first quarter schedule as required)	☐ (S) ☐ (U)	
High-pressure hosing to free pores (if necessary	☐ (S) ☐ (U)	

Date of Inspection _____

Recharge Galleries
Operation, Maintenance
and Management Inspection Checklist (Complete in 2 Pages)

Project: Sandidge Way Apartments
Location: Sandidge Way
City of Albany, Albany County, NY
Date: _____
Time: _____
Inspector: _____

MAINTENANCE ITEM	SATISFACTORY(S)/ UNSATISFACTORY(U)	COMMENTS
1. Structural Components (Annual)	**SEDIMENT STRUCTURES & PIPE GALLERY**	
No evidence of structural deterioration of pavement over recharge gallery	☐ (S) ☐ (U)	
All frames are in good condition	☐ (S) ☐ (U)	
No evidence of spalling or cracking of structural parts	☐ (S) ☐ (U)	
Examine for sediment accumulation	☐ (S) ☐ (U)	
2. Overall Function of Facility (Annual)	**LAWN AND LANDSCAPE AREAS**	
Vegetation condition OK	☐ (S) ☐ (U)	
No replacement required	☐ (S) ☐ (U)	
Evidence of flow bypassing facility	☐ (S) ☐ (U)	
No noticeable odors outside of facility	☐ (S) ☐ (U)	
3. Recharge Basin (Quarterly)	**RECHARGE BASIN PIPE GALLERY**	
Examine for sediment accumulation (clean if reaches 6 inches)	☐ (S) ☐ (U)	
Examine pipes for excessive deformation	☐ (S) ☐ (U)	

Date of Inspection _____

(CDTA). Bus stops are located on both sides of Fuller Road at Loughlin Street and are served by CDTA Routes 114, 117, 190, and 712. Route 114 travels from Crossgates Mall to the Albany-Rensselaer train station, Route 117 travels from Guilderland to Colonie, Route 190 travels from Crossgates Mall to Latham Farms, and Route 712 travels from Crossgates Mall to Downtown Albany. The four routes generally provide service Monday through Saturday from 6:00 a.m. till 11:00 p.m. with limited service on Sunday.

Data Collection

This traffic study focuses on the weekday AM and PM peak periods since these time periods correspond to peak operations at the site and peak traffic conditions on the surrounding roadway network. Turning movement counts were conducted at the Fuller Road/Tricentennial Drive roundabout on Thursday, March 31, 2016 during the morning peak period from 7:00 to 9:00 a.m. and on Wednesday, March 30, 2016 during the afternoon peak period from 4:00 to 6:00 p.m. The traffic counts were completed on a typical weekday when SUNY Albany and the Albany NanoTech Complex were in session. The raw traffic volumes are included in Attachment B. These peak hour traffic volumes provide existing traffic conditions at the study area intersections and are shown on Figure 1 and form the basis for all traffic forecasts.

An automatic traffic recorder (ATR) was placed on Fuller Road, approximately 200 feet south of Loughlin Street, on Wednesday, March 30, 2016 to continuously record traffic volume and vehicle speed data for a period of several days.

3.0 Traffic Assessment

Trip Generation

Trip generation determines the quantity of traffic expected to travel to and from a given site. The Institute of Transportation Engineers' (ITE) *Trip Generation*, 9th Edition, is the industry standard used for estimating trip generation for proposed land uses based on data collected at similar land uses. Trip generation for the proposed project was estimated using land use code (LUC) 220 for Apartment. Table 1 summarizes the trip generation estimate for the AM and PM peak hours.

Table 1 – Trip Generation Summary

Land Use	AM Peak Hour			PM Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total
Apartments – 173 Units	18	71	89	73	40	113

Table 1 shows that the site will generate 89 new vehicle trips during the AM peak hour (18 entering and 71 exiting) and 113 new vehicle trips during the PM peak hour (73 entering and 40 exiting). It is noted that the site generated trips distributed onto the adjacent roadway network will result in less than the NYSDOT and ITE threshold of 100 site generated vehicles on any one intersection approach which determines the need for detailed off-site intersection analysis. This guidance was developed as a tool to identify locations where the magnitude of traffic generated has the potential to impact operations at off-site intersections and screen out locations from requiring detailed analysis that do not reach the 100 vehicle threshold and are unlikely to require mitigation. As previously noted, due to the proximity of the adjacent Fuller Road/Tricentennial