Environmental Impact Statement

For

Spruce Street Apartments
1052 Spruce Street
(Block 701, Lot 39)
Lawrence Township
Mercer County
New Jersey

Prepared for:
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Appendices

1.0 Introduction

1.1 Document Purpose

1052 Spruce Street, LLC (Developer) has requested that Nautilus Environmental Group, LLC (Nautilus) prepare this Environmental Impact Statement (EIS) in accordance with the requirements of Chapter 812 of the Land Use Ordinance of the Township of Lawrence (The Township of Lawrence, 2019). A copy of this ordinance is presented in Appendix A. The EIS document analyzes the existing conditions and potential impacts associated with the construction of a proposed multi-family residential development known as the Spruce Street Apartments at 1052 Spruce Street (Block 701, Lot 39) in the Township of Lawrence, Mercer County, New Jersey (Subject Property).

The EIS documents environmental resources on the Subject Property, potential impacts to these resources as a result of the proposed development and mitigation measures to avoid or minimize impacts. Nautilus has relied on various documents, databases, reports (as referenced) and a site reconnaissance.

1.2 Subject Property Location and Description

The Subject Property consists of 7.16 acres and is designated as Block 701, Lot 39 in the Township of Lawrence, Mercer County, New Jersey. The Subject Property is presented on the USGS Topographic Map, Trenton West, 2019 (Figure 1, Appendix B) and the Township of Lawrence Tax Map (Figure 2, Appendix B). The Subject Property is rectangular-shaped with a "flag-lot" access to Spruce Street located northwest of the intersection with Tiffany Court and southeast of the intersection with Arctic Parkway (Figure 3, Appendix B). The Subject Property is zoned as AT, Apartment and Townhouse (Township of Lawrence Zoning Map, January 2021). The Subject Property currently contains a vacated commercial structure, grassy and forested areas (Figure 4, Appendix B). Photographs were collected during a site reconnaissance on July 19, 2021 (Nautilus Environmental Group, LLC, 2021). These photographs are presented in Appendix C (Nautilus Environmental Group, LLC, 2021a).

1.3 Project Description

The proposed project has been designed to be fully conforming to the requirements of the AT (Apartment and Townhouse) zone and includes five multi-story residential buildings having a total of 129 units (one, two, and three bedroom units) on 7.17 acres. The proposed project will have a clubhouse and a recreation area. The proposed development will be serviced by a stormwater management system designed in accordance with New Jersey Department of Environmental Protection's Stormwater Management Rules (N.J.A.C. 7:8 et seq). Trenton Water Works and Ewing Lawrence Sewerage Authority (ELSA) will provide

potable water and sanitary disposal services to the proposed project. The access road from Spruce Street will be composed of a boulevard entrance. A copy of the proposed development layout is presented on Figure 5, Appendix B. Lastly, the Developer's civil engineer (Hopewell Valley Engineering, PC) has prepared an engineering design set for the proposed development entitled "Preliminary and Final Site Plan for Spruce Street Apartments, Lot 39, Block 701 Situate in Lawrence Township, Mercer County, New Jersey," dated November 18, 2021 (Appendix D) (Hopewell Valley Engineering, PC, 2021). This plan set includes the following sheets: 1) Cover Sheet; 2) Layout Control Plan; 3) Grading and Stormwater Plan; 4) Utility Plan; 5) Tree Protection Plan & Landscaping Plan; 6) Landscaping Plan; 7) Lighting Plan; 8) Construction Details; 9) Construction Details; 10) Storm Profiles and Inlet Details; 11) Sanitary Profiles and Details; 12) Refuse Truck Circulation Plan; 13) Fire Truck Circulation Plan; and 14) Moving Truck Circulation Plan.

1.4 Demographics

According to the United States Census Bureau (United States Census Bureau, 2019), Lawrence Township has an estimated population of 32,435 individuals as of July 1, 2019. The proposed project will have 129 units (69 one-bedroom units, 55 two-bedroom unit and 5 three-bedroom units). According to "Who's Living in New Jersey, The Profile of Occupants of Residential Development in New Jersey" (Voicu and Listokin, 2018), there will be an anticipated resident population of 262 individuals utilizing multipliers of 1.5, 2.5 and 4.0 residents for one-bedroom units, two-bedroom units and three-bedroom units, respectively. Lastly, it is anticipated that there will be a working population of two individuals (rental office manager and facilities manager).

1.5 Master Plan Compatibility

1.5.1 New Jersey State Plan

According to the "New Jersey State Development and Redevelopment Plan", NJSDRP, (New Jersey State Planning Commission, 2001), the Subject Property is located within Planning Area 1 (PA 1, Metropolitan Planning Area), (Figure 6, Appendix A). The NJSDRP's intention within the Metropolitan Planning Area is to: 1) provide for much of the state's future redevelopment; 2) revitalize cities and towns; 3) promote growth in compact forms; 4) stabilize older suburbs; 5) redesign areas of sprawl; and 6) protect the character of existing stable communities. As per the NJSDRP:

> "These goals will be met by strategies to upgrade or replace aging infrastructure; retain and expand employment opportunities; upgrade and expand housing to attract a balanced residential population; restore or stabilize a threatened environmental base through

> brownfields redevelopment and metropolitan park and greenway enhancement; and manage traffic effectively and create greater opportunities for public transportation connections within the Metropolitan Planning Area and between the Metropolitan Planning Area, suburban employment centers, and the Philadelphia and New York areas." (p.190)

1.5.2 Mercer County Master Plan

According to the "Mercer County Master Plan", MCMP, (Mercer County Planning Department, 2016), the Subject Property is located within an area designated as a Metropolitan (PA 1) – Growth Area (Figure 7, Appendix A). As per the MCMP:

> "The Mercer County Master Plan is consistent with the State Plan's policies and goals for balanced growth in the region. The Mercer County Master Plan supports the following eight State Plan goals: Goal #1: Revitalize State's Cities and Towns Goal #2: Conserve Natural Resources and Systems Goal #3: Promote Economic Growth and Development Goal #4: Protect the Environment Goal #5: Provide Public Services at Reasonable Cost Goal #6: Provide Housing at Reasonable Cost Goal #7: Preserve Historic and Cultural Areas Goal #8: Ensure Integrated Planning Statewide." (p.37)

1.5.3 Township of Lawrence Master Plan

According to the "Master Plan of the Township of Lawrence", MPTL, (The Township of Lawrence Planning Board, 1995), *"the Lawrence Master Plan is compatible with the County Growth Management Plan and with all other County Plans and instruments reviewed."*

In addition, the MPTL acknowledges that the Subject Property is located within a Planning Area 1 – Metropolitan Planning Area as designated by the NJSDRP. In summary, the MPTL states the following:

> "The policy goals and objectives for the Lawrence Township Master Plan have been shown to be substantially consistent with local plans and ordinances, County growth management and solid waste plans, airport safety requirements, and the State Development and Redevelopment Plan. In certain minor instances, mainly with the land use policies in adjacent municipalities, inconsistencies occur. These inconsistencies, however, do not alter the substantial compatibility of this document with other relevant planning instruments." (p. 240)

Lastly, the Developer and the Township of Lawrence have mutually executed a Developer's Agreement dated February 9, 2021 (The Township of Lawrence – 1052 Spruce Street, 2021). This agreement allows

the Developer to provide 22 affordable housing rental units to assist the Township of Lawrence with their share of the Third Round Obligation for providing affordable units.

2.0 Site Description and Inventory

2.1 Topography and Slopes

The Subject Property is relatively flat with elevations ranging from 80 ft. to 100 ft. above mean sea level, with a gentle grade to the northeast. There is a limited area with steep slopes located along the southern boundary (Figure 5, Appendix A).

2.2 Soils

Soil is formed through the interaction of a variety of physical, chemical and biological factors that include climate, time, parent material and topography. The degree to which any or all of these factors affects the local soil characteristics is quite variable, leading to an inconsistent formation of soil types. The United States Department of Agriculture has mapped soils throughout the state of New Jersey and provided the results to each county specifically in Mercer County (United States Department of Agriculture, 1972). This original soil data is presented on the Natural Resources Conservation Services Web Soil Survey (Figure 8, Appendix A), this property contains the following soils:

Elkton silt loam, 0% to 2% slopes (EkbA)

Hydrologic Soil Group: C/D

Hydric Soil Rating: Yes

Udorthents, stratifies substratum, 0% to 8% slopes (UdstB)

Hydrologic Soil Group: D

Hydric Soil Rating: No

2.3 Geology

The Subject Property is underlain by a Pleistocene-aged surficial geologic unit designated as Weathered Shale, Mudstone and Sandstone (Figure 9, Appendix A). This surficial unit is composed of silty sand to silty clay with shale, mudstone, or sandstone fragments with thickness ranging from 10 to 30 feet (NJDEP NJ-GeoWeb, 2021).

Beneath the overlying surficial geology, the Subject Property is underlain by bedrock composed of the Stockton Formation (Figure 10, Appendix A). The Stockton Formation in Mercer County is a well

producing aquifer system ranging in thickness from 2,500 to 3,500 feet and is composed of arkosic conglomerate, red siltstone and arkosic sandstone (Olsen, 1980 and Widmer, 1965).

2.4 Vegetation

The upland and wetland vegetation on the Subject Property have been documented in the wetland report entitled "Freshwater Wetland Delineation Report Spruce Street Property, Block 701, Lot 39, Lawrence Township, Mercer County, New Jersey, October 29, 2019" (DuBois Associates, 2019). According to this report:

> "The wooded uplands on the site are characterized as a mixed hardwood community. Overstory and subcanopy vegetation includes white oak (Quercus alba, FACU), sweet gum (Liquidambar styraciflua, FAC), hickory (Carya glabra, FACU), Norway maple (Acer platanoides, UPL), and sassafras (Sassafras albidum, FACU). Amur honeysuckle (Lonicera maackii, NI), multiflora rose (Rosa multiflora, FACU), red raspberry (Rubus idaeus, FACU), and wineberry (Rubus phoenicolasius, FACU) are understory species. Herbaceous vegetation includes bracken fern (Pteridium aquilinum, FACU), greenbriar (Smilax rotundifolia, FAC), and Japanese honeysuckle (Lonicera japonica, FAC). This community also does not exhibit the 50 percent hydrophytic vegetation dominance criterion."
>
> In addition, "the wetland complex in the eastern section of the site is classified as a hardwood swamp community. Overstory vegetation includes species often found in wet conditions, including red maple (Acer rubrum, FAC), pin oak (Quercus palustris, FACW), and sweet gum (Liquidambar styraciflua, FAC). The understory includes arrowwood (Viburnum dentatum, FAC) and sweet pepperbush (Clethra alnifolia, FAC). Cinnamon fern (Osmunda cinnamomea, FACW) is the dominant herbaceous species. This community is composed of species that exceed the 50 percent dominance criteria and therefore meets the hydrophytic vegetation parameter." (p.5)

2.5 Surface Water and Wetlands

Review of the information database presented on NJDEP NJ-GeoWeb shows that the Subject Property is located within Watershed Management Area 11 (Central Delaware, Shabakunk Creek Watershed). The database shows that there are no streams or surface water bodies on the Subject Property, which is confirmed in the Layout Control Plan (Figure 5, Appendix B), and it identifies potential wetlands on the eastern boundary of the Subject Property (Figure 11, Appendix B). Based on review of the Flood Insurance

Rate Map, Panel No. 34021C0207F, dated July 20, 2016 (Flood Emergency Management Agency, 2016), the Subject Property is not located within a flood hazard area, Figure 12, Appendix B.

As previously discussed, wetland delineation activities were previously completed on the Subject Property (DuBois Associates, 2019). Subsequent to the preparation of this wetland delineation report a NJDEP Freshwater Wetland Letter of Interpretation (LOI), File No. 1113-07-0007.1, FWW190001, dated June 2, 2020, was issued for the Subject Property (New Jersey Department of Environmental Protection, 2020). This LOI specifically locates the actual, realized wetland on the Subject Property. This wetland along with a 50-foot transition area buffer are shown on the Layout and control Plan (Figure 5, Appendix B).

2.6 Wildlife

Wildlife can be defined as living things, especially mammals, birds, and fishes, that are neither human nor domesticated. The majority of the Subject Property is composed of a vacant commercial establishment with a cinder block building and associated asphalt parking areas. The eastern portion of the Subject Property is composed of successional growth areas, forested upland and forested wetland areas (Figure 4, Appendix B). According to the "Environmental Resource Inventory for the Township of Lawrence, Mercer County, New Jersey", dated April 2017, common mammals and birds present in the township include cottontail rabbits, eastern gray squirrels, skunks, little brown bats, white-tailed deer, opossums, raccoons, ducks, woodpeckers, geese, swallows, jays, robins, wrens, sparrows, and some hawks.

2.6.1 Threatened and Endangered Species

Review of the New Jersey Landscape Project information on NJ-GeoWeb shows that there is a potential for the presence of wood turtle (*Glyptemys insculpta*) on the western portion of the Subject Property (Figure 13, Appendix B). It is important to note that the New Jersey Landscape Project information should be used as a planning tool and site-specific information may be more reflective of site conditions. As previously discussed, the Subject Property has a memorialized NJDEP Freshwater Wetland Letter of Interpretation (New Jersey Department of Environmental Protection, 2020). This LOI specifically locates the actual realized wetland on the Subject Property with 50-foot transition area buffer. During the NJDEP review process of a submitted LOI application a threatened and endangered species review was implemented. NJDEP's approved 50-foot transition area buffer confirms the lack of threatened and endangered species on the Subject Property.

2.6 2 Wildlife Habitat

As previously discussed, the majority of the Subject Property is composed of a vacant commercial establishment with a cinder block building and associated asphalt parking areas. The eastern portion of the Subject Property consists of habitat composed of successional growth areas, forested upland and forested wetland areas (Figure 4, Appendix B). According to the "Environmental Resource Inventory for the Township of Lawrence, Mercer County, New Jersey" (The Township of Lawrence, 2017), common mammals and birds present in the township include cottontail rabbits, eastern gray squirrels, skunks, little brown bats, white-tailed deer, opossums, raccoons, ducks, woodpeckers, geese, swallows, jays, robins, wrens, sparrows, and some hawks.

2.6.3 Aquatic Organisms

As previously discussed, review of information presented on NJDEP NJ-GeoWeb, shows that there are no documented surface water bodies on the Subject Property. In addition, no surface water bodies were observed during the site reconnaissance on July 19, 2021. Lastly, the wetland delineation report (DuBois Associates, 2019) documents the lack of standing water within the wetland areas. Thus, aquatic organisms are not expected to be present.

2.7 Subsurface Water

Groundwater is present in the subsurface of the Subject Property within the overlying overburden geology and within the Stockton Formation, which is a very productive aquifer within the Newark Basin in both New Jersey and Pennsylvania (NJDEP NJ-GeoWeb, 2021 and Widmer, 1965), (Figure 14, Appendix B).

2.8 Cultural and Historic Resources

According to NJDEP, (HPO, 2021), the Subject Property is not on the New Jersey and National Registers of Historic Places: Mercer County database. In addition, the lack of historic sites and districts on the Subject Property is confirmed according to the Master Plan Historic Preservation Plan Element, Lawrence Township, Mercer County, New Jersey (August 17, 2020), (Figure 15, Appendix B).

2.9 Air Quality

Since the passing of the Clean Air Act in 1970, New Jersey's air quality has significantly improved, to the point where New Jersey is in compliance with all National Ambient Air Quality Standards (NAAQS). The Federal Clean Air Act requires each state to attain and maintain specified air quality standards. Ambient Air Quality Standards have been promulgated by the federal government and by New Jersey for total suspended particulate (TSP), sulfur dioxide (SO2), carbon monoxide (CO), nitrogen dioxide (NO2), lead

and ozone. The New Jersey standards are generally the same as the federal standards for these pollutants. Primary air quality standards are set to protect human health and secondary standards are set to protect human welfare. The following air quality assessment is taken from the 2019 Annual Air Quality Report published by the NJDEP Bureau of Air Monitoring (New Jersey Department of Environmental Protection, 2020a). In 2019, air quality in New Jersey was good for 162 days, moderate for 190 days and unhealthy for sensitive groups for 13 days.

2.10 Existing Development Features

The majority of the Subject Property is currently composed of a vacant commercial property with a cinder block structure and associated asphalt parking areas. In addition, the eastern portion of the Subject Property is composed of successional growth, forested uplands and forested wetland areas (Figure 4, Appendix A).

2.11 Environmental Remediation Activities

There is an ongoing remedial action on the Subject Property related to groundwater contamination on the southwestern boundary. According to Arecon, LTD "Summary of Site Remediation Activities at 1052 Spruce Street, Lawrenceville, NJ 08648, SRP PI#: 680461, Sherwood Industries, Inc," dated February 4, 2022:

> "The remediation is under the oversight of Mr. Patrick Nocera, the Licensed Site Remediation Professional (LSRP), of Arecon Ltd. The area of concern that is being remediated is groundwater contamination in the southwesterly portion of the property. A monitoring well network is in place to assess the ground water quality of the area of concern. The network consists of six (6) onsite monitoring wells and one (1) offsite well in the shallow aquifer, and one (1) onsite well in the deep aquifer. The main contaminant of concern is benzene and the elevated concentrations relative to the Ground Water Quality Standards (GWQS) are delineated horizontally and vertically. The elevated level of benzene is limited to two (2) onsite wells (MW-2 and MW-3). Enhanced fluid recovery (EFR) and the application of oxygen releasing socks were the two (2) interim remedies applied to treat the groundwater contamination at the property to date. Currently, Arecon is in the process of conducting post-treatment monitoring as required under the New Jersey Department of Environmental Protection (NJDEP) Permit-by-Rule (PBR) issued on December 5, 2019. The last round of monitoring is tentatively scheduled for April of 2022. If the results of monitoring demonstrate a stable and/or decreasing trend for the contaminants identified in ground water, a Remedial Action Permit (RAP) for Monitored

> Natural Attenuation (MNA) will be filed and the remediation will continue until compliance with the GWQS is achieved. If the results of monitoring demonstrate an increasing trend for the contaminants identified in ground water, an active remedy will be implemented prior to the filing of a RAP." (p.1)

3.0 Area and Regional Description

3.1 Surrounding Environs

The Subject Property is situated within a portion of Lawrence Township which is characterized by urban areas (medium density residential and commercial establishments) with adjacent areas composed of forests, streams and wetlands (Figure 16. Appendix A). The Subject Property and local developed areas are serviced by local county roads (e.g., County Route 613 – Spruce Street, County Route 627 – Prospect Street, County Route 636 – Parkside Avenue) and main arteries (i.e., US Highway 1 and NJ State Route 206). The Subject Property and immediate region are serviced by ELSA for sanitary waste disposal, and by Trenton Water Works for public water supply.

4.0 Environmental Performance Controls

The following environmental controls are anticipated to be employed during the construction and operational phases of the proposed project specifically relating to: 1) soils and sediment control; 2) surface water; 3) wetlands; 4) air quality; 5) sanitary wastewater; 6) water supply and water conservation; 7) energy conservation; and 8) noise.

4.1 Soils and Sediment Control

In accordance with New Jersey State Agricultural Committee's Soil Erosion and Sediment Control Act, N.J.A.C. 2:90-1 et seq. (New Jersey State Agricultural Committee, 2014), projects disturbing over 5,000 square feet will require the development of a site-specific soil erosion and sediment control plan. This must incorporate vegetative and engineering standards to minimize and mitigate the release of soil off-site during and after construction. Vegetative standards include but are not limited to: 1) Permanent Vegetative Cover for Soil Stabilization; 2) Stabilization with Mulch Only; 3) Stabilization with Sod; 4) Temporary Vegetative Cover for Soil Stabilization; 5) Topsoiling; and 6) Tree Protection During Construction. Engineering standards include but are not limited to: 1) Dust Control; 2) Land Grading; 3) Sediment Barrier; 4) Construction Access; 5) Storm Sewer Inlet Protection; and 6) Traffic Control. Also, this plan will be administered and enforced through the Mercer County Soil Conservation District.

Based on the above, it is anticipated that there will be temporary disturbance and impacts to surface soils that will occur during demolition of existing structures and the construction of the proposed development that will be minimized and mitigated through the proper implementation of the soil erosion and sediment control standards.

4.2 Surface Water

As previously discussed in Section 2.5 (Surface Water and Wetlands), there are no streams or surface water bodies on the Subject Property nor on immediately adjacent properties. Any streams or surface water bodies that maybe present on regional properties will be protected by the development and implementation of a site-specific soil erosion and sediment control plan as previously described in Section 4.1. Based on the above there are no anticipated impacts to streams or surface water bodies.

4.3 Wetlands

As previously discussed, A NJDEP Freshwater Wetland LOI exists for the subject property. These wetlands are located along the property's western boundary and include a 50-foot transition area buffer. The proposed engineering design plans (Appendix D). shows that there are no proposed construction activities within the wetlands. Also, the 50-foot transition area buffer will remain mostly undisturbed with the exception of the construction of two stormwater outfalls, which will require a NJDEP General Permit #11 approval in accordance with N.J.A.C. 7:7A (Freshwater Wetlands Protection Act Rules).

Based on the above, there no anticipated temporary or long-term impacts to wetland areas on the Subject Property.

4.4 Air Quality

The proposed development may have minor impacts on air quality during the demolition, construction and post development operational phases. Minor, localized, short-term effects on air quality will occur during the construction phase of the proposed project particularly related to air pollutants generated during the construction phase include carbon monoxide (CO), hydrocarbons, (HC), nitrogen oxides (NOx) and sulfur dioxide (SO_2) from the exhaust of vehicles and construction equipment, and particulate matter (PM) from dust generated during demolition and construction activities. The minor impacts to air quality during the demolition and construction phases are not anticipated to be significant.

Once the project is complete, and during the operational phase, the anticipated outdoor air pollution will primarily be related to vehicle exhaust from resident automobiles, which is consistent with existing impacts associated with the surrounding land uses.

The residential units associated with the proposed development will include highly efficient Magicpak, All in One HVAC units. Specifications relating to these HVAC units are presented in Appendix E (Magicpak, undated). Thus, the minor impacts to air quality during the operational phase are not anticipated to be significant.

The acceptable air quality standards are not anticipated to be impacted by the proposed project. While air quality may be locally impacted during demolition and construction activities, no significant net-impacts to air quality are anticipated to result from the proposed project during post construction operation.

4.5 Sanitary Wastewater

According to the NJDEP Water Pollution Control Act, Subchapter 22, (N.J.A.C. 7:14A-22 et seq.), the following volumes of wastewater are anticipated.

Apartments

One Bedroom: 69 units at 150 gallons/day = 10,350 gallons/day

Two Bedrooms: 55 units at 225 gallons/day = 12,375 gallons/day

Three Bedrooms: 5 units at 300 gallons/day = 1,500 gallons/day

Clubhouse and Bar/Cafe

316 square feet of office at 0.1 gallons/day/square foot = 32 gallons/day

Eight seats at 20 gallons/day/seat = 160 gallons per/day.

Based on the proposed development plans, 24,417 gallons/day of anticipated daily wastewater will be generated.

The Developer will have to apply for a NJDEP Treatment Works Approval (TWA). The TWA program regulates the construction and operation of industrial and domestic wastewater collection, conveyance and treatment facilities, including treatment plants, pumping stations, interceptors, sewer mains and other collection, holding and conveyance systems.

The Developer has received a “will service” letter from ELSA indicating that capacity exists from the proposed development.

Based on the above, there are no anticipated negative impacts due to production and sanitary wastewater for the Subject Property.

4.6 Water Supply and Water Conservation

Based on the proposed wastewater generation, as previously described in Section 4.5 (Sanitary Wastewater), an anticipated public water supply of approximately 25,000 gallons/day will be needed to support the proposed development. Also, the contractor will be required to install highly efficient, state of the art plumbing fixtures and hot water heaters to conserve water. Copies of design specifications pertaining to these water conservation fixtures are presented in Appendix F (Sterling, Moen, and Rinnai, various dates). The Developer has received a "will service" letter from the Trenton Water Works (Trenton Water Works, 2021) indicating that capacity exists for the proposed development subsequent to the appropriate design review application process (Appendix G).

Based on the above, there are no anticipated negative impacts due to the utilization of a public water supply for the Subject Property.

4.7 Energy Conservation Measures

As previously discussed, the residential units associated with the proposed development will include highly efficient HVAC units (i.e., Magicpak, All In One HVAC units), and the contractor will be required to install highly efficient, state of the art plumbing fixtures. In addition, the contractor will be required to install highly efficient lighting fixtures as presented in Appendix H (Magicpak, undated). Lastly, the Developer has received a "will service" letter from PSE&G to supply natural gas and electricity to the proposed development (PSE&G, 2021). A copy of this letter is presented in Appendix I.

Based on the above, there are no anticipated negative impacts due to the utilization of state of the art utility fixtures.

4.8 Noise Reduction Techniques

Demolition and Construction activities will cause an anticipated temporary increase in noise levels of short duration, estimated to be within the 74 to 90 decibel (dBA) range in the immediate vicinity of the Subject Property. Stationary equipment such as generators, pumps, power generators, and air compressors generally run continuously at relatively constant power and speeds. Noise levels at 50 ft. from stationary equipment can range from 78 to 90 dBA, with pumps typically in the quieter range. Average maximum noise levels at 50 feet from heavy equipment range from about 74 to 82 dBA for non-impact equipment. Table 1 (Appendix J) shows examples of noise levels associated with construction equipment pursuant to United States Department of Transportation, Construction Noise Handbook (United States Department of Transportation, 2017.

The major receptors for the increased noise at the demolition and construction areas will be the construction equipment operators, laborers, and project management personnel, which will be required to take necessary health and safety precautions such as hearing protection. Following construction, it is anticipated that the main source of noise on the project site will be car traffic, landscape equipment, and other noises associated with a residential development. The noises during operational phases are expected to be consistent with the noises that already occur within adjacent and nearby residential areas. Noise levels during the construction and operational phases are not anticipated to result in significant impacts to the surrounding area.

5.0 Impacts

The following negative or negligible on-site and off-site impacts will be discussed, including negative impacts that are unavoidable during the demolition, construction and operational phases of the proposed project specifically relating to: 1) soils; 2) flooding and flood plains; 3) surface water quality; 4) groundwater quality; 5) groundwater supply; 6) sanitary waste disposal; 7) alteration of existing vegetation, wildlife and wildlife habitats; 8) destruction or disturbance of historic or cultural resources; 9) noise levels; 10) energy; 11) blighting or improving effects on neighborhoods; and 12) traffic.

5.1 Soils

There will be unavoidable negative impacts to soil on the Subject Property during demolition and construction activities. However, these impacts will be short-term and temporary. These impacts will be minimized and mitigated by the implementation of a site-specific soil erosion and sediment control plan enforced by the Mercer County Soil Conservation District. After the completion of the construction activities, post development soil stabilization procedures will be implemented including topsoiling and mulching. Thus, there will be no anticipated long-term impacts to soil on the Subject Property.

5.2 Flooding and Flood Plains

There will be no anticipated impacts resulting in flooding or to floodplains as a result of the proposed development. As previously discussed, the Subject Property is not located within flood hazard areas. Also, Hopewell Valley Engineers has prepared a report entitled “Stormwater Management Report, Prepared for Nexus Spruce Street Apartments, Preliminary and Final Site Plan, Township of Lawrence, Mercer County, New Jersey, Lot 39, Block 701,” dated November 18, 2021 in accordance NJDEP’s Stormwater Management Rules at N.J.A.C. 7:8 et seq. Impervious surfaces will increase as a result of the proposed development. The resulting increase in stormwater runoff flow rates can be controlled by implementation of an appropriate stormwater management plan. This plan will incorporate the "green infrastructure" measure of Filterra® Bioretention Systems to provide water quality treatment. In addition, a combination

of extended detention basin/infiltration basin (Green Infrastructure) will be used to provide quantity control. No significant impact on flooding or floodplain distribution are anticipated as a result of the proposed project.

5.3 Surface Water Quality

The proposed development will result in new impervious surfaces and meets the definition of a "major development," pursuant to the NJDEP's Stormwater Management Rules at N.J.A.C. 7:8. Potential impacts to surface water quality resulting from the proposed development will be associated with stormwater runoff from the proposed development. Based on the proposed increase in impervious surface, changes in stormwater quality can be expected to occur. As previously discussed, there are no streams located on the Subject Property; however, the proposed development could have the potential to cause minor and temporary impacts on surface water quality within the Shabakunk Creek watershed, due to the addition of suspended solids during construction activities. However, these impacts will be mitigated by the implementation of a stormwater management plan and a soil erosion and sediment control plan. The stormwater management plan includes use of Filterra® Units (Green Infrastructure) and one stormwater basin. The proposed stormwater management plan for the project will meet the NJDEP's requirements for groundwater recharge, surface water quality, and surface water quantity, as set forth by N.J.A.C. 7:8. Details of the proposed stormwater management plan are presented in the "Stormwater Management Report," prepared for the project by Hopewell Valley Engineers, dated November 18, 2021. Therefore, there are no anticipated negative impacts to surface water quality related to the development activities.

5.4 Groundwater Quality

The proposed development will result in new impervious surfaces and meets the definition of a "major development," pursuant to the NJDEP's Stormwater Management Rules at N.J.A.C. 7:8. However, these impacts will be mitigated through the implementation of a stormwater management plan, which includes a stormwater basin. The proposed stormwater management plan for the project will meet the NJDEP's requirements for groundwater recharge and water quality treatment, as set forth by N.J.A.C. 7:8 and as described in greater detail in the "Stormwater Management Report" (Hopewell Valley Engineers, 2021).

As previously discussed, the proposed project includes the installation of a groundwater well for irrigation purposes. The well will be located on the south-central boundary. Also, an ongoing remedial action is being completed on the Subject Property, related to groundwater contamination on the southwestern boundary. The groundwater contaminant plume is present within the overburden soils situated above the bedrock groundwater formation (Stockton Formation). The proposed groundwater irrigation is anticipated to be

installed in the Stockton Formation and not within the overburden sediments. Therefore, with proper well construction techniques, it is anticipated that the groundwater plume in the overburden sediments should have minimal, if any, impact to the quality of the groundwater being withdrawal from the Stockton Formation.

5.5 Groundwater Supply

As previously described, the new residential construction on the Subject Property will be served by Trenton Water Works for a potable water supply. The proposed development will result in new impervious surfaces and meets the definition of a "major development," pursuant to the NJDEP's Stormwater Management Rules at N.J.A.C. 7:8. However, these impacts will be mitigated through the implementation of a stormwater management plan, which includes a stormwater basin. The proposed stormwater management plan for the project will meet the NJDEP's requirements for groundwater recharge and water quality treatment as set forth by N.J.A.C. 7:8, and as described in greater detail in the "Stormwater Management Report" (Hopewell Valley Engineers, 2021).

Lastly, the proposed development includes the use of a groundwater well, to be used specifically for irrigation waters only. As previously mentioned, the Subject Property is underlain by the Triassic-aged Stockton Formation. According to Widmer (1965), the Stockton Formation is a very productive aquifer in Mercer County with an average groundwater flow of 94 gallons/minute. The proposed well is anticipated to be installed and screened in the well water producing Stockton Formation groundwater aquifer. The groundwater use for irrigation will include periodic use with an estimated 250,000 gallons per year during the growing season based on on-going precipitation patterns. Based on the above, there will be a long-term negligible impact to groundwater supply on the Subject Property.

5.6 Sanitary Waste Disposal

There will be unavoidable impact due to the production of sanitary wastewater as a result of activities associated with the post development residents. The New Jersey Department of Environmental Protection's Water Quality Management Planning Program implements rules to protect water quality pursuant to regulations under the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq. (1972). As a part of the NJDEP's Water Quality Management Planning Program, the Mercer County Wastewater Management Plan (WMP) recognizes that ELSA is a permitted utility to receive, treat and dispose of sanitary wastewater. Consequently, ELSA operates a wastewater treatment plant in accordance NJDEP New Jersey Pollutant Discharge Elimination System Rules, N.J.A.C. 7:14A (New Jersey Department of Environmental Protection, 2020), Permit No. NJ0024759.

The Developer will have to apply for a NJDEP TWA. The TWA program regulates the construction and operation of industrial and domestic wastewater collection, conveyance and treatment facilities, including treatment plants, pumping stations, interceptors, sewer mains and other collection, holding and conveyance systems.

The Developer has received a "will service" letter from ELSA indicating that capacity exists from the proposed development (Appendix J).

Based on the above, the unavoidable production of sanitary wastewater will be fully mitigated by the subsequent disposal and treatment by the fully permitted ELSA operations.

5.7 Alteration of Existing Vegetation, Wildlife and Wildlife Habitats

The proposed development will result in the removal of trees located along the eastern portion of the Subject Property. As previously discussed, the majority of the Subject Property is composed of a vacant commercial establishment with a cinder block building and associated asphalt parking areas. The eastern portion of the Subject Property is composed of habitat composed of successional growth areas, forested upland and forested wetland areas According to the Environmental Resource Inventory for the Township of Lawrence, Mercer County, New Jersey (The Township of Lawrence, 2017), common mammals and birds present in the township include cottontail rabbits, eastern gray squirrels, skunks, little brown bats, white-tailed deer, opossums, raccoons, ducks, woodpeckers, geese, swallows, jays, robins, wrens, sparrows, and some hawks.

As previously discussed, the Subject Property has a memorialized NJDEP Freshwater Wetland Letter of Interpretation (New Jersey Department of Environmental Protection, 2020) including a 50-foot transition area buffer. Due to the NJDEP approved 50-foot transition area buffer confirms the lack of threatened and endangered species on the Subject Property.

Hopewell Valley Engineering, PC completed a tree survey and developed a tree replacement schedule in accordance with Section 541 (Tree Removal and Tree Cutting) of the Lawrence Township Land Use Ordinance (December 17, 2019). The details of the tree replacement schedule are presented on Sheets 5 and 6 of the "Preliminary and Final Site Plan for Spruce Street Apartments, Lot 39, Block 701 Situate in Lawrence Township, Mercer County, New Jersey," dated November 18, 2021 (Appendix D) (Hopewell Valley Engineering, PC, 2021).

It is anticipated that there will be a disturbance to existing trees due to the proposed construction activities associated with the proposed development. However, there are no anticipated impacts to special wildlife habitats. In addition, the applicant will be planting replace trees in accordance with the Lawrence Township

Land Use Ordinance (December 17, 2019), which will mitigate any potential long-term impacts to the Subject Property.

5.8 Air Pollution

As previously discussed, The proposed development may have minor impacts on air quality during the demolition, construction and post development operational phases. Minor, localized, short-term effects on air quality will occur during the construction phase of the proposed project particularly related to air pollutants generated during the construction phase include carbon monoxide (CO), hydrocarbons, (HC), particulate matter (PM), nitrogen oxides (NOx) and sulfur dioxide (SO2) from the exhaust of vehicles and construction equipment and particulates from dust generated during demolition and construction activities.

The residential units associated with the proposed development will include highly efficient HVAC units and during the operational phase, the anticipated outdoor air pollution will primarily be that related to vehicle exhaust from resident automobiles which is consistent with existing impacts associated with the surrounding land uses.

The acceptable air quality standards are not anticipated to be impacted by the proposed project due to its relatively small scale. While air quality may be locally impacted during construction and operation, no significant net-impacts to air quality are anticipated to result from the proposed project.

5.9 Noise Level Impacts

A previously discussed, demolition and construction activities will cause an anticipated temporary increase in noise levels of short duration estimated to be within the 74 to 90 dBA range for short durations in the immediate vicinity of the Subject Property. The major receptors for the increased noise at the demolition and construction areas will be the construction equipment operators, laborers, and project management personnel, which will be required to take necessary health and safety precautions such as hearing protection. During the operational phase of the development, it is anticipated that the main source of noise on the project site will be car traffic, landscape equipment, and other noises associated with a residential development. The noises during operational phases are expected to be consistent with the noises that already occur within adjacent and nearby residential areas. Noise levels during the construction and operational phases are not anticipated to result in significant impacts to the surrounding area.

5.10 Energy Utilization

In general comparison to the existing structures on the Subject Property and structures on adjacent properties, the proposed development will be designed as a state of the art facility that will utilize energy efficient

technologies such as LED lighting and highly efficient HVAC systems, which are Energy Star rated equipment.

5.11 Blighting or Improving Effects on Neighborhoods

As previously discussed, the Subject Property is composed of a vacated property with an empty commercial structure. Adjoining properties are composed of medium density residential homes to the east and southeast and to the north and west by commercial facilities specifically, 1) The Boys and Girls Club (1040 Spruce Street); 2) vacant commercial structures (1056, 1058, 1060, and 1062 Spruce Streets); and 3) Centercourt Indoor Sports & Training Center (1080 Spruce Street). The proposed development will aesthetically improve the Subject Property and provide a benefit to the surrounding properties.

5.12 Traffic

McDonough & Rea Associates (MRA) prepared a Traffic Impact Study detailed in a letter report dated October 29, 2021 relating to Spruce Street Apartments, Lot 39 in Block 701, Lawrence Township, Mercer County, New Jersey. This letter report concluded that the proposed development to construct 129 residential apartments can operate compatible with existing and future traffic conditions in the area. For the 2026 design year, the site access to Spruce Street, which will be a right-in/right-out only access, will operate at level of service "B" for both the AM and PM peak street hours. The off-site intersections of Spruce Street/Arctic Parkway (signalized) and Spruce Street/Tiffany Woods Court/Capital Plaza (unsignalized) will not be significantly impacted by this proposal and will also continue to operate within acceptable traffic engineering parameters. Lastly, the proposed plans have been properly designed with respect to availability and accessibility of the parking supply, conformance to New Jersey Residential Site Improvement Standards (N.J.A.C. 5:21 et seq.) and proper traffic engineering principles.

6.0 Alternatives

6.1 No Build Alternative

As previously discussed, the Subject Property is composed of a vacated property with an empty commercial structure. Thus, a "No Build" alternative would leave the Subject Property within its vacant and underutilized condition.

6.2 Additional Alternative within the AT Zone

As previously discussed, the Subject Property is zoned as AT (Apartment and Townhouse). According to the "Land Use Ordinance of the Township of Lawrence" (The Township of Lawrence, 2019),

> "The Apartment and Townhouse (AT) residential zone is intended to provide for dwellings in a garden apartment, multi-story or townhouse configuration at moderate multi-family densities." (p. 89)

The proposed development layout provides a practical plan for the project while protecting the natural surroundings that currently exist on and off the Subject Property. Other alternatives in compliance with the current zoning would require similar site improvements and would most likely still be protective of the natural surrounds on and off the Subject Property.

7.0 Licenses, Permits and Other Approvals Required by Law

The following licenses, permits and other approvals required by law include related to the proposed project:

- Township of Lawrence Planning Board Site Plan and Minor Subdivision
- Mercer County Planning Board
- Lawrence Township Soil Disturbance
- Mercer County Soil Conservation District Soil Erosion and Sediment Control Plan Certification
- Delaware and Raritan Canal Commission Zone "B" Certification
- NJDEP Freshwater Letter of Interpretation (Approved, June 2, 2020)
- NJDEP General Permit #11 – Stormwater Outfalls
- NJDEP Treatment Works Approval
- Trenton Water Works
- Municipal Approval for Water Main Extension
- PSE&G Electric and Gas Connections

8.0 Summary and Conclusions

8.1 Project Description

The proposed project has been designed to be fully conforming to the requirements of the AT (Apartment and Townhouse) zone and includes five multi-story residential buildings having a total of 129 units

(including one, two, and three bedroom units) on 7.17 acres. The proposed project will have a clubhouse and a recreation area. The access road from Spruce Street will be composed of a boulevard entrance.

Trenton Water Works and ELSA will provide potable water and sanitary wastewater disposal services to the proposed project. The proposed development will be serviced by a stormwater management system designed in accordance with New Jersey Department of Environmental Protection's Stormwater Management Rules (N.J.A.C. 7:8 et seq).

The proposed project is in conformance with the goals of the New Jersey State Plan, Mercer County Master Plan and the Township of Lawrence Master Plan. In addition, the Developer and the Township of Lawrence have mutually executed a Developer's Agreement dated February 9, 2021 (The Township of Lawrence – 1052 Spruce Street, 2021). This agreement allows the Developer to provide 22 affordable housing rental units to assist the Township of Lawrence with their share of the Third Round Obligation for providing affordable units.

Lastly, the Subject Property is composed of a vacated property with an empty commercial structure. The proposed development will aesthetically improve the Subject Property and provide a benefit to the surrounding properties.

8.2 Unavoidable, Short Term and Temporary Impacts

Unavoidable and short-term impacts to environmental resources as a result of the proposed development include soil disturbance, decreased local air quality during construction activities, and elevated noise levels during construction activities.

During the operational phase of the project, soils will be stabilized with landscaping. It is anticipated that the main source of noise on the project site will be vehicle traffic, landscape equipment, and other noises associated with a residential development. The noises during operational phases are expected to be consistent with the noises that already occur within adjacent and nearby residential areas. The residential units associated with the proposed development will include highly efficient HVAC units. During the operational phase, the anticipated outdoor air pollution will primarily be related to vehicle exhaust from resident automobiles, which is consistent with existing impacts associated with the surrounding land uses. The acceptable air quality standards are not anticipated to be impacted by the proposed project due to its relatively small scale.

8.3 Potential Unavoidable, Short Term and Temporary Impacts

As previously discussed, there are no streams or surface water bodies located on the Subject Property; however, development of the Subject Property could have the potential to cause minor and temporary impacts on surface water quality within the Shabakunk Creek watershed. These potential and temporary impacts would be due to the addition of suspended solids during construction. However, these impacts will be mitigated through the implementation of a stormwater management plan and a soil erosion and sediment control plan. The stormwater management plan includes the use of Filterra® Units (Green Infrastructure) and one stormwater basin. During the operational phase of the project, the proposed stormwater management plan will meet the NJDEP's requirements, as set forth by N.J.A.C. 7:8, and be protective of surface water quality.

8.4 Unavoidable and Long-Term Impacts with Negligible Impacts

The proposed development will require a potable water source and generate sanitary wastewater. Trenton Water Works will provide a potable water supply, while ELSA will provide wastewater treatment and disposal services. Thus, any unavoidable and long-term impacts from the use of an off-site potable water supply and off-site transport and treatment of sanitary wastewater will be mitigated via the permitted activities associated with both the Trenton Water Works and ELSA.

The proposed development includes the use of a groundwater well specifically for irrigation use only. This proposed well is anticipated to be installed and screened in the Stockton Formation groundwater aquifer. Groundwater used for irrigation will be on a periodic basis, with an estimated 250,000 gallons per year used during the growing season based on on-going precipitation patterns. Based on the above, there will be no long-term negligible impact to groundwater supply on the Subject Property.

The construction activities associated with the proposed development will result in the removal of trees along the eastern boundary of the Subject Property. There are no documented special wildlife habitats on the Subject Property. The proposed development will include a tree replacement plan in accordance with the Municipal ordinance. While there will be the removal of trees, these impacts will be mitigated by the planting of replacement trees.

The proposed development will have an increase in Subject Property population resulting in an increase in vehicular traffic. According to the traffic study report prepared by the Developer's consultant, site access to Spruce Street, which will be a right-in/right-out only access, will operate at level of service "B" for both the AM and PM peak street hours. In addition, the off-site intersections of Spruce Street/Arctic Parkway (signalized) and Spruce Street/Tiffany Woods Court/Capital Plaza (unsignalized) will not be significantly

impacted. Therefore, the any long-term impacts to traffic density and patterns are anticipated to be negligible.

9.0 Qualifications of the Preparer of the EIS

The qualifications of the preparer of this EIS are presented in Appendix L.

NAUTILUS ENVIRONMENTAL GROUP, LLC

Randy S. Kertes, PG, CPG
PRINCIPAL

10.0 References and Documentation

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14) New Jersey Department of Environmental Protection, 2010, New Jersey Pollutant Discharge Elimination System Rules (N.J.A.C. 7:14A), October 5, 2010

15) New Jersey Department of Environmental Protection, 2010a, Water Pollution Control Act, Subchapter 22, (N.J.A.C. 7:14-22 et seq.), October 10, 2010

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20) New Jersey Department of Environmental Protection, 2021, NJ-GeoWeb, July 2021

21) New Jersey Department of Environmental Protection, 2021, Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A).

22) New Jersey Residential Site Improvement Standards, May 3, 2021, N.J.A.C. 5:21 et seq.

23) New Jersey State Agricultural Committee, 2014, Soil Erosion and Sediment Control Act Rules, (N.J.A.C. 2:90-1 et seq.) February 20, 2014

24) New Jersey State Planning Commission, 2001, New Jersey State Development and Redevelopment Plan, March 1, 2001

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30) The Township of Lawrence, 2019, Chapter 812 of the Land Use Ordinance of the Township of Lawrence, December 17, 2019

31) The Township of Lawrence, 2021, Township of Lawrence Zoning Map, January 2021

32) The Township of Lawrence - 1052 Spruce Street, 2021, Developer's Agreement, Township of Lawrence – 1052 Spruce Street, LLC, February 9, 2021

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APPENDICES

Appendix A: Chapter 812 Of The Land Use Ordinance Of The Township Of Lawrence

2. The developer applied promptly for and diligently pursued the required approvals.

The length of the extension shall be equal to the period of delay caused by the wait for the required approvals, as determined by the Board of Jurisdiction. The developer may then apply for an extension either before or after the original expiration date.

C. No subdivision plat shall be accepted for filing by the county recording officer until it has been approved by the Board of Jurisdiction as indicated on the instrument by the signature of the Chairman or Chairwoman and Secretary of the Board of Jurisdiction or a certificate issued in lieu of action by the Board in accordance with *N.J.S.A.* 40:55D-47, -50, -56, -61, -67 or -76. If the County Recording Officer records any plat without such approval, such recording shall be deemed null and void, and upon request of the municipality, the plat shall be expunged from the official records.

D. It shall be the duty of the County Recording Officer to notify the Planning Board in writing within 7 days of the filing of any plat, identifying such instrument by its title, date of filing, and official number.

§ 812 Environmental Impact Statement.

Environmental Impact Statements, when required, shall include the following information:

A. When Required. The impact on the environment generated by land development projects necessitate a comprehensive analysis of the variety of problems that may result and the actions that can be taken to minimize these problems. It is further recognized that the level of detail required for various types of applications will vary depending on the size of the project, the nature of the site and the location of the project. Therefore, having determined that flexibility is needed in preparing the environment impact statement, the requirements for such a document pertaining to different types of development applications are listed below:

1. All agricultural operations conducted in accordance with a plan approved by the soil conservation district and all silviculture operations conducted in accordance with a plan prepared by a professional forester are specifically exempt from the submission of an environmental impact statement.

2. Any variance application to the Zoning Board of Adjustment not involving a site plan or subdivision application shall not require an environmental impact statement unless specifically requested by the Board. The Board may request an environmental impact statement where there exists significant critical areas or suspected environmental hazard on the site in question. The Zoning Board of Adjustment or its designee shall inform the applicant regarding the scope of the information that may be required.

3. Any minor subdivision and/or minor site plan applications to the Board shall not require an environmental impact statement unless specifically requested by the Board. The Board may request an environmental impact statement where there exists significant critical areas or suspected environmental hazard on the site in question. The Board or its designee shall inform the applicant regarding any information that may be required.

4. All preliminary major subdivision and preliminary major site plan applications shall be accompanied by an environmental impact statement.

5. Notwithstanding the categories of development that are excluded from the requirement to submit an Environmental Impact Statement, the Board of Jurisdiction may require the submission of information that may be included in the document that is reasonably necessary to make an informed decision.

B. Submission Format. When an environmental impact statement is required, the applicant shall retain one or more competent professionals to perform the necessary work. All applicable material on file in the Department of Community Development pertinent to local conditions shall be consulted. Any additional material pertinent to the evaluation of regional impacts shall also be considered. Furthermore, as much original research as necessary shall be conducted to develop the environmental impact statement. All environmental impact statements shall consist of written and graphic materials which clearly present the required information addressing the following areas and utilizing the following format:

1. Project description. A description of the proposed project shall be presented to indicate the extent to which the site must be altered, the kinds of facilities to be constructed, how they are to be considered and the uses intended.

2. Demographics. The resident population, working population, and visitor population shall be estimated.

3. Master plan compatibility. The compatibility or incompatibility of the proposed project shall be described in relation to the following documents:

   a. Municipal master plan, especially the land use and open space elements.

   b. Master plan of adjacent municipalities.

   c. Mercer County master plan.

   d. Mercer/Somerset/Middlesex or other regional planning guides.

   e. State Development and Redevelopment Plan.

   f. Other pertinent planning documents.

C. Site description and inventory. An inventory shall be provided of environmental conditions on the site which shall include the following items: Types of Soils. When septic effluent disposal or private well, whether individual or community, is proposed, a description of each soil type located on the site from the Soil Survey of Mercer County - Soil Conservation Service shall be provided. If available, percolation data shall be submitted. Where proposed land improvements would involve severe limitations for the development of buildings or roads, then soil information shall be submitted for the entire site.

   b. Topography. Describe the topographic conditions of the site, with specific delineation of any lands with slopes exceeding 12%.

   c. Geology. When septic effluent disposal or private well, whether individual or community, is proposed, a description of each geologic formation shall

be provided. Depth to bedrock shall be delineated where it would interfere with proposed land improvements.

d. Vegetation. A description of the existing vegetation on the site. The location of tree masses shall be depicted. Where woodlands are delineated, the forest type shall be indicated.

e. Wildlife. Unique or rare wildlife habitats shall be identified. Where applicable, other data assembled regarding wildlife activity on the site shall also be mapped or described.

f. Surface water. When the natural drainage pattern will be significantly altered, an analysis shall be conducted which will investigate flow, depth, capacity and water quality of the receiving waters. Flood plains and wetlands shall be delineated.

g. Subsurface water. Where private or community wells are proposed, a description of subsurface water conditions shall be provided on the depth to ground water and the water supply capabilities of the site. Where existing conditions warrant, detailed information regarding existing wells within 500 feet of the site relative to depth, capacity and water quality shall be described.

h. Cultural resources. A Stage 1A cultural resources survey shall be undertaken pursuant to State of New Jersey Executive Order No. 53, as it may be amended or superseded. A Stage 1B cultural resource survey shall be conducted should the Stage 1A review provide any indication of the presence of cultural resources.

i. Historic resources. The historic resources that would be affected by the proposed development shall be discussed in accordance with the criteria in Article XI.

j. Existing development features. A description of any existing improvements shall be provided.

k. Miscellaneous. When warranted, an analysis shall be conducted of existing air quality and noise levels as prescribed by the New Jersey Department of Environmental Protection.

1. Area and regional description. Provide a description of the surrounding environs. Describe the existing land use pattern. When required, describe in detail the existing infrastructure with respect to the drainage and transportation network as well as any central sewerage and water supply facilities. Include an appropriate regional analysis relative to the proposed project.

2. Environmental performance controls. Describe in detail the measures to be employed during the construction and operation phases which will minimize or eliminate negative impacts on and off site that could result from the proposed project. Of specific interest are:

a. Sewage disposal techniques.

b. Water supply and water conservation proposals.

c. Energy conservation measures.

d. Noise reduction techniques.

3. Impact. Discuss both the negative and positive and off-tract impacts. Indicate those negative impacts that are unavoidable. The specific concerns that shall be considered include, but are not limited to, the following:

a. Flooding and flood plain impact.

b. Impact on surface water and groundwater quality.

c. Impact on the capacity to supply groundwater.

d. Sewage disposal impacts.

e. Alteration to existing vegetation and its impact on wildlife and wildlife habitats.

f. Destruction or disturbance of cultural resources.

g. Noise level impacts.

h. Energy utilization.

i. Blighting or improving effects on neighborhoods.

8. Alternatives. Alternatives to the arrangement of the proposed development shall be discussed. The board of jurisdiction shall reserve the right to require alternative arrangements of land, buildings, and infrastructure to determine a design of lesser impact.

9. Licenses, permits and other approvals required by law. The applicant shall list all known licenses, permits and other forms of approval required by law for the construction and operation of the proposed project. This list shall include, but will not be limited to, approvals required by the municipality, as well as agencies of the county, State and Federal governments. Where approvals have been granted, copies of said approvals shall be attached. Where approvals are pending, a note shall be made to that effect.

10. Documentation. All publications, file reports, manuscripts or other written sources of information related to the project, the project site and the municipality which were consulted and employed in compilation of the environmental impact statement shall be listed. A list of all agencies and individuals from whom pertinent information was obtained orally or by letter shall be listed separately. Dates and locations of all meetings shall be specified.

11. Disposition. The Board shall not approve a submission unless it determines and finds that the proposed development:

a. Will not result in appreciable harmful effects to the environment;

b. Has been designed and conceived with a view toward the protection of regional sources; and

c. Will not place a disproportionate or excessive demand upon the total resources available for such proposal and for any future proposals.

§ 813 Community Impact Statement.

Community Impact Statements, when required, shall conform to the following provisions:

A. When Required. All applications for preliminary major subdivision approval where more than 10 lots are proposed and all applications for preliminary major site plan approval in excess of 50,000 gross square feet of floor area shall be accompanied by a community impact statement analyzing the proposed development and its expected impacts upon existing municipal facilities and services. General development plan applications shall be submitted with an abbreviated community impact statement consisting of items -B.1 and -B.5, below. The community impact statement shall indicate why, in the applicant's opinion, the proposed development is in the public interest as well as providing data and opinions concerning the impacts in subsection -B.

B. Submission Format. When a community impact statement is required, the applicant shall retain one or more competent professionals to perform the necessary work as required under §802. All applicable material on file in the Department of Community Development pertinent to local conditions may be consulted. Any additional material pertinent to the evaluation of regional impacts shall also be considered. All community impact statements shall consist of written and graphic materials which clearly present the required information addressing the following areas:

1. Population impact. An analysis of the number of people expected to be added to the municipal population as a result of the proposed development, including those attracted to the Township for the number of projected jobs in non-residential development, according to the following age cohorts:

   a. 0-4 years

   b. 5-17 years

   c. 17-24 years

   d. 25-44 years

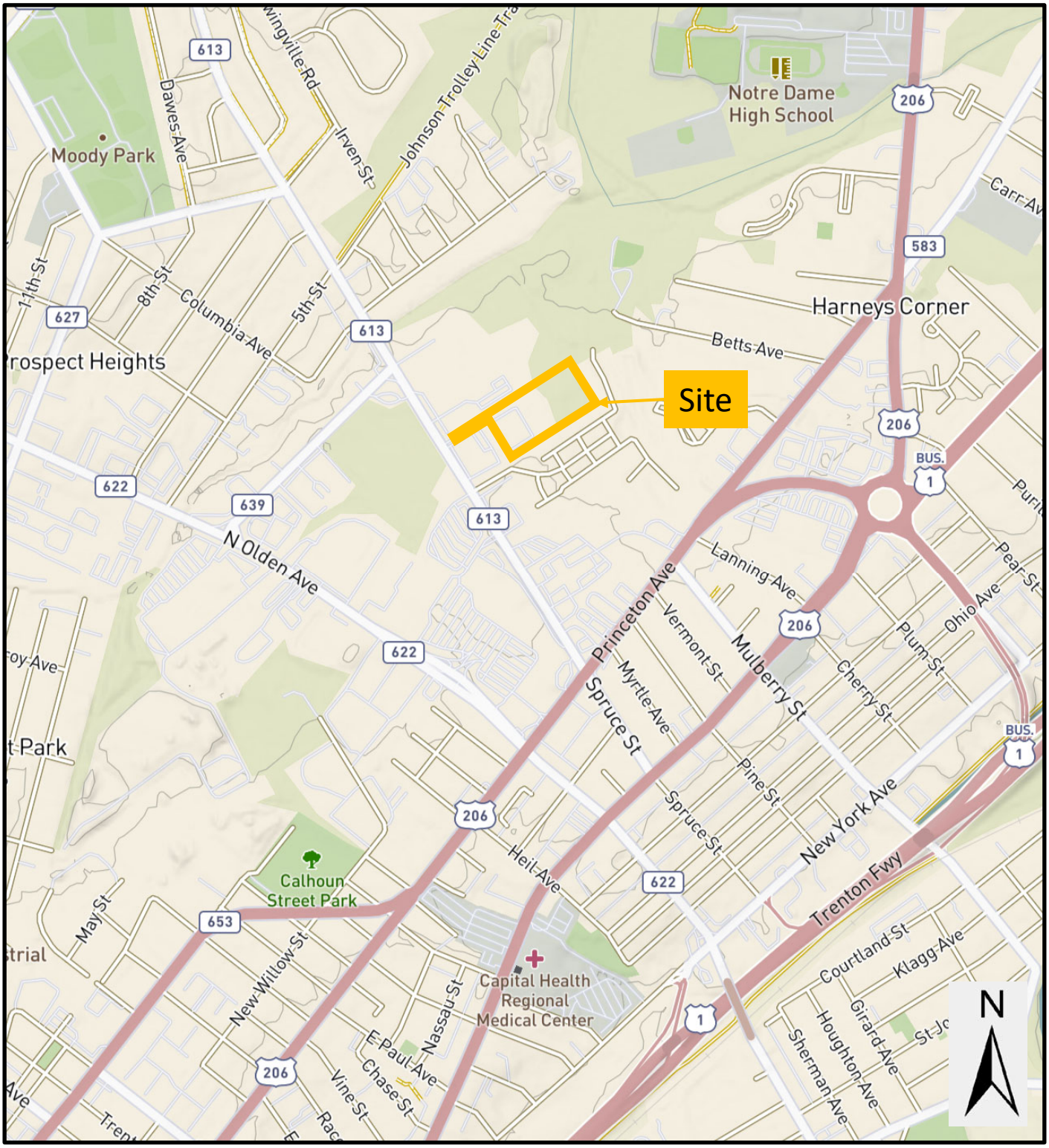
   e. 45-64 years

   f. 65 years and older

2. Schools impact. An analysis of the anticipated number of public school students projected to be added and the ability of the existing public school facilities to absorb the additional population projected ten years into the future. The overall anticipated cost of facilities necessitated and the development's share of the cost on a pro rata basis by the increase in student population shall be provided.

3. Community facilities impact. An analysis of the existing community facilities and infrastructure available to serve the proposed development and its impact on the adequacy of existing public water facilities, public sewerage facilities; recreational facilities; library facilities, and senior services. Should such facilities be determined

Appendix B: Figures



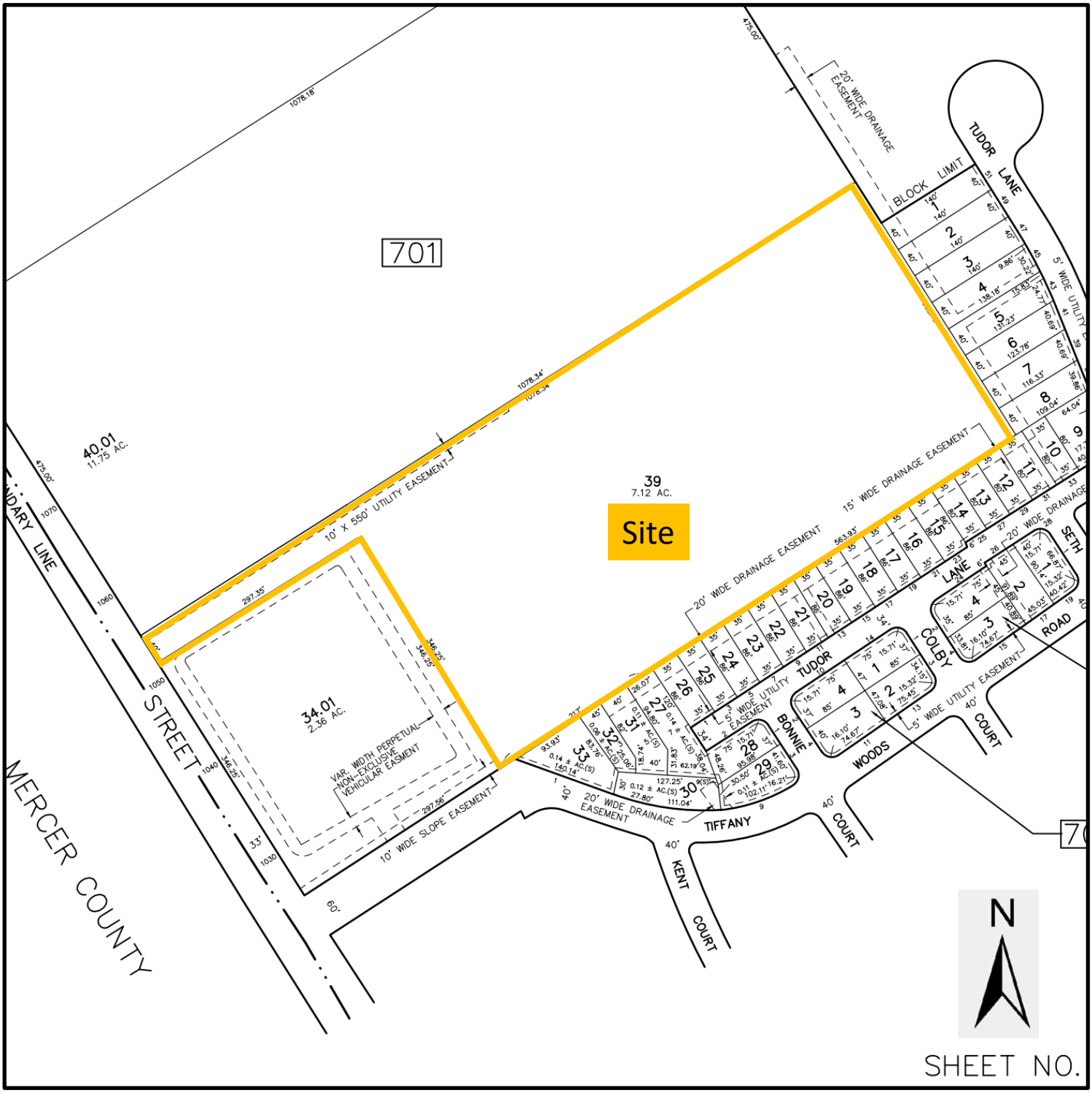
APPROXIMATE SCALE
1,000 FEET

Source: USGS TOPOGRAPHIC MAP, TRENTON WEST, 2019

Nautilus Environmental Group, LLC
"HELPING YOU ATTAIN YOUR GOALS"
Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

FIGURE 1
USGS LOCATION MAP



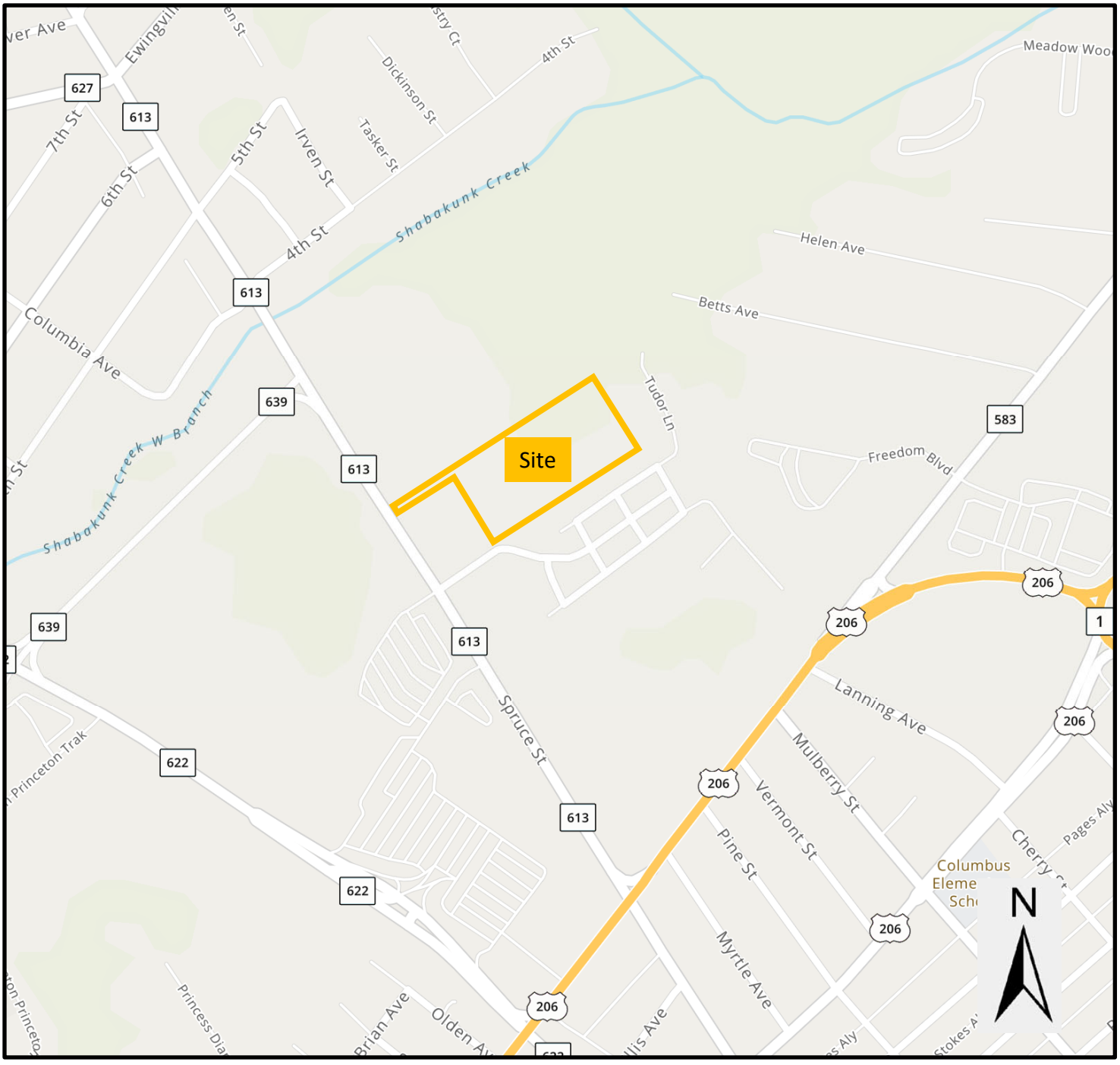
Source: TOWNSHIP OF LAWRENCE,
NJ TAX MAP, AUGUST 2012

APPROXIMATE SCALE
100 FEET

Nautilus Environmental Group, LLC
"HELPING YOU ATTAIN YOUR GOALS"
Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

FIGURE 2
TAX MAP



APPROXIMATE SCALE
500 FEET

Source: MAPQUEST, JULY 2021

Nautilus Environmental Group, LLC
"HELPING YOU ATTAIN YOUR GOALS"
Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

FIGURE 3
ROAD MAP

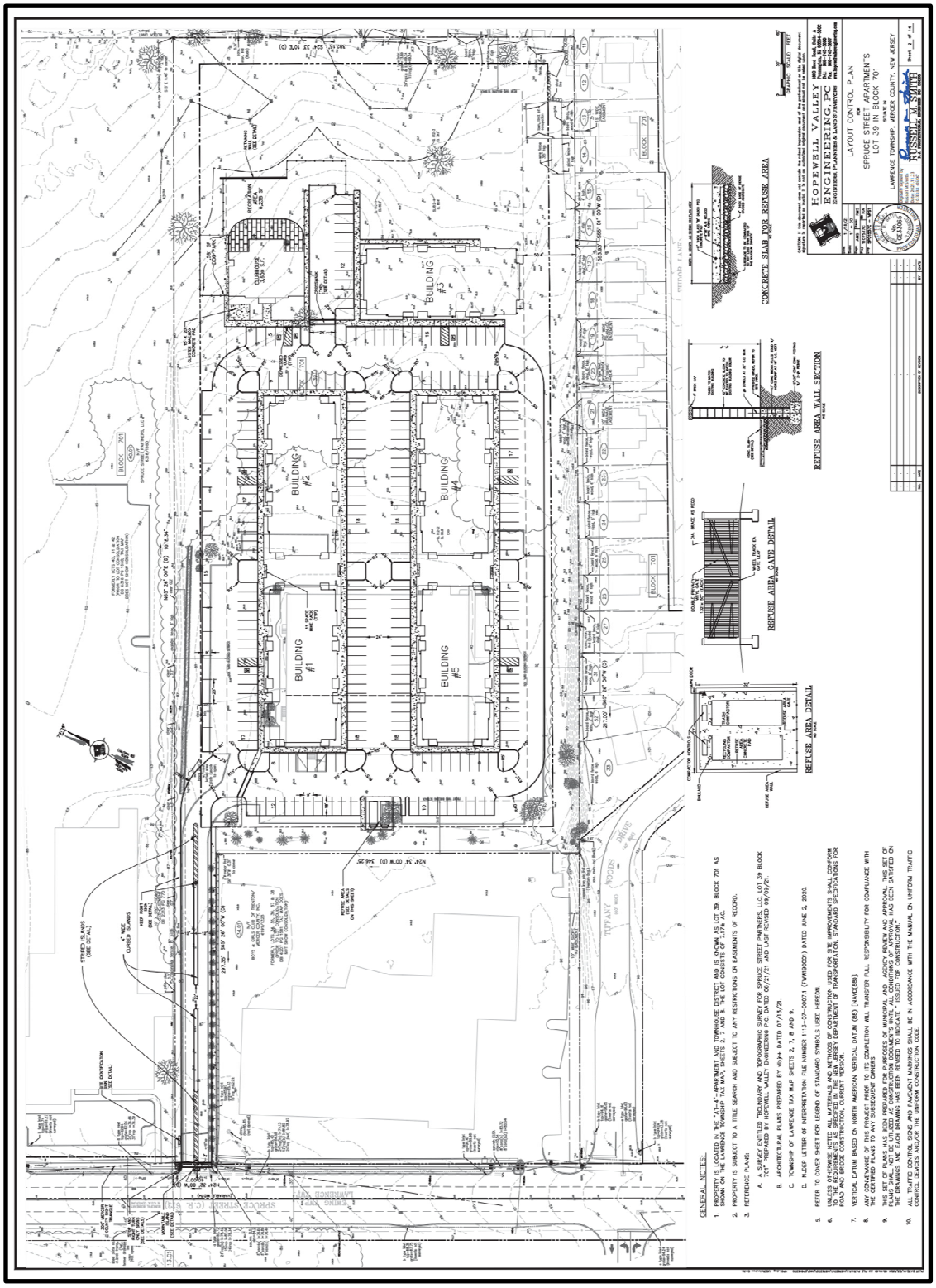
APPROXIMATE SCALE
100 FEET

Source: NJDEP, NJ-GEOWEB, JULY 2021

Nautilus Environmental Group, LLC
"HELPING YOU ATTAIN YOUR GOALS"
Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

FIGURE 4
AERIAL / TAX MAP

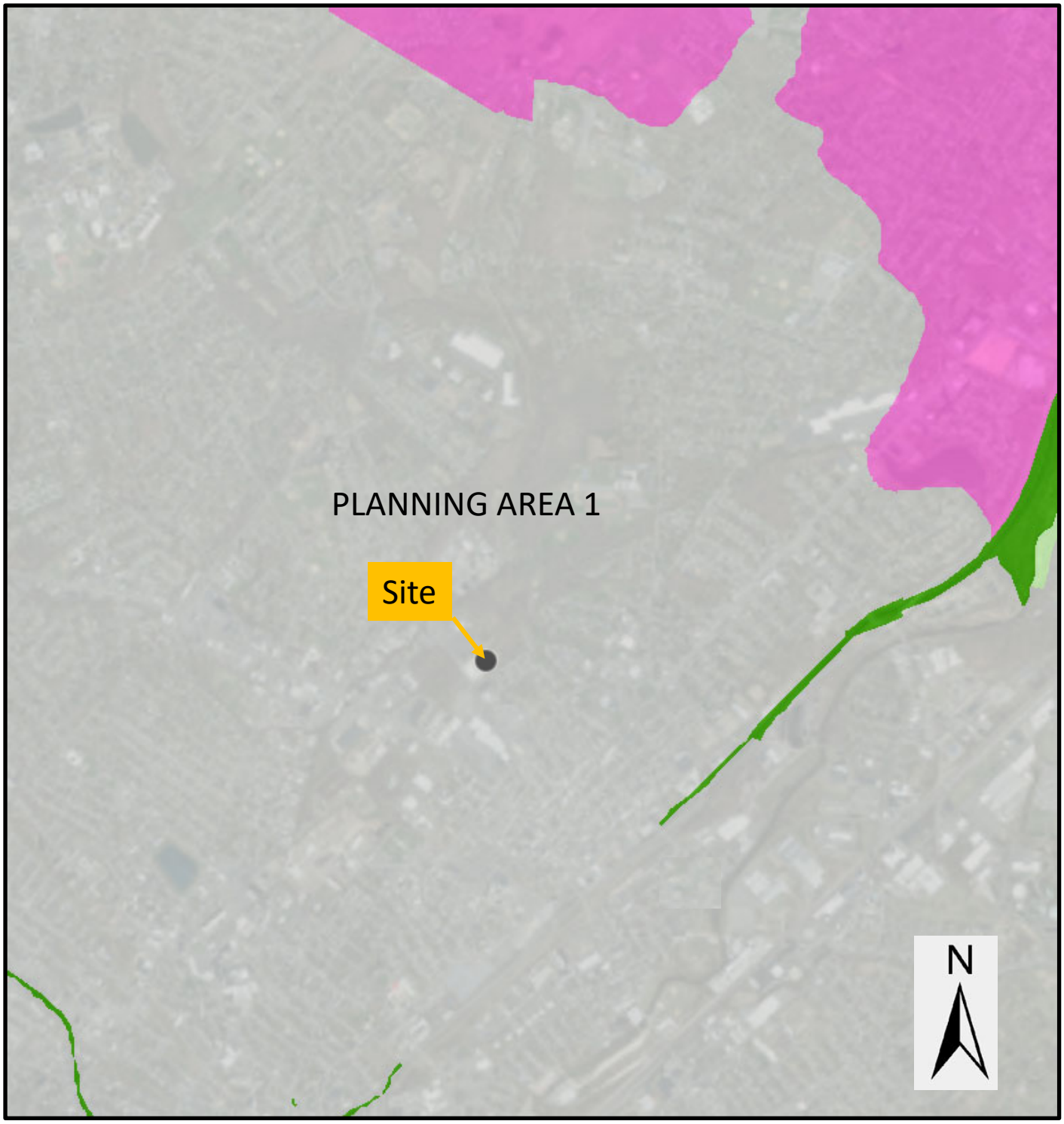


Source: HOPEWELL VALLEY ENGINEERING, PC, 2021

Nautilus Environmental Group, LLC
"HELPING YOU ATTAIN YOUR GOALS"
Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

FIGURE 5
DEVELOPMENT
PLAN



Source: NJDEP, NJ-GEOWEB, JULY 2021

NOT TO SCALE

Nautilus Environmental Group, LLC
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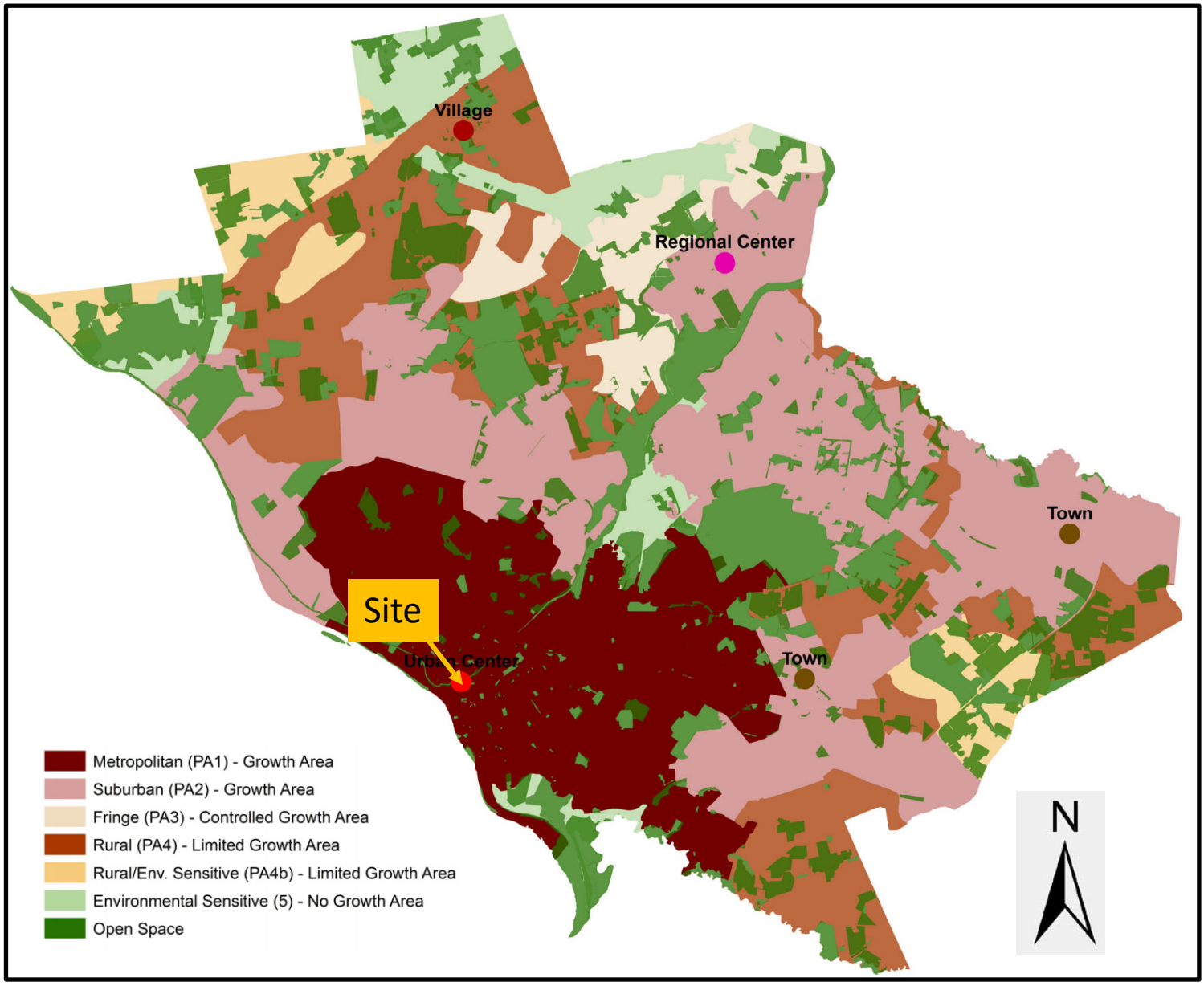
Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

FIGURE 6
NEW JERSEY STATE
DEVELOPMENT AND
REDEVELOPMENT PLAN



Source: NJDEP, NJ-GEOWEB, JULY 2021

NOT TO SCALE

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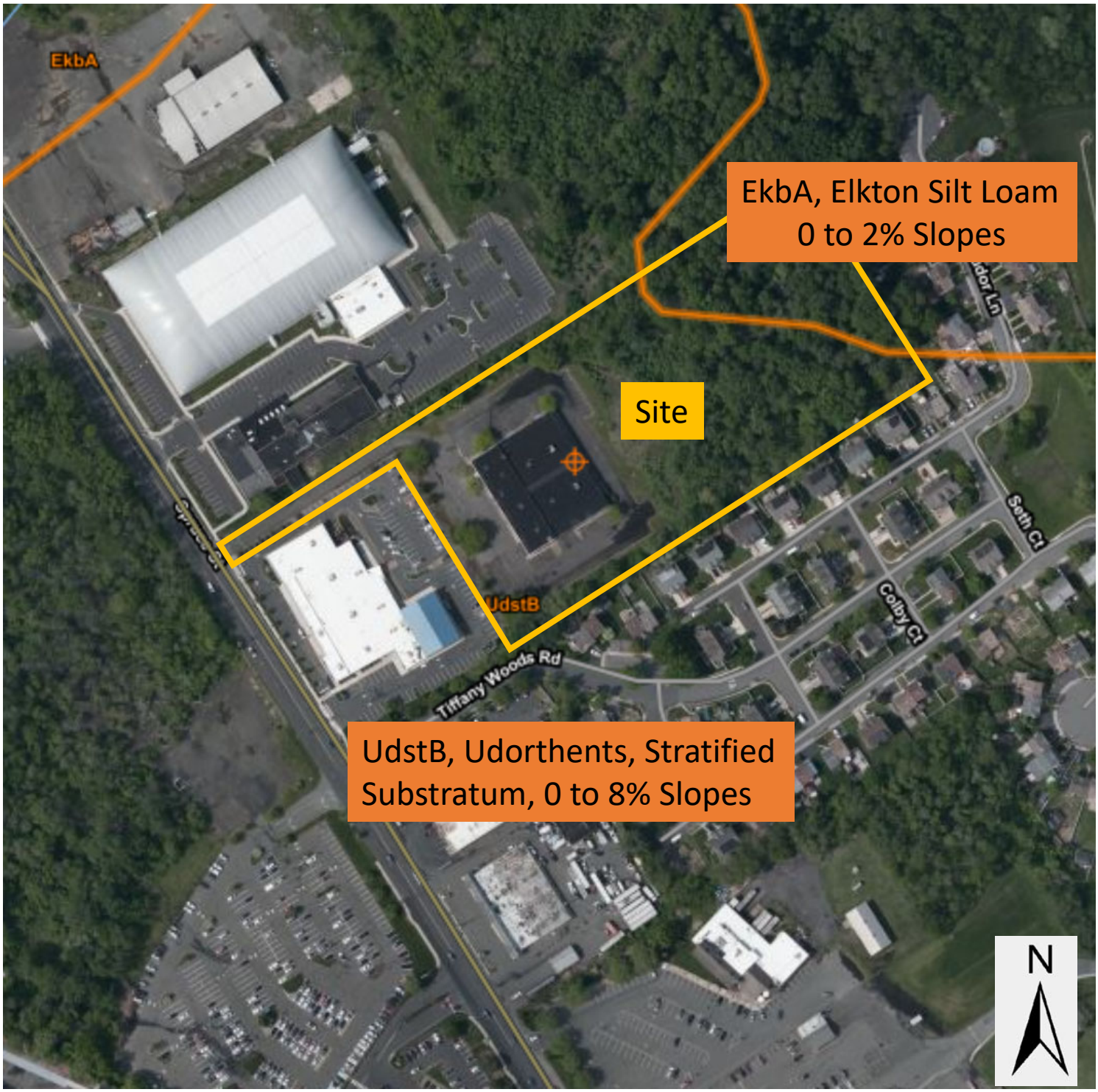
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

FIGURE 7
MERCER COUNTY
MASTER PLAN



APPROXIMATE SCALE
100 FEET

Source: USDA WEB SOIL WEBSITE, JULY 2021

Nautilus Environmental Group, LLC
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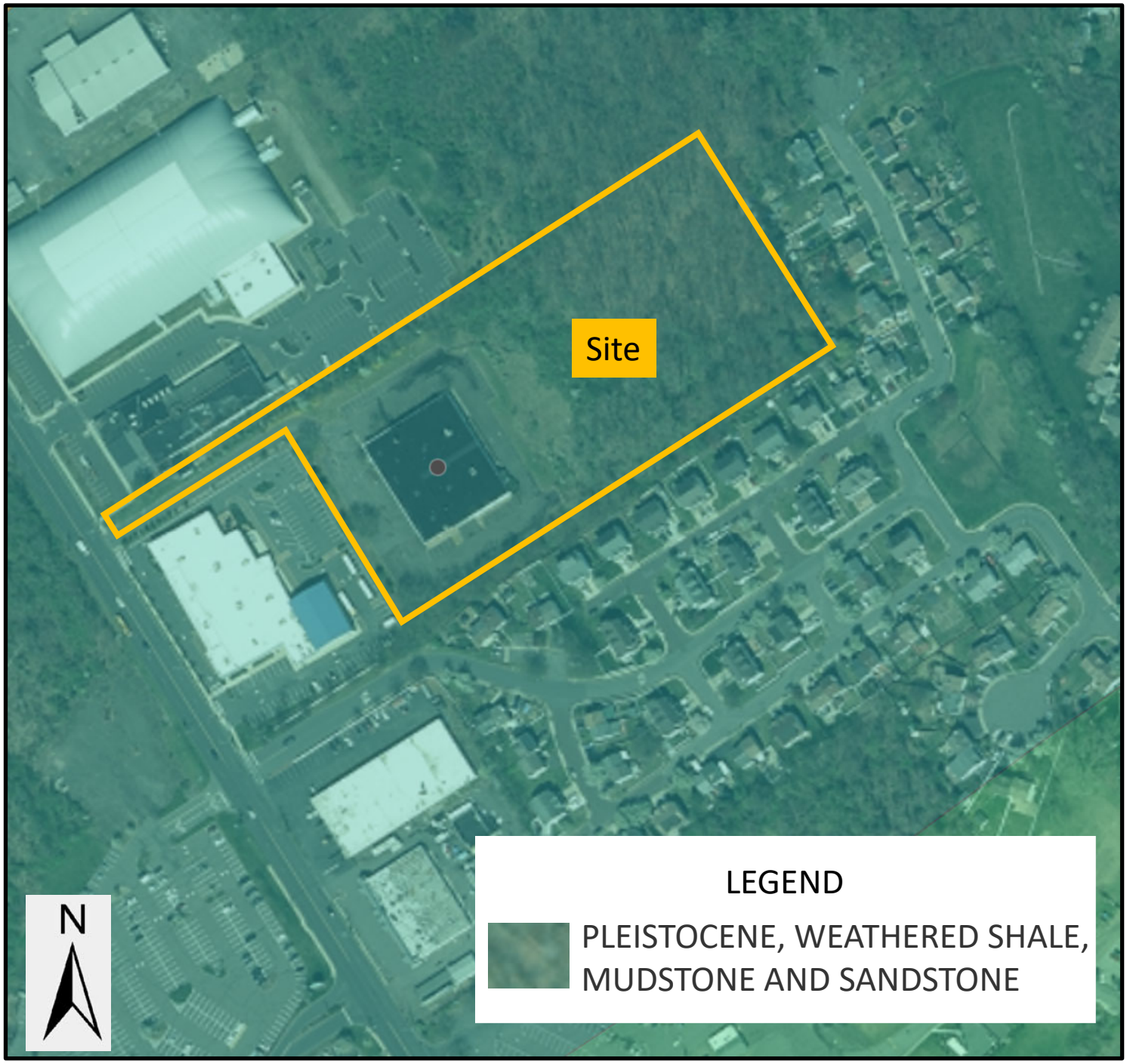
Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

FIGURE 8
USDA SOIL MAP



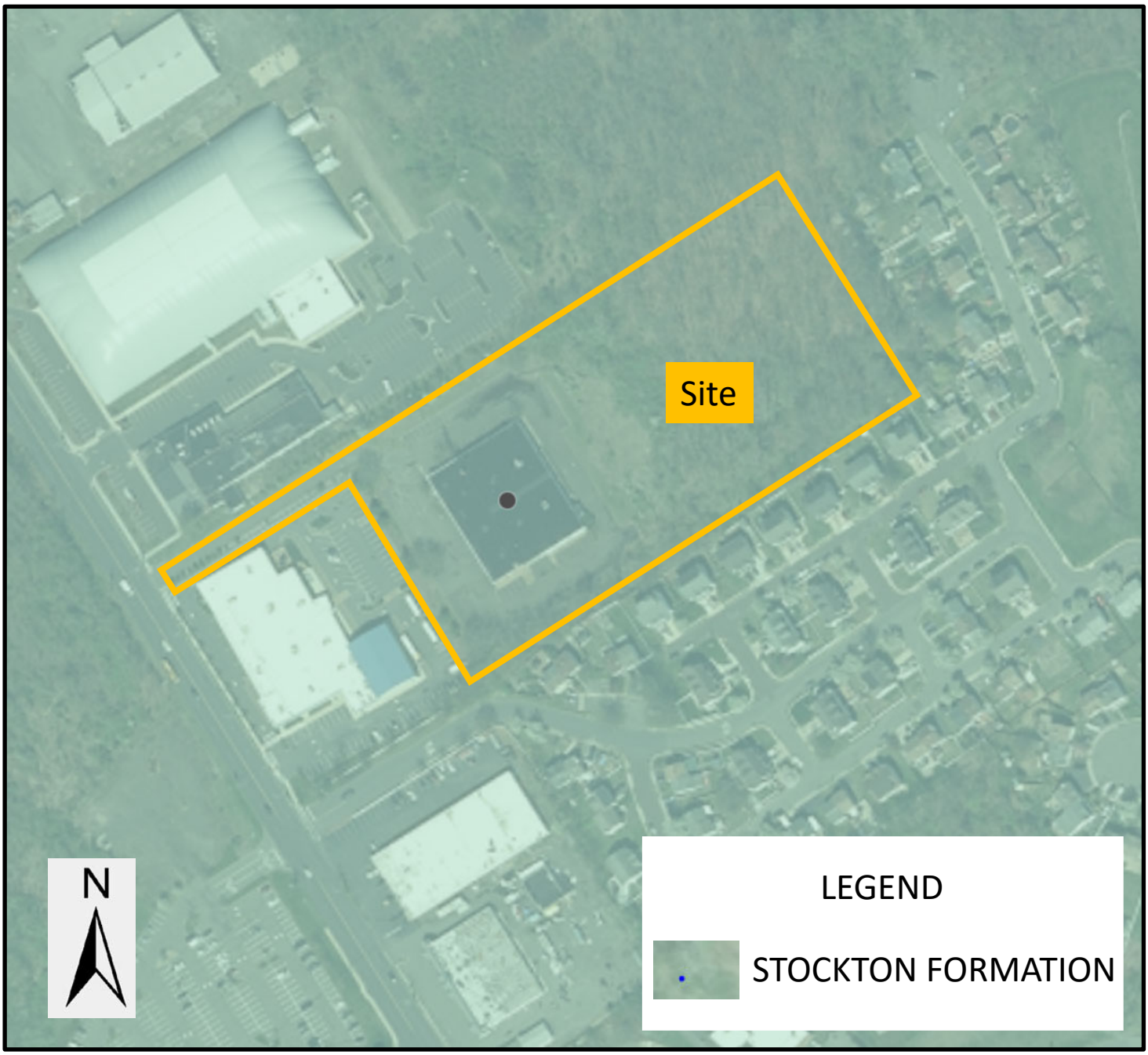
Source: NJDEP, NJ-GEOWEB, JULY 2021

APPROXIMATE SCALE
100 FEET

Nautilus Environmental Group, LLC
"HELPING YOU ATTAIN YOUR GOALS"
Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

FIGURE 9
SURFICIAL
GEOLOGY MAP



APPROXIMATE SCALE
100 FEET

Source: NJDEP, NJ-GEOWEB, JULY 2021

Nautilus Environmental Group, LLC
"HELPING YOU ATTAIN YOUR GOALS"
Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

FIGURE 10
BEDROCK
GEOLOGY MAP

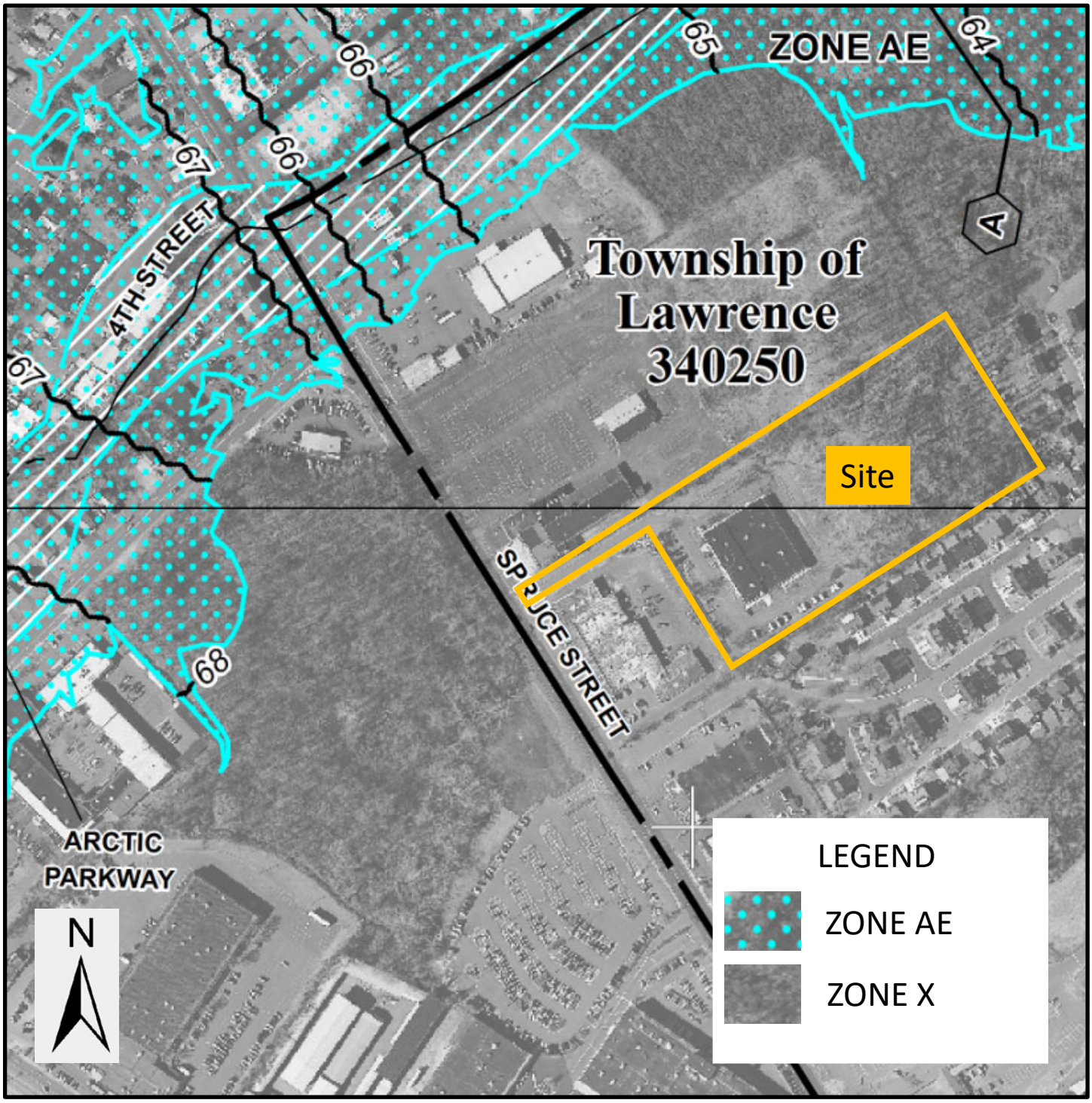
Source: NJDEP, NJ-GEOWEB, JULY 2021

APPROXIMATE SCALE
500 FEET

Nautilus Environmental Group, LLC
"HELPING YOU ATTAIN YOUR GOALS"
Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

FIGURE 11
SURFACE AND
WETLANDS MAP



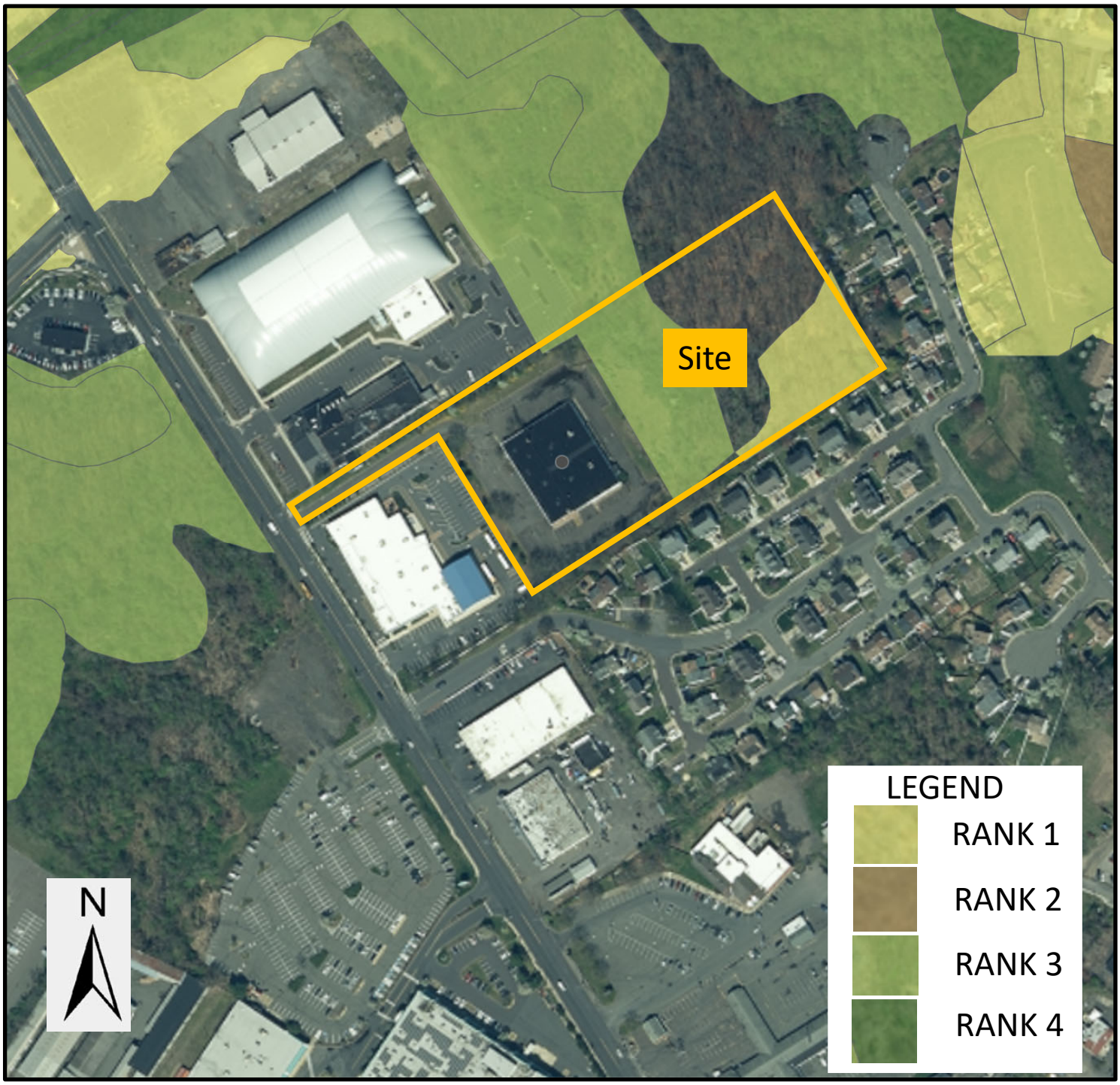
Source: FEMA FIRM, PANEL NO. 34021C0207F, JULY 20, 2016

APPROXIMATE SCALE
500 FEET

Nautilus Environmental Group, LLC
"HELPING YOU ATTAIN YOUR GOALS"
Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

FIGURE 12
FEMA MAP



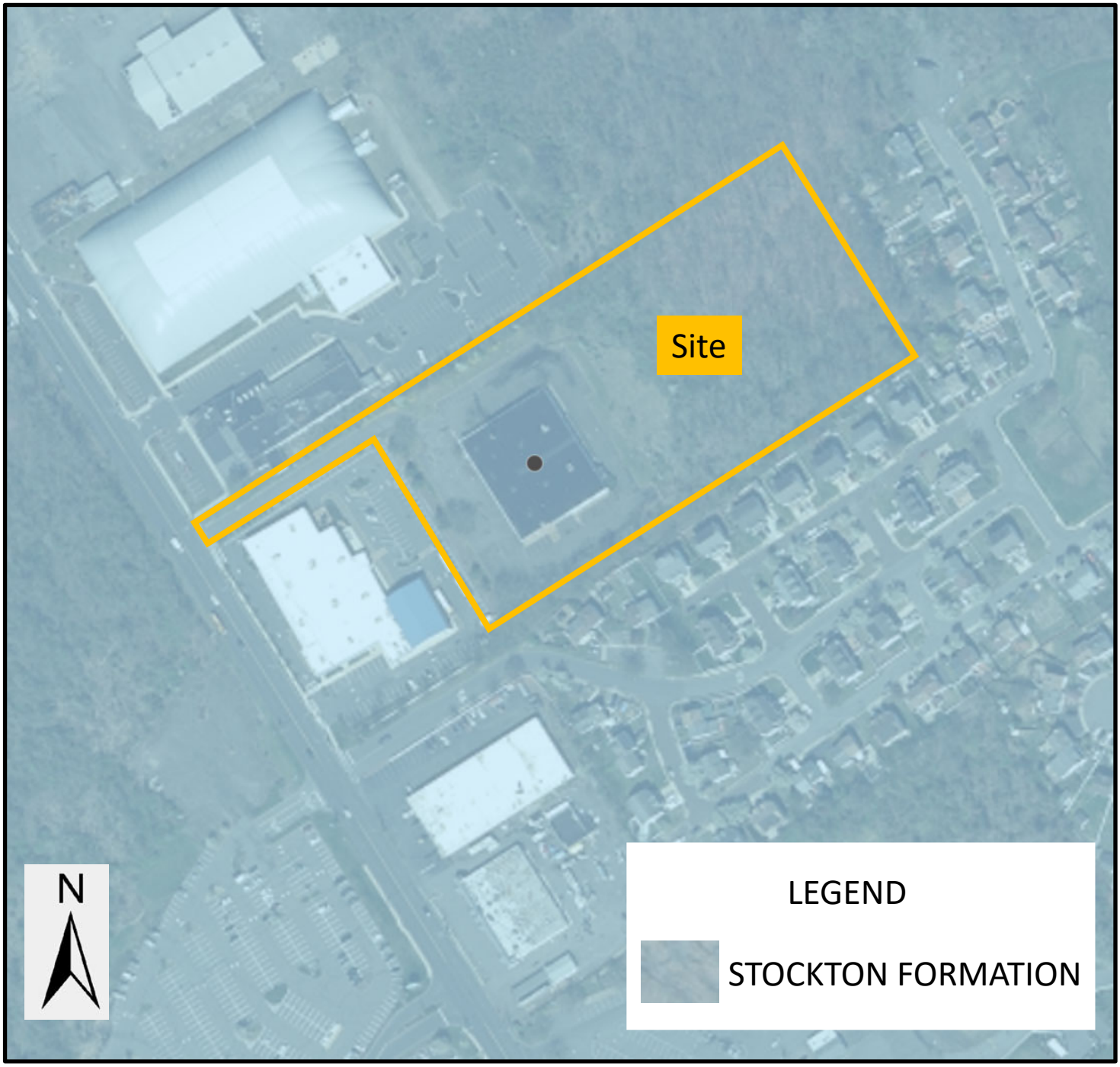
Source: NJDEP, NJGEOWEB, JULY 2021

APPROXIMATE SCALE
500 FEET

Nautilus Environmental Group, LLC
"HELPING YOU ATTAIN YOUR GOALS"
Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

FIGURE 13
NJDEP LANDSCAPE
PROJECT MAP



Source: NJDEP, NJGEOWEB, JULY 2021

APPROXIMATE SCALE
500 FEET

Nautilus Environmental Group, LLC
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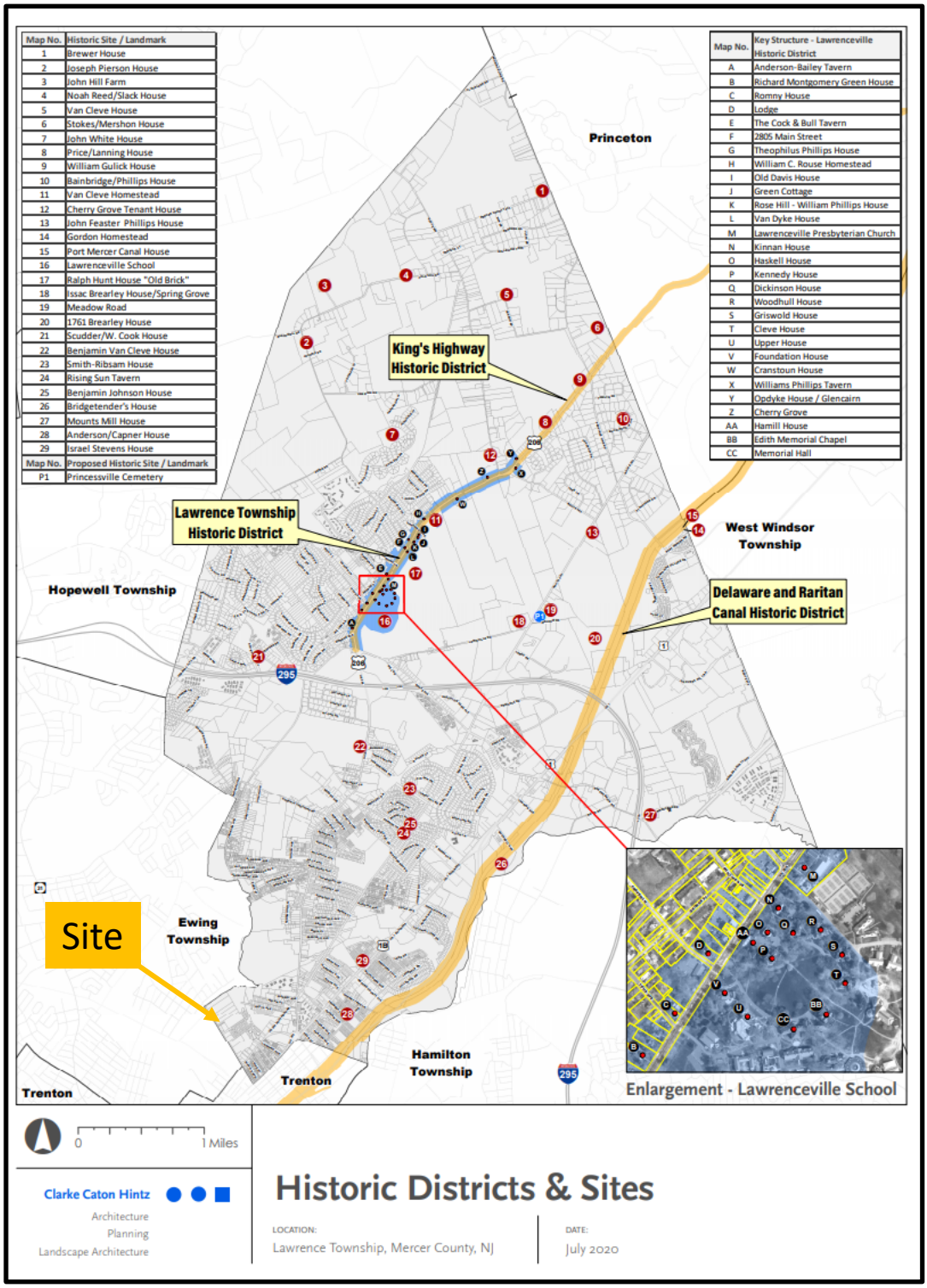
Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

FIGURE 14
AQUIFER MAP



Source: MASTER PLAN HISTORIC PRESERVATION PLAN ELEMENT LAWRENCE TOWNSHIP MERCER COUNTY, NEW JERSEY, AUGUST 17, 2020

Nautilus Environmental Group, LLC

"HELPING YOU ATTAIN YOUR GOALS"
Nautilus Environmental Group, LLC
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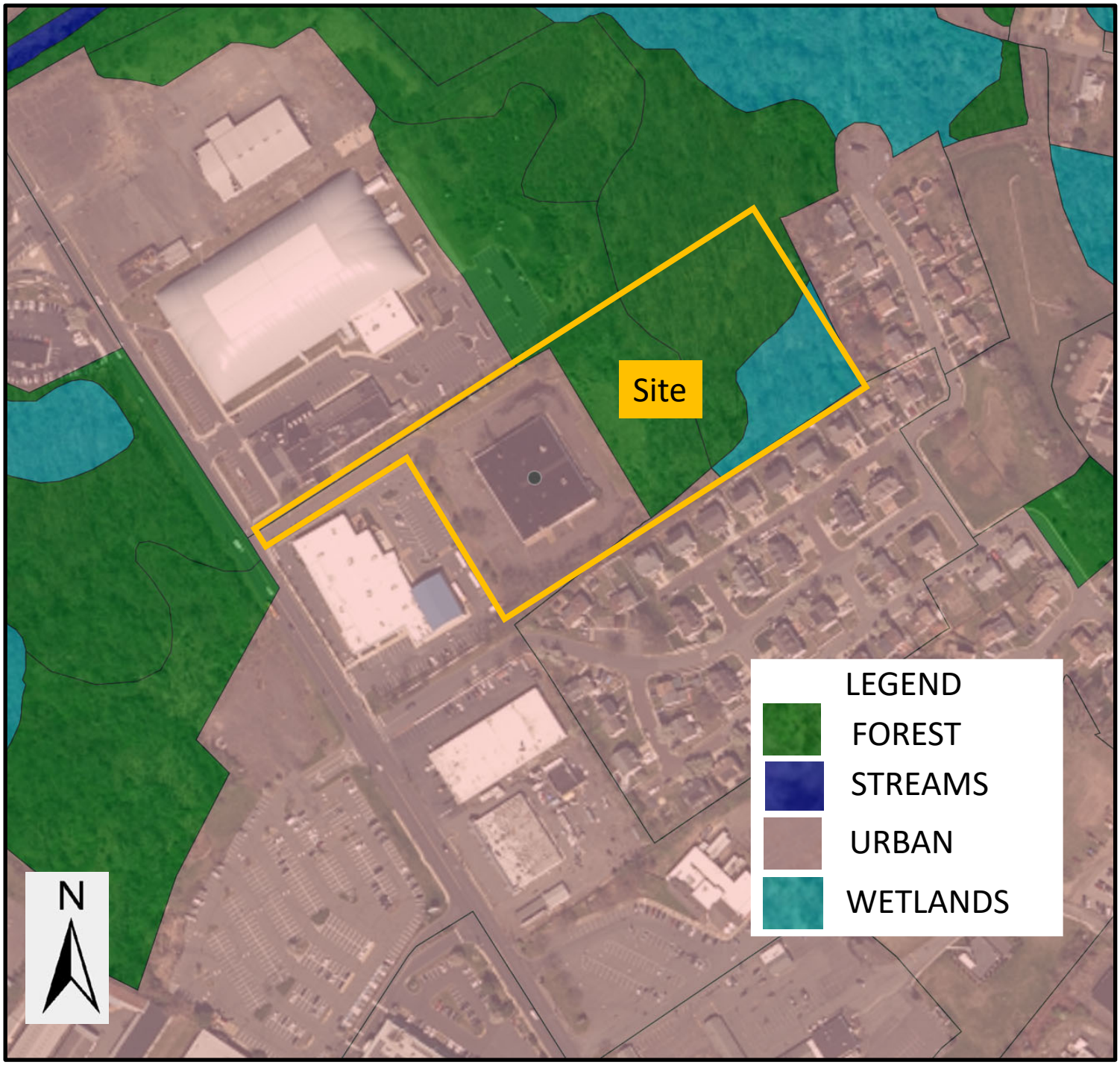
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

FIGURE 15
HISTORIC DISTRICTS AND SITES MAP



Source: NJDEP, NJ-GEOWEB, JULY 2021

APPROXIMATE SCALE
500 FEET

Nautilus Environmental Group, LLC
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Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

FIGURE 16
LAND USE MAP

Appendix C: Photographs

1 Adjacent property to the west across Spruce Street

2 Adjacent properties to the north

Nautilus Environmental Group, LLC

"HELPING YOU ATTAIN YOUR GOALS"

Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

PHOTOGRAPHS

3 Adjacent property to the west

4 Subject Property along northern boundary

Nautilus Environmental Group, LLC

"HELPING YOU ATTAIN YOUR GOALS"

Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

PHOTOGRAPHS

5

Foreground: Subject Property
Background: Adjacent property to the west

6

Subject Property

Nautilus Environmental Group, LLC

"HELPING YOU ATTAIN YOUR GOALS"
Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

PHOTOGRAPHS

7 Subject Property

8 Subject Property

Nautilus Environmental Group, LLC

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Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

PHOTOGRAPHS

9 Subject Property

10 Foreground: Subject Property
Background: Adjacent property to the south

Nautilus Environmental Group, LLC
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Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

PHOTOGRAPHS

11

Foreground: Subject Property
Background: Adjacent property to the west

12

Subject Property

Nautilus Environmental Group, LLC

"HELPING YOU ATTAIN YOUR GOALS"
Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

PHOTOGRAPHS

13

Foreground: Subject Property
Background: Adjacent property to the north

14

Adjacent property to the southeast

Nautilus Environmental Group, LLC

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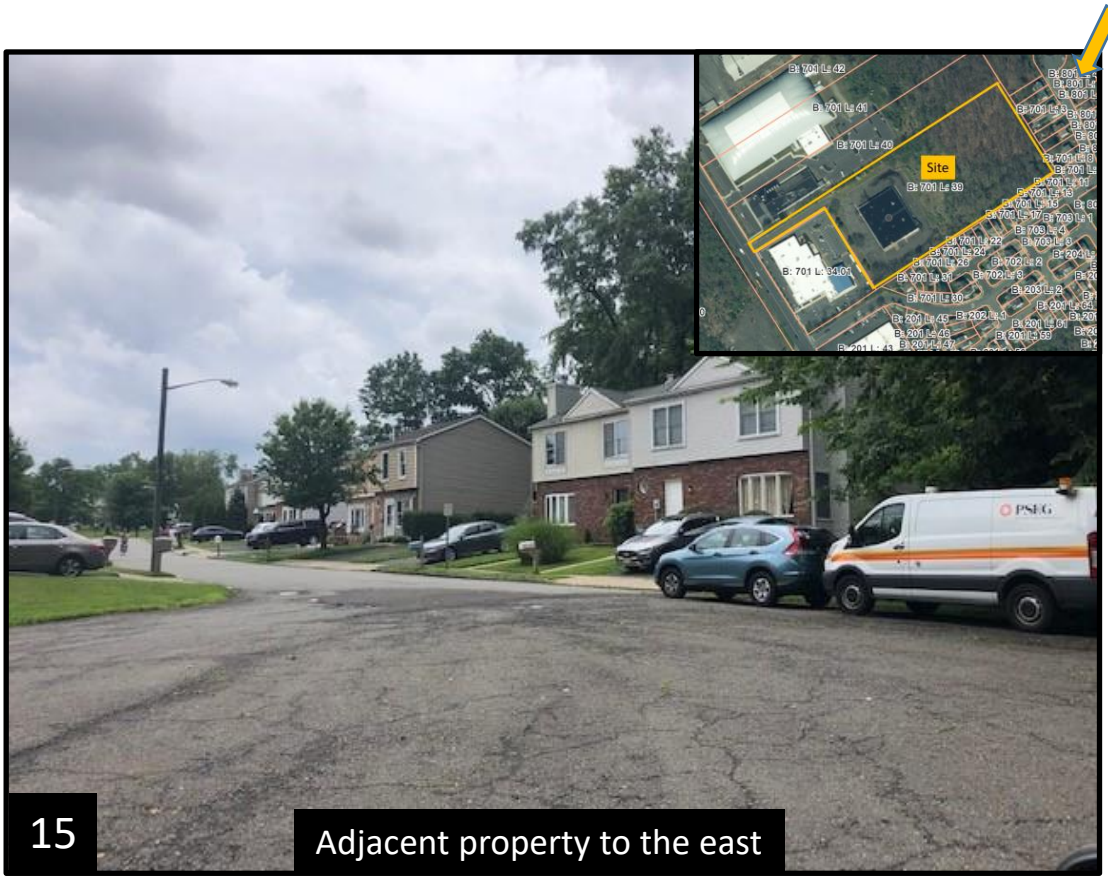
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

PHOTOGRAPHS



15 Adjacent property to the east

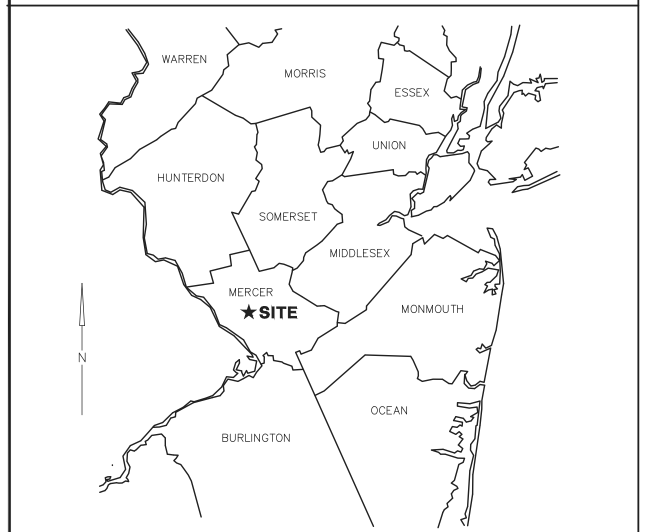
Nautilus Environmental Group, LLC
"HELPING YOU ATTAIN YOUR GOALS"
Nautilus Environmental Group, LLC
15 Quaker Road
Princeton Junction, NJ 08550

EIS
1052 SPRUCE STREET
LAWRENCE TOWNSHIP, NJ

PHOTOGRAPHS

Appendix D: Engineering Design Set

REGIONAL MAP NO SCALE



PRELIMINARY AND FINAL

SITE PLAN

FOR

SPRUCE STREET APARTMENTS

LOTS 39 IN BLOCK 701

SITUATE IN

LAWRENCE TOWNSHIP
MERCER COUNTY, NEW JERSEY

PREPARED BY
HOPEWELL VALLEY ENGINEERING, P.C.
1600 REED ROAD, SUITE A
PO BOX 710
PENNINGTON, N.J. 08534-3613

OWNER/APPLICANT

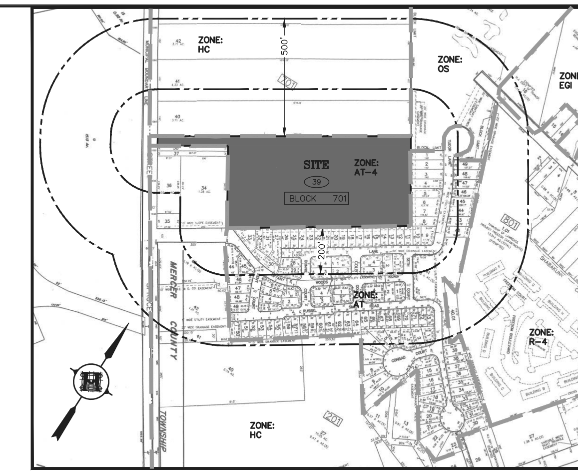
1052 SPRUCE LLC
1333 BRUNSWICK AVE
SUITE 200
LAWRENCEVILLE, NJ 08648

ISSUANCE DATED: 11/18/21

LAST REVISED: ____________

INDEX OF DRAWINGS

1 – COVER SHEET
2 – LAYOUT CONTROL PLAN
3 – GRADING AND STORMWATER PLAN
4 – UTILITY PLAN
5 – TREE PROTECTION & LANDSCAPING PLAN
6 – LANDSCAPING PLAN
7 – LIGHTING PLAN
8 – CONSTRUCTION DETAILS
9 – CONSTRUCTION DETAILS
10 – STORM PROFILES AND INLET DETAILS
11 – SANITARY PROFILES AND DETAILS
12 – REFUSE TRUCK CIRCULATION PLAN
13 – FIRE TRUCK CIRCULATION PLAN
14 – MOVING TRUCK CIRCULATION PLAN



KEY MAP SCALE: 1"=300'

EXPECTED REGULATORY PERMITS AND APPROVALS

1. LAWRENCE TOWNSHIP PLANNING BOARD SITE PLAN AND MINOR SUBDIVISION
2. MERCER COUNTY PLANNING BOARD
3. LAWRENCE TOWNSHIP SOIL DISTURBANCE
4. DELAWARE AND RARITAN CANAL COMMISSION ZONE 'B' CERTIFICATION
5. NJDEP WETLANDS GENERAL PERMIT #11 – STORMWATER OUTFALLS
6. EWING–LAWRENCE SEWERAGE AUTHORITY
7. NJDEP TREATMENT WORKS APPROVAL
8. TRENTON WATER WORKS
9. NJDEP WATER MAIN EXTENSION
10. PSE&G ELECTRIC AND GAS CONNECTIONS

LAWRENCE TOWNSHIP PROPERTY OWNERS LIST 1052 Spruce Street, LLC (LAWRENCE WATER) WITHIN 200' OF:
Block 701, Lot 39

August 5, 2021 LIST OBTAINED FROM TOWNSHIP OF LAWRENCE

BLOCK	LOT	OWNER NAME	ADDRESS	CITY, STATE, ZIP
201	43	O'DONNELL, JOSEPH E	1010 SPRUCE STREET	LAWRENCEVILLE, NJ 08648
201	44	WITT, MARY JANE	2 TIFFANY WOODS ROAD	LAWRENCEVILLE, NJ 08648
201	45	BURYAK, ALLA	4 TIFFANY WOODS ROAD	LAWRENCE TOWNSHIP, NJ 08648
201	46	BRADSHAW, MARVA M & WATTS, GERALDINE	1 KENT COURT	LAWRENCEVILLE, NJ 08648
202	6	MIGA, WLADYSLAWA	2 KENT COURT	LAWRENCEVILLE, NJ 08648
701	1	BEN, PAUL	51 TUDOR LANE	LAWRENCEVILLE, NJ 08648
701	2	LELENIEWSKI, KATARZYNA	49 PINE KNOLL DRIVE	LAWRENCEVILLE, NJ 08648
701	3	GLINSKA, SYLVIA	18 COLONIAL LAKE DR	LAWRENCEVILLE, NJ 08648
701	4	BORKOWSKI, MARIUSZ &SZADY, MALGORZATA	45 TUDOR LANE	LAWRENCE TOWNSHIP, NJ 08648
701	5	ROCAFORT, RODELIO M & EDWINA	43 TUDOR LANE	LAWRENCEVILLE, NJ 08648
701	6	ROBERSON, JAZMEN	41 TUDOR LANE	LAWRENCE LAWRENCE, NJ 08648
701	7	ZHANG LI & ZIYAO MA	39 TUDOR COURT	LAWRENCE TOWNSHIP, NJ 08648
701	8	JAKOWIAK, JULIA	37 TUDOR LANE	LAWRENCE TOWNSHIP, NJ 08648
701	9	CULLUM, NAOMI E	35 TUDOR LANE	LAWRENCEVILLE, NJ 08648
701	10	CZERWINSKI, WOJCIECH & GRASYNA	33 TUDOR LANE	LAWRENCEVILLE, NJ 08648
701	11	PALANT, LARRY	31 TUDOR LANE	LAWRENCEVILLE, NJ 08648
701	12	OHR, MORGAN W	29 TUDOR LANE	LAWRENCE TOWNSHIP, NJ 08648
701	13	ZATE, SANTOS E & MARIA E	27 TUDOR LANE	LAWRENCEVILLE, NJ 08648
701	14	D'SOUZA, JOVITA	25 TUDOR LANE	LAWRENCEVILLE, NJ 08648
701	15	BRAND, KATHLEEN	23 TUDOR LANE	LAWRENCEVILLE, NJ 08648
701	16	THE BANK OF NY MELLON	1 MORTGAGE WAY	MOUNT LAUREL NJ 08054
701	17	HILL, CRYSTAL L	19 TUDOR LANE	LAWRENCE TOWNSHIP, NJ 08648
701	18	LIKHANGA, EUPHRESIA	17 TUDOR LANE	LAWRENCE TOWNSHIP, NJ 08648
701	19	NABEEL, ROZINA & CHAUDHARY, NABEEL A.	15 TUDOR LANE	LAWRENCEVILLE, NJ 08648
701	20	SOTOVANDO, INGRID	13 TUDOR LANE	LAWRENCEVILLE, NJ 08648
701	21	PINEDA-CRUZ ENTERPRISE LLC	53 WINWOOD RD	LAWRENCEVILLE, NJ 08648
701	22	DIWAN, ANURAG	22 AVE @PRT IMPERIAL #404	WEST NEW YORK, NJ 07093
701	23	JONES, MICHELLE L	7 TUDOR LANE	LAWRENCEVILLE, NJ 08648
701	24	TORRES, VERONICA	5 TUDOR LANE	LAWRENCEVILLE, NJ 08648
701	25	PATEL, ARPAN	21 WILSON WAY N	PRINCETON JCT, NJ 08550
701	26	LITTLE, KRISTIN N.	1 TUDOR LANE	LAWRENCEVILLE, NJ 08648
701	27	SANTOS, ADOLFO L & LETICIA P	7 TIFFANY WOODS RD	LAWRENCEVILLE, NJ 08648
701	28	RODRIGUEZ, KAMORA & ALBERTO	1 BONNIE COURT	LAWRENCEVILLE, NJ 08648
701	29	SHARMA, MADHUSOODAN	3 BONNIE COURT	LAWRENCEVILLE, NJ 08648
701	30	TIFFANY WOODS HOA C/O P&A MANAGEMENT	28 STATE HIGHWAY 33	HAMILTON, NJ 08619
701	31	MARCINCINOVA, MICHAELA	192 SYABROOK AVE	HAMILTON, NJ 08619
701	32	SOBERA, ELZBIETA	3 TIFFANY WOODS RD	LAWRENCEVILLE, NJ 08648
701	33	CHILINSKI, ROBERT	1 TIFFANY WOODS RD	LAWRENCEVILLE, NJ 08648
701	34.01	BOYS & GIRLS CLUB OF TRENTON	212 CENTRE ST	TRENTON, NJ 08611
701	40.01	SPRUCE STREET PARTNERS, LLC	7 NORTH WILLOW ST #8B	MONTCLAIR, NJ 07042
702	1	SINGH, DHARAM & VIPULABEN RADIA	1 COLBY COURT	LAWRENCEVILLE, NJ 08648
702	2	PATEL, NILESH & CHHAYAN	3 COLBY COURT	LAWRENCEVILLE, NJ 08648
702	3	THORPE, IVAN & ANDREA	4 BONNIE COURT	LAWRENCEVILLE, NJ 08648
702	4	DYOUS, KEISHA	2 BONNIE COURT	LAWRENCEVILLE, NJ 08648
703	1	JOHN-CHARLES, TINA & JULIUS JOHN	28 TUDOR LANE	LAWRENCEVILLE, NJ 08648
703	2	ANNAPALAI, P & SATHAPPAN, R	26 TUDOR LANE	LAWRENCEVILLE, NJ 08648
703	3	YE, AMY	4 COLBY COURT	LAWRENCEVILLE, NJ 08648
703	4	CALLEJAS, YIMER & MARIA	2 COLBY COURT	LAWRENCEVILLE, NJ 08648
801	41	TIFFANY WOODS HOA C/O P&A MANAGEMENT	28 STATE HIGHWAY 33	HAMILTON, NJ 08619
801	42	ZAGAJEWSKI, JANUSZ & MARIA	36 TUDOR LANE	LAWRENCEVILLE, NJ 08648
801	43	CHILINSKI, TOMESZ & RENATA	38 TUDOR LANE	LAWRENCEVILLE, NJ 08648
801	44	WILLIAMS, CLIFTON L IV & RACQUEL TTEES	4418 AMBERLEAF WALK	LILBURN, GA 30047
801	45	SZORC, PIOTR	42 TUDOR LANE	LAWRENCEVILLE, NJ 08648
801	46	SZAJA, PRZEMYSLAW	44 TUDOR LANE	LAWRENCEVILLE, NJ 08648
801	47	PETERS, GROVES & GENEVA	46 TUDOR LANE	LAWRENCEVILLE, NJ 08648
801	48	SREFINKO, ROMAN & KHRYSTYNA	48 TUDOR LANE	LAWRENCEVILLE, NJ 08648
801	49	LUTO, MIECZYLAW & THERESA	50 TUDOR LANE	LAWRENCEVILLE, NJ 08648
902	17	TOWNSHIP OF LAWRENCE	2207 LAWRENCEVILLE RD	LAWRENCEVILLE, NJ 08648

EWING TOWNSHIP PROPERTY OWNERS LIST 1052 Spruce Street, LLC (LAWRENCE WATER) WITHIN 200' OF:
Block 701, Lot 39

11/18/21 LIST OBTAINED FROM REALQUEST.COM

13.01	10	LEVIN, JANICE H.	PO BOX 326	PLAINSFIELD, NJ 07061
		AGENCIES REQUIRING NOTICE		
	CORPORATE SECRETARY	EWING-LAWRENCE SEWERAGE AUTHORITY	600 WHITEHEAD ROAD	LAWRENCEVILLE NJ 08648
	CORPORATE SECRETARY	PUBLIC SERVICE ELECTRIC & GAS COMPANY	80 PARK PLAZA, 4B	NEWARK, NJ 07101
	DONNA SHORT	N.J. AMERICAN WATER	1025 LAUREL OAK ROAD	LAWRENCEVILLE NJ 08648
	ELIZABETH GAS COMPANY	ONE ELIZABETHTOWN PLAN	THIRD FLOOR EAST	UNION, NJ 07083-1975
	CORPORATE SECRETARY	TRENTON WATER WORKS	P.O. BOX 528	TRENTON, NJ 08604
	CORPORATE SECRETARY	VERIZON	540 BROAD STREET	NEWARK, NJ 07101
	JAMES BARBATO	AQUA WATER COMPANY	2875 ERIAL ROAD	ERIAL, NJ 08081
	GENERAL MANAGER	COMCAST CABLEVISION	940 PROSPECT STREET	TRENTON, NJ 08618
		RCN CORPORATION	105 CARNEGIE CENTER	PRINCETON, NJ 08540
	CORPORATE SECRETARY	AT&T	1 AT&T WAY	BEDMINSTER, NJ 07921
	MERCER COUNTY PLANNING BOARD	640 SOUTH BROAD STREET	P.O. BOX 8068	TRENTON, NJ 08650-8068
	CORPORATE SECRETARY	JERSEY CENTRAL POWER AND LIGHT	300 MADISON AVENUE	MORRISTOWN, NJ 07962
	R-O-W DEPARTMENT	SUN PIPE LINE COMPANY	1801 MARKET STREET, 26TH FLOOR	PHILADELPHIA, PA 19103-1699
	CORPORATE SECRETARY	TRANSCONTINENTAL GAS PIPE LINE CORPORATION	2800 POST OAK BOULEVARD	HOUSTON, TX 77056
	RIGHT-OF-WAY DEPARTMENT	SUNOCO PIPE LINE, L.P.	MONTELLO COMPLEX, 525 FRITZTOWN ROAD	SINKING SPRING, PA 19608
	COMMISSIONER	N.J. DEPARTMENT OF TRANSPORTATION	1035 PARKWAY AVENUE, CN 600	TRENTON, NJ 08625

ZONING REQUIREMENTS		
APARTMENT AND TOWNHOUSE 4 (AT–4) DISTRICT APARTMENT BUILDINGS ARE A PERMITTED USE		
	REQUIRED AT–4 ZONE	PROPOSED
LOT AREA (AC)	7	7.17±
BUILDABLE AREA (AC)	4	4.46±
MAX. GROSS DENSITY (UNITS/AC)	18	18
OPEN SPACE (%)	30	40
MIN. FRONTAGE (FT)	40	40
BUILDING SETBACK FROM PERIMETER (FT)	50	50.4±
PARKING SETBACKS (EXCLUDING ENTRANCE/EXIT)		
DRIVEWAY SETBACK (FT)	25	25
PARKING OR STREET (FT)	25	25
MAX. DWELLING UNITS IN ONE BUILDING (APARTMENTS)(UNITS)	27	26
BUILDING TO BUILDING SETBACKS		
FRONT OR BACK SETBACK (FT)	50	76
SIDE (FT)	20	23
FROM PARKING (FT)	5	6
MAX. BUILDING HEIGHT (FT/STORIES)	45/3	44.5/3
MAX. BUILDING LENGTH (FT)	240	139
MIN. APARTMENT SIZE (SF)	550	550
MIN. BALCONY SIZE (SF)	50	>50
MIN. COMMUNITY CENTER SIZE (SF)	3,500	3,600
MIN. ACTIVE/PASSIVE REC AREA SIZE (SF)	7,500	7,819
MIN. REQUIRED COAH UNITS	22	22

DEVELOPMENT DATA

PARKING PROVIDED = 245 SPACES (7 HC SPACES (ALL VAN) AS PER ADA)

DWELLING UNITS PROVIDED:
1 BEDROOM UNITS 69
2 BEDROOM UNITS 55
3 BEDROOM UNITS 5
TOTAL UNITS 129

PARKING REQUIREMENTS (RSIS REGULATIONS FOR GARDEN APARTMENTS):
69 ONE BEDROOM UNITS @ 1.8 SPACES PER UNIT = 124.2 SPACES
55 TWO BEDROOM UNITS @ 2.0 SPACES PER UNIT = 110.0 SPACES
5 THREE BEDROOM UNITS @ 2.1 SPACES PER UNIT = 10.5 SPACES

TOTAL REQUIRED = 244.7 SPACES (SAY 245)

WE HAVE PROVIDED 245 SPACES WHICH COMPLIES.

LEGEND

ITEM	EXISTING	PROPOSED
SIGN		
GUY POLE		
UTILITY POLE		
SANITARY SEWER		
STORM SEWER		
INLET SQ.	A B D E	A B D E
MANHOLE		
FIRE HYDRANT		
UTILITY VALVE		
CABLE LINE	C	C
WATER LINE	W	W
GAS LINE	G	G
ELECTRIC LINE	E	E
TELEPHONE LINE	T	T
ELECTRIC, TELEPHONE & CABLE LINES	ETC	ETC
CONTOUR LINES		100
GRADE ELEVATION	x100.0	x100.00
CURB		
OVERHEAD WIRE		

APPROVAL SIGNATURES

OWNER/APPLICANT
1052 SPRUCE LLC
1333 BRUNSWICK AVE
SUITE 200
LAWRENCEVILLE, NJ 08648

I/WE OWN THE PROPERTY AS DESIGNATED AND SHOWN HEREON, AND HEREBY APPROVE OF THIS PLAN.

OWNER/APPLICANT ____________ DATE 11-18-21

PLANNING BOARD CHAIRMAN ____________ DATE

PLANNING BOARD SECRETARY ____________ DATE

TOWNSHIP ENGINEER ____________ DATE

I HEREBY CERTIFY THAT I HAVE PREPARED THIS PLAN AND THAT TO THE BEST OF MY KNOWLEDGE ALL DIMENSIONS AND INFORMATION ARE CORRECT.

RUSSELL M. SMITH
N.J. PROFESSIONAL ENGINEER NO. 33065

ONE CALL — 811 Know what's below. Call before you dig.

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ENGINEERS, PLANNERS & LAND SURVEYORS
1600 Reed Road, Suite A
Pennington, NJ 08534-5002
Tel.: 609-745-5800
Fax: 609-745-5807
www.hopewellvalleyengineering.com

Date: 11/18/21
Scale: 1" = 30'
Dsgn: AWS Check: RMS
Proj: 1107570A FB: N/A
Dwg: SP01537C – NO VPS1

STATE OF NEW JERSEY RUSSELL M. SMITH No. GE33065 *LICENSED* PROFESSIONAL ENGINEER

COVER SHEET
OF
SPRUCE STREET APARTMENTS
LOT 39 IN BLOCK 701
SITUATE IN
LAWRENCE TOWNSHIP, MERCER COUNTY, NEW JERSEY

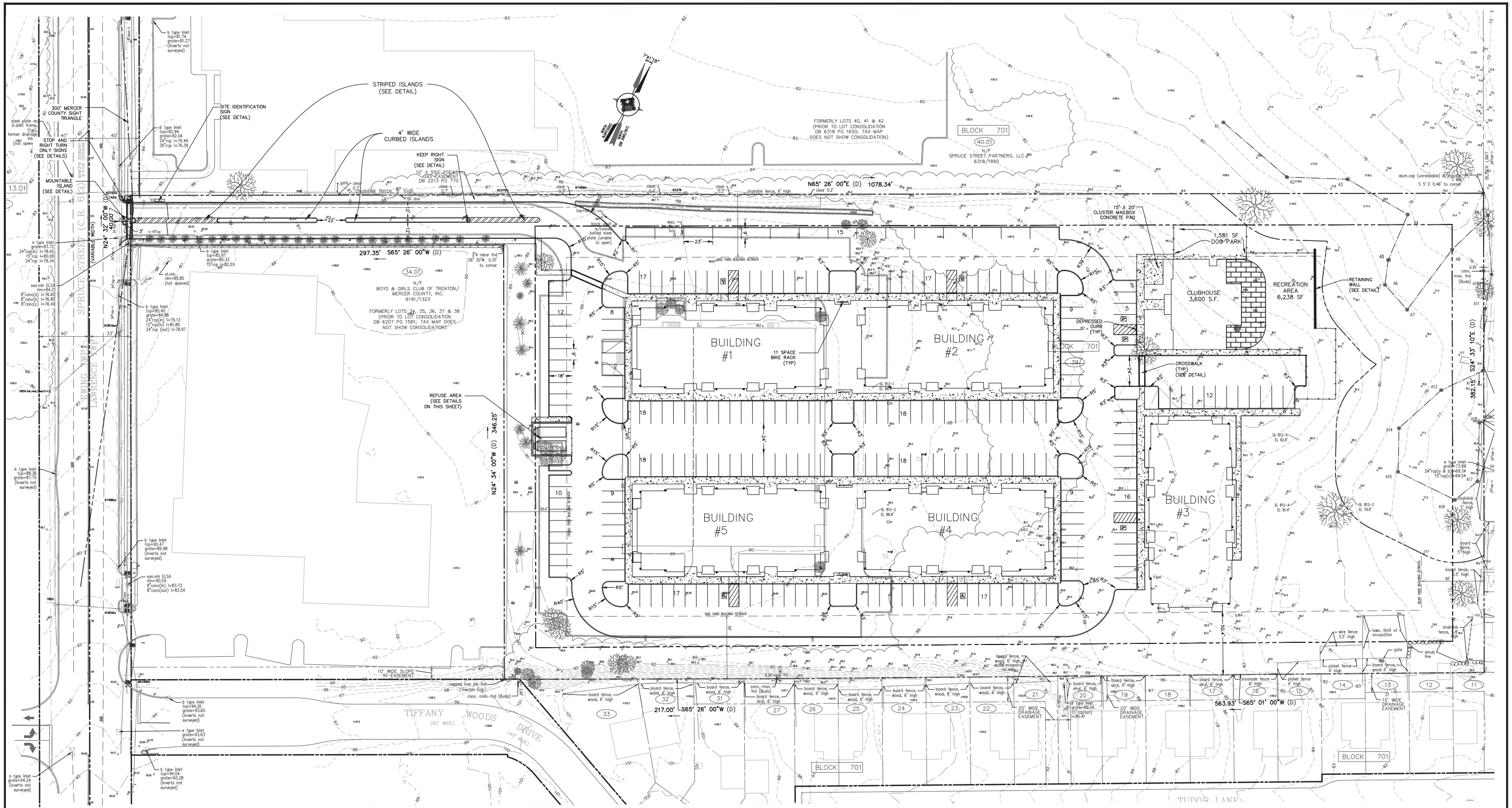
Digitally signed by Russell M Smith
Date: 2021.11.23 10:43:29 -05'00'

RUSSELL M. SMITH
N.J. PROFESSIONAL ENGINEER NO. 33065

Sheet 1 of 14

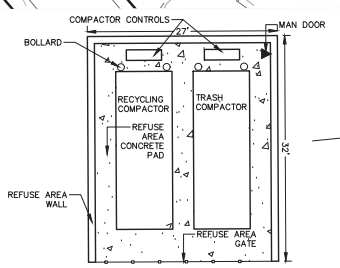
NO.	DATE	DESCRIPTION OF REVISION	BY	CHK'D

PLOT DATE:11/23/2021 10:11:06 AM FILE PATH:F:\1107537A\1107537C\DWG\SP01537C – NO VPS1.dwg USER:Andrew Smith

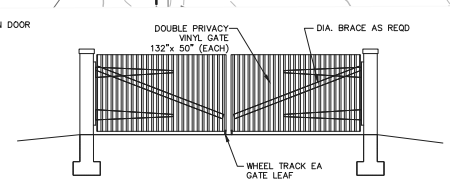


GENERAL NOTES:

1. PROPERTY IS LOCATED IN THE "AT-4" APARTMENT AND TOWNHOUSE DISTRICT AND IS KNOWN AS LOT 39, BLOCK 701 AS SHOWN ON THE LAWRENCE TOWNSHIP TAX MAP, SHEETS 2, 7 AND 8. THE LOT CONSISTS OF 7.17± AC.
2. PROPERTY IS SUBJECT TO A TITLE SEARCH AND SUBJECT TO ANY RESTRICTIONS OR EASEMENTS OF RECORD.
3. REFERENCE PLANS:
   - A. A SURVEY ENTITLED "BOUNDARY AND TOPOGRAPHIC SURVEY FOR SPRUCE STREET PARTNERS, LLC, LOT 39 BLOCK 701" PREPARED BY HOPEWELL VALLEY ENGINEERING P.C. DATED 06/21/21 AND LAST REVISED 09/09/21.
   - B. ARCHITECTURAL PLANS PREPARED BY vlbjr+ DATED 07/13/21.
   - C. TOWNSHIP OF LAWRENCE TAX MAP SHEETS 2, 7, 8 AND 9.
   - D. NJDEP LETTER OF INTERPRETATION FILE NUMBER 1113-07-0007.1 (FWW190001) DATED JUNE 2, 2020.
5. REFER TO COVER SHEET FOR LEGEND OF STANDARD SYMBOLS USED HEREON.
6. UNLESS OTHERWISE NOTED ALL MATERIALS AND METHODS OF CONSTRUCTION USED FOR SITE IMPROVEMENTS SHALL CONFORM TO THE REQUIREMENTS AS SPECIFIED IN THE NEW JERSEY DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, CURRENT VERSION.
7. VERTICAL DATUM BASED ON NORTH AMERICAN VERTICAL DATUM (88) [NAVD(88)].
8. ANY CONVEYANCE OF THIS PROJECT PRIOR TO ITS COMPLETION WILL TRANSFER FULL RESPONSIBILITY FOR COMPLIANCE WITH THE CERTIFIED PLANS TO ANY SUBSEQUENT OWNERS.
9. THIS SET OF PLANS HAS BEEN PREPARED FOR PURPOSES OF MUNICIPAL AND AGENCY REVIEW AND APPROVAL. THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL CONDITIONS OF APPROVAL HAS BEEN SATISFIED ON THE DRAWINGS AND EACH DRAWING HAS BEEN REVISED TO INDICATE " ISSUED FOR CONSTRUCTION."
10. ALL TRAFFIC CONTROL SIGNS AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND/OR THE UNIFORM CONSTRUCTION CODE.



REFUSE AREA DETAIL
NO SCALE



REFUSE AREA GATE DETAIL
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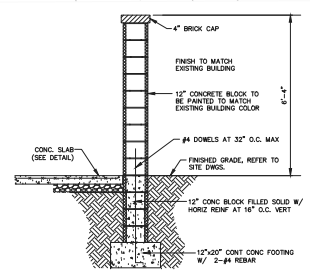
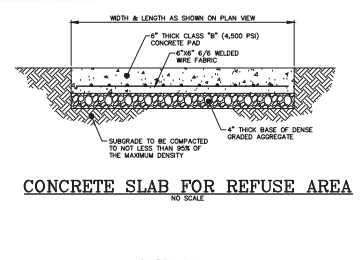


REFUSE AREA WALL SECTION
NO SCALE



CONCRETE SLAB FOR REFUSE AREA
NO SCALE

GRAPHIC SCALE: FEET (0, 30', 60')

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Dwg: SP01537C - VPS1

LAYOUT CONTROL PLAN
FOR
SPRUCE STREET APARTMENTS
LOT 39 IN BLOCK 701
SITUATE IN
LAWRENCE TOWNSHIP, MERCER COUNTY, NEW JERSEY

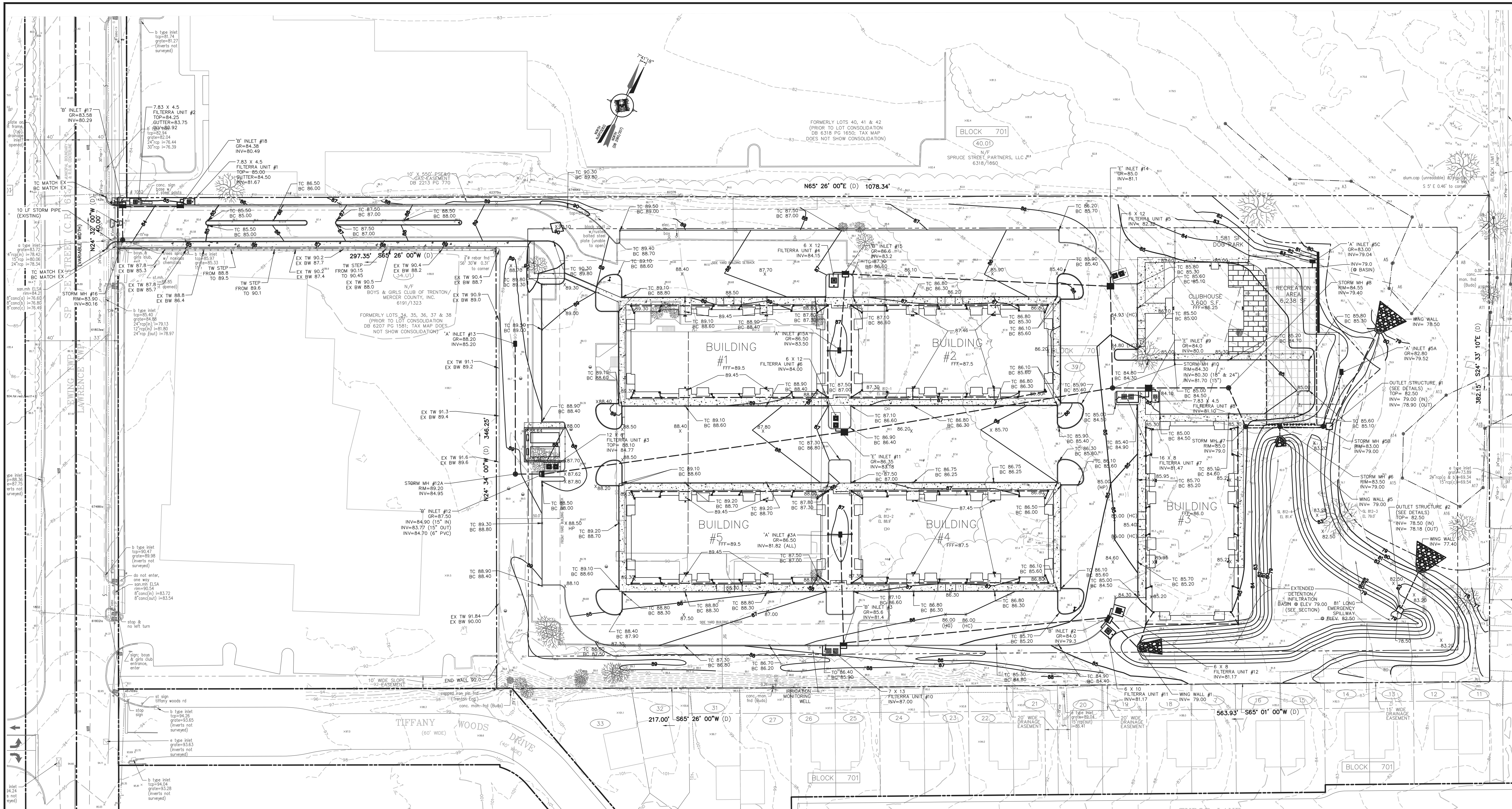
RUSSELL M. SMITH No. GE33065 N.J. LICENSED PROFESSIONAL ENGINEER

Digitally signed by Russell M Smith
Date: 2021.11.23 10:33:33 -05'00'

RUSSELL M. SMITH
N.J. PROFESSIONAL ENGINEER NO. 33065

Sheet 2 of 14

PLOT DATE: 11/23/2021 10:14:43 AM FILE PATH: Y:\1107537C\DWG\SP01537C - VPS1.dwg LOGIN: Andrew Smith



GRADING NOTES

1. ALL ELEVATIONS SHOWN HEREON ARE EXISTING OR FINISHED PAVEMENT GRADES.
2. THE FOLLOWING MINIMUM GRADES ARE REQUIRED UNLESS OTHERWISE SPECIFIED:
   - 2% OVERLAND IN LAWN AREAS
   - 1% IN GRASS SWALES
   - 1.5% OVERLAND IN PARKING AREAS
   - 0.75% IN CURBED GUTTERLINES
3. SOIL STABILIZATION SHALL BE IN ACCORDANCE WITH APPROVED SOIL EROSION AND SEDIMENT CONTROL PLANS AND / OR MERCER COUNTY SOIL CONSERVATION DISTRICT STANDARDS.
4. BASEMENTS ARE NOT PROPOSED.
5. LIGHTWEIGHT CONSTRUCTION EQUIPMENT SHALL BE USED BY THE CONTRACTOR WHEN GRADING PROPOSED OPEN SPACES, BASIN AND LAWN AREAS.

SPECIFICATIONS FOR DETENTION BASIN BERM

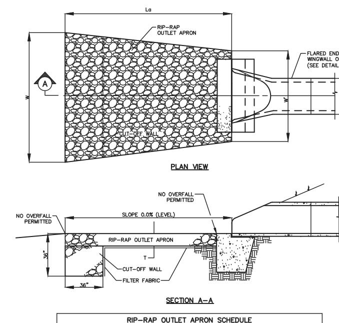
1. AREAS UNDER THE EMBANKMENT AND ANY STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL, ROOTS OR OTHER OBJECTIONABLE MATERIAL. UNLESS OTHERWISE NOTED, TO FACILITATE CLEAN OUT AND RESTORATION, THE BASIN AREA WILL BE CLEARED OF ALL BRUSH AND EXCESS TREES.
2. THE SUITABILITY AND ACCEPTABILITY OF ALL FILL MATERIAL WILL BE DETERMINED BY REGULAR PERIODIC SOIL ANALYSIS AND COMPACTION TESTS WHICH SHALL BE MADE BY QUALIFIED SOILS ENGINEER.
3. TESTS FOR SOIL ANALYSIS, MOISTURE CONTENT, AND COMPACTION TO BE CONDUCTED IN ACCORDANCE WITH THE LATEST ASTM STANDARDS.
4. IT IS RECOMMENDED THAT MATERIALS USED FOR THE IMPERVIOUS CORE BE COMPRISED OF ONE OF THE FOLLOWING SOILS AS DESIGNATED BY THE UNIFIED SOIL SYSTEM: GC, GM, SC, SM, CL, CH, ML, MH.
5. THE FILL SHALL BE CONSTRUCTED IN 6 INCH LIFTS AND SHALL BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL SO THAT SMOOTH HORIZONTAL PLANES ARE NOT BUILT INTO THE FILL STRUCTURE. SMOOTH HORIZONTAL PLANES CAN BE AVOIDED BY SCARIFYING OR USE OF SHEEPSFOOT ROLLERS.
6. THE EMBANKMENT SHALL BE CONSTRUCTED TO A MINIMUM ELEVATION OF 5% HIGHER THAN THE DESIGN HEIGHT TO ALLOW FOR SETTLEMENT WHEN MECHANICAL COMPACTORS ARE USED FOR COMPACTION.
7. IF SUFFICIENT ACCEPTABLE MATERIAL IS NOT AVAILABLE ON THE SITE TO PROPERLY COMPLETE THE FILL, THE CONTRACTOR IS RESPONSIBLE TO ACQUIRE ADEQUATE ACCEPTABLE MATERIAL.

GENERAL NOTES FOR DETENTION BASINS

1. THE DESIGN TOP ELEVATION OF ALL DAMS AND EMBANKMENTS, AFTER ALL SETTLEMENT HAS TAKEN PLACE SHALL BE 1' GREATER THAN THE MAXIMUM WATER SURFACE ELEVATION IN THE BASIN RESULTING FROM THE PASSAGE OF THE 100 YEAR STORM THROUGH THE EMERGENCY SPILLWAY. THEREFORE,THE DESIGN HEIGHT OF THE DAM OR EMBANKMENT, DEFINED AS THE VERTICAL DISTANCE MEASURED FROM THE TOP OF BERM DOWN TO THE BOTTOM OF THE DEEPEST CUT, SHALL BE INCREASED BY THE AMOUNT NEEDED TO INSURE THAT THE DESIGN ELEVATION WILL BE MAINTAINED FOLLOWING SETTLEMENT. THIS INCREASE SHALL NOT BE LESS THAN 5 PERCENT.
2. THE FILL MATERIAL IN ALL EARTHEN DAMS AND EMBANKMENTS SHALL BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DENSITY OBTAINED FROM COMPACTION TESTS PERFORMED BY THE APPROPRIATE METHOD IN ASTM D698.
3. ALL EARTH FILL SHALL BE FREE FROM BRUSH, ROOTS, AND OTHER ORGANIC MATERIAL SUBJECT TO DECOMPOSITION.
4. ALL POURED CONCRETE STRUCTURES SHALL CONTAIN REINFORCING STEEL. ALL CONSTRUCTION JOINTS SHALL BE WATERTIGHT.
5. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 1" 45 DEGREE CHAMFER UNLESS OTHERWISE NOTED.
6. THE BASIN SHALL BE TOPSOILED, SEEDED, AND MULCHED IMMEDIATELY FOLLOWING GRADING OF THE SAME.
7. ALL PRECAST CONCRETE STRUCTURES SHALL CONTAIN REINFORCING STEEL AND BE DESIGNED FOR HS–20 LOADING. SHOP DRAWINGS SHALL BE SUBMITTED TO THE TOWNSHIP ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
8. THE DETENTION BASIN SHALL SERVE AS A TEMPORARY SEDIMENT BASIN DURING CONSTRUCTION. IMMEDIATELY UPON COMPLETION OF ALL CONSTRUCTIONJ AND FINAL STABILIZATION OF ALL EXPOSED AREAS, THE SEDIMENT BASIN SHALL HAVE ALL SILT REMOVED, BE RESHAPED TO THE REQUIRED DETENTION BASIN DIMENSIONS AND STABILIZED ACCORDINGLY.

STORM SEWER NOTES

1. ALL PRECAST DRAINAGE STRUCTURES SHALL CONTAIN REINFORCING STEEL AND BE DESIGNED FOR HS–20 LOADING.
2. SHOP DRAWINGS OF ALL PRECAST DRAINAGE STUCTURES SHALL BE SUBMITTED TO THE TOWNSHIP ENGINEER FOR APPROVAL PRIOR TO INSTALLATION. ALL PRECAST STRUCTURES SHALL COMPLY WITH THE NEW JERSEY DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST REVISION.
3. ALL SUBSURFACE DRAINS ENCOUNTERED DURING CONSTRUCTION SHALL BE EXTENDED AND CONNECTED TO THE NEAREST STORM DRAIN STRUCTURE.
4. ANY DRAINAGE STRUCTURE THAT IS TO BE LEFT UNCOVERED FOR MORE THAN 8 HOURS SHALL BE PROTECTED WITH BARRICADES IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES OR OSHA STANDARDS.
5. CONDUIT OUTLET PROTECTION SHALL BE INSTALLED PRIOR TO THE CONSTRUCTION OF STORM SEWER PROGRESSES IN THE ACCORDANCE WITH THE SEQUENCE OF CONSTRUCTION.
6. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AS CONSTRUCTION OF STORM SEWER PROGRESSES IN ACCORDANCE WITH THE SEQUENCE OF THE CONSTRUCTION.
7. ALL STORM SEWER CONSTRUCTION SHALL BEGIN AT THE LOWEST ELEVATION.
8. NO STORM SEWER SHALL BE CONSTRUCTED IN ADVANCE OF THE STORM WATER DETENTION BASIN CONSTRUCTION.
9. ALL STORM SEWERS AND APPURTENANCES SHALL BE CONSTRUCTED IN WITH THE NEW JERSEY DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, LATEST REVISION.
10. STORM SEWER AND LENGTHS INDICATED ON PLANS AND PROFILES REPRESENT LENGTHS FORM CENTERLINE OF STRUCTURE TO CENTERLINE OF STRUCTURE.

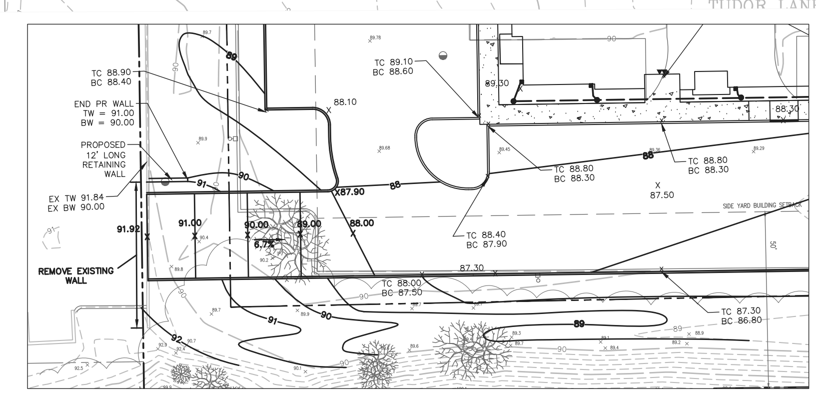


RIP–RAP OUTLET APRON SCHEDULE						
OUTLET NO.	La (FT.)	W' (FT.)	W (FT.)	d50 STONE (IN.)	THICKNESS T (IN.)	COMMENTS
WW #1	18.0	5	12.0	4	8	W/ FILTER FABRIC
WW #5	7.0	6	9.0	4	8	W/ FILTER FABRIC
FROM OS #1	20.0	6	26.0	4	8	W/ FILTER FABRIC
FROM OS #2	20.0	6	26.0	4	8	W/ FILTER FABRIC

NOTE:
THE RIP–RAP SHALL BE COMPOSED OF A WELL–GRADED MIXTURE SUCH THAT 50% OF THE MIXTURE BY WEIGHT SHALL BE SMALLER THAN THE STONE SIZE DESIGNATED AS d50.

CONDUIT OUTLET PROTECTION

NO SCALE



FUTURE BOYS AND GIRLS CLUB DRIVEWAY CONNECTION

GRAPHIC SCALE: FEET (0, 30', 60')

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GRADING AND STORMWATER PLAN
FOR
SPRUCE STREET APARTMENTS
LOT 39 IN BLOCK 701
SITUATE IN
LAWRENCE TOWNSHIP, MERCER COUNTY, NEW JERSEY

STATE OF NEW JERSEY RUSSELL M. SMITH No. GE33065 *LICENSED* PROFESSIONAL ENGINEER

Digitally signed by Russell M Smith
Date: 2021.11.23 10:32:47 -05'00'

RUSSELL M. SMITH
N.J. PROFESSIONAL ENGINEER NO. 33065

Sheet 3 of 14

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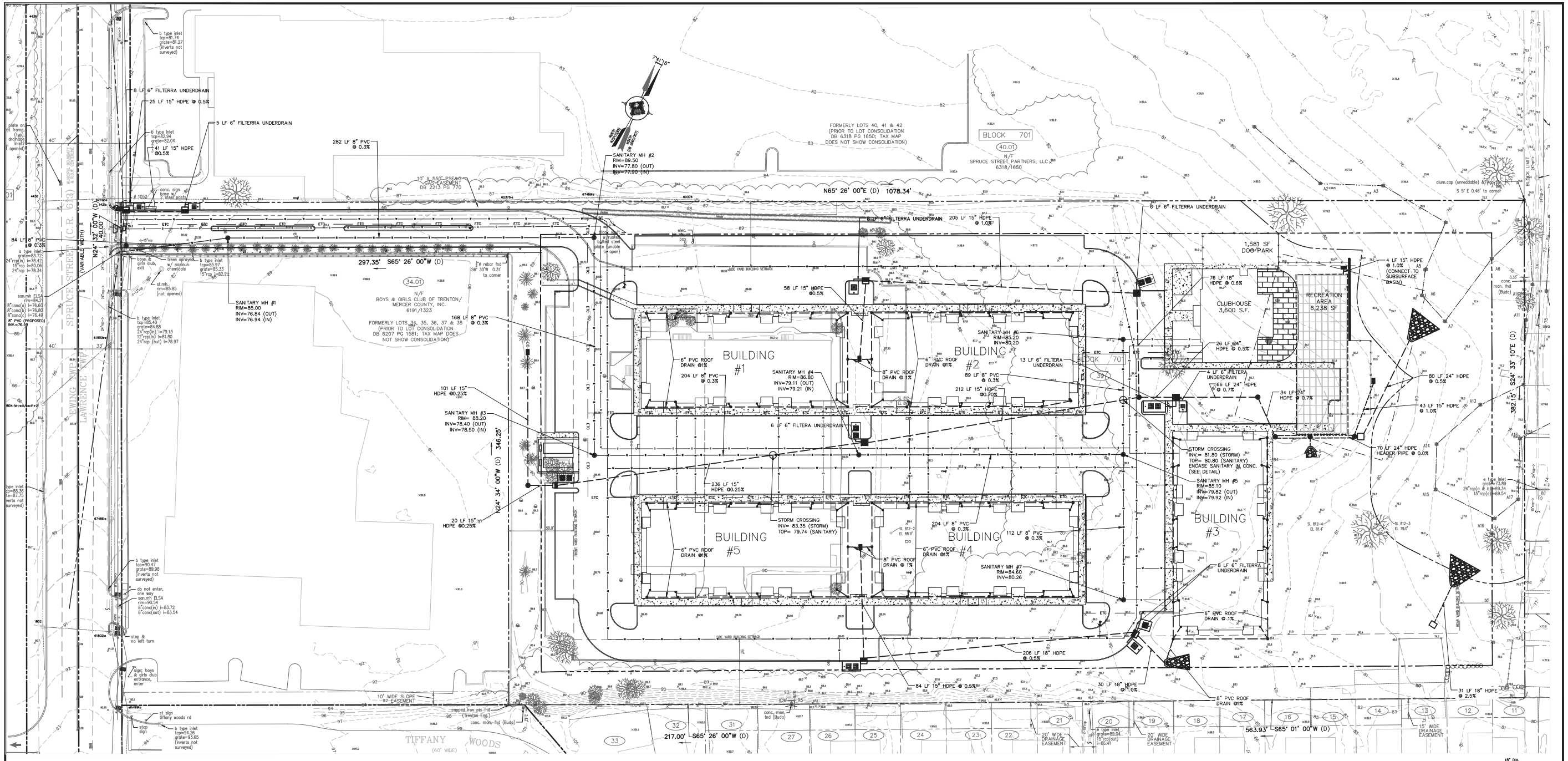
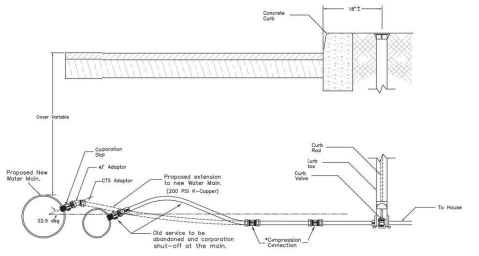
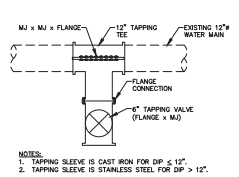




TRENTON WATER WORKS NEW WATER SERVICE CONNECTION DETAIL
NO SCALE



NOTES:
1. TAPPING SLEEVE IS CAST IRON FOR DIP ≤ 12".
2. TAPPING SLEEVE IS STAINLESS STEEL FOR DIP > 12".

WET TAP SLEEVE & VALVE DETAIL
NO SCALE

TEE & BENDS IN PLAN (HORIZONTAL)

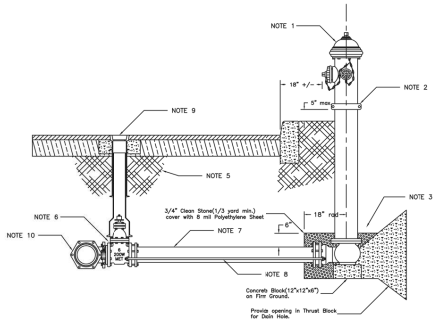
PROFILE VIEW

M.J.E. PLUG OR CAP

PIPE DIA.	FITTING	A	B
6"	90° BEND & TEE's	16"	14"
	11-1/4° & 45° BENDS	16"	13"
8"	90° BEND & TEE's	18"	18"
	11-1/4° & 45° BENDS	18"	15"
10"	90° TEE's	24"	24"
	11-1/4° & 45° BENDS	24"	18"
12"	90° BEND & TEE's	24"	28"
	11-1/4° & 45° BENDS	24"	20"
16"	90° BEND & TEE's	24"	36"
	11-1/4° & 45° BENDS	24"	28"

ALL THRUST BLOCKS TO BE POURED AGAINST UNDISTURBED SOIL. ALL JOINTS ARE TO BE CLEAR OF CONCRETE.

TRENTON WATER WORKS CONCRETE THRUST BLOCKS DETAIL
NO SCALE



NOTES:
1. Hydrant shall be T.W.W. Standard U.S. Type METROPOLITAN/M-94 Dry-Barrel Fire Hydrant, with the following specification.
   a. Safety coupled standpipe.
   b. 6" Mechanical joint inlet connection.
   c. Two 2 1/2" National Standard Thread hose nozzles.
   d. One 4 1/2" National Standard Thread steamer nozzle.
   e. Hydrant operators and Hydrant nozzle cap nuts shall be in accordance with ANSI/AWS standard 1302.
   f. Hydrant hose caps shall be attached by means of chains.
   g. Hydrant barrels shall be painted-RED, bonnets-YELLOW, and nozzle caps-BLACK.
   h. Hydrants shall OPEN COUNTER CLOCKWISE.
2. Standpipe (break-away) coupling shall not exceed a MAXIMUM of 3 inches from the top of the curb to the bottom of the standpipe.
3. The drain valve shall be clear of any obstructions, and 3/4" clear ground be placed from the bottom of the hydrant to a point 6" above the Hydrant Lateral pipe.
4. Thrust Blocks shall be made of Class B Concrete(3300 psi).
5. Backfill material shall be in accordance with the local jurisdiction.
6. 6" U.S. Pipe ResGrext Wedge Nut End Of (Right Hand)
7. 6" Ductile Iron cement lined steel 52 pipe.
8. 6" Gate Diameter be rod with eye bolts- 1 required(see view drawing)
9. See Roadway Box Installation Detail.
10. Hydrant Tee shall be U.S. Pipe catalog B-1-350 Tiller-TYTE Ductile Iron Mechanical Joint or an T.W.W. approved substitute.
11. Modifications of the fire hydrant location shall be the determination of the T.W.W. representive.

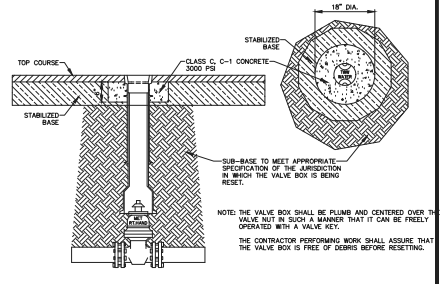
TRENTON WATER WORKS FIRE HYDRANT DETAIL
NO SCALE

UTILITY NOTES

1. PARTIAL LIST OF UTILITIES THAT MAY SERVICE THE SITE:
   WATER: TRENTON WATER WORKS
   ELECTRIC: PSE&G (PUBLIC SERVICE ELECTRIC & GAS)
   GAS: PSE&G (PUBLIC SERVICE ELECTRIC & GAS)
   TELEPHONE: VERIZON

   CONTRACTOR IS ADVISED TO CALL 1-800-272-1000 PRIOR TO CONSTRUCTION TO LOCATE ANY EXISTING UTILITIES.
2. THE PROPOSED UTILITIES SHALL BE OWNED AND MAINTAINED AS FOLLOWS:

   STORM SEWER: OWNER
   WATER: PUBLIC WATER CONNECTION (TRENTON WATER WORKS)
   SANITARY SYSTEM: ELSA
   DETENTION BASIN: OWNER
3. THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL UTILITIES SHOWN HEREON ARE APPROXIMATE ONLY. NO GUARANTEE IS HEREIN MADE OR IMPLIED THAT ALL UNDERGROUND UTILITIES ARE SHOWN. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE TYPE, SIZE AND LOCATION OF ALL EXISTING UTILITIES PRIOR TO STARTING THE WORK. THIS VERIFICATION MAY INCLUDE PERFORMING TEST PITS OR OTHER SUBSURFACE EXPLORATION TO DETERMINE THE LOCATION OF EXISTING UTILITIES AT ALL CRITICAL POINTS INCLUDING CROSSING POINTS OF ALL OTHER UTILITIES. SHOULD ANY CONFLICT OCCUR, THE ENGINEER IS AVAILABLE, FOR A FEE, TO MAKE SUCH ADJUSTMENTS TO THE ORIGINAL DESIGN, AS REQUIRED, TO MEET FIELD CONDITIONS ENCOUNTERED. CONTRACTOR IS ADVISED TO CALL 1-800-272-1000 PRIOR TO CONSTRUCTION.
4. ALL PROPOSED UTILITIES SHALL BE INSTALLED UNDERGROUND.
5. ALL UTILITIES TO BE INSTALLED IN STRICT ACCORDANCE WITH THE RULES, REGULATIONS AND SPECIFICATIONS OF THE GOVERNMENTAL AGENCIES AND UTILITY COMPANIES HAVING JURISDICTION THEREOVER.
6. WATERTIGHT PLUGS SHALL BE PROVIDED AT TERMINAL ENDS OF ALL PROPOSED UTILITIES.
7. ALL EXISTING UTILITY VALVE BOX COVERS, MANHOLE FRAMES AND COVERS, UTILITY JUNCTION BOX COVERS, MONITORING WELLS AND INLET FRAMES AND GRATES SHALL BE RESET TO GRADE AS REQUIRED.
8. ALL EXISTING UTILITIES WHICH PROJECT ABOVE GRADE, SUCH AS FIRE HYDRANTS AND UTILITY POLES, WHICH INTERFERE WITH PROPOSED IMPROVEMENTS SHALL BE RELOCATED AS REQUIRED. ANY EXISTING UTILITIES TO BE RELOCATED SHALL BE DESIGNED AND APPROVED BY THE GOVERNMENTAL AGENCIES AND UTILITY COMPANY HAVING JURISDICTION THEREOVER.



NOTE: THE VALVE BOX SHALL BE PLUMB AND CENTERED OVER THE OPERATING NUT OF THE VALVE SO THAT IT CAN BE FREELY OPERATED WITH A VALVE KEY.

THE CONTRACTOR PERFORMING WORK SHALL ASSURE THAT THE VALVE BOX IS FREE OF DEBRIS BEFORE RESETTING.

ROADWAY BOX AND GATE VALVE DETAIL
NO SCALE

0 30' 60'
GRAPHIC SCALE: FEET

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UTILITY PLAN
FOR
SPRUCE STREET APARTMENTS
LOT 39 IN BLOCK 701
SITUATE IN
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No. GE33065 LICENSED PROFESSIONAL ENGINEER

Digitally signed by Russell M Smith
Date: 2021.11.23 10:31:16 -05'00'

RUSSELL M. SMITH
N.J. PROFESSIONAL ENGINEER NO. 33065

Sheet 4 of 14

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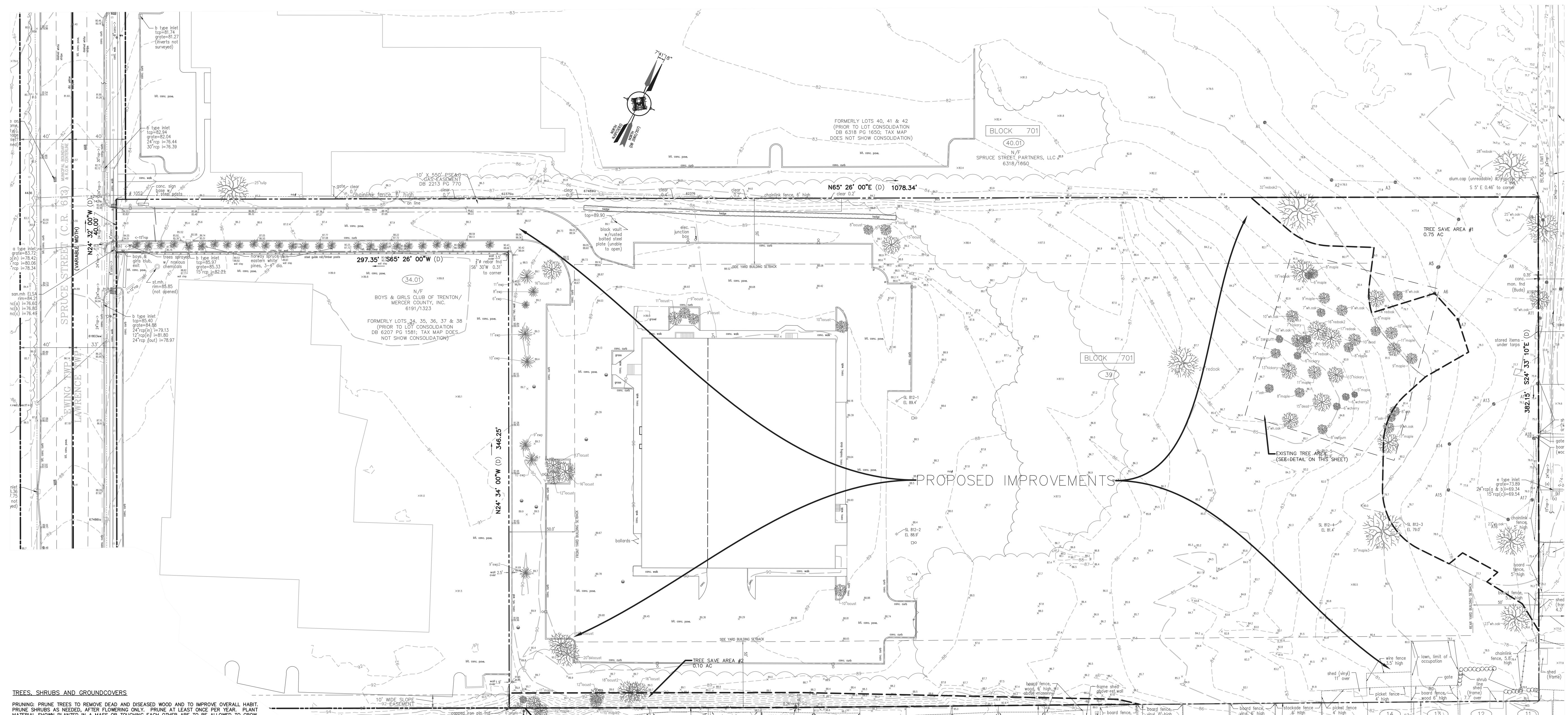

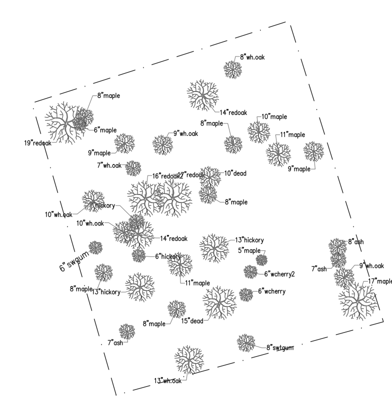

EXISTING TREE AREA DETAIL

SCALE 1"=30'

TREES, SHRUBS AND GROUNDCOVERS

PRUNING: PRUNE TREES TO REMOVE DEAD AND DISEASED WOOD AND TO IMPROVE OVERALL HABIT. PRUNE SHRUBS AS NEEDED, AFTER FLOWERING ONLY. PRUNE AT LEAST ONCE PER YEAR. PLANT MATERIAL SHOWN PLANTED IN A MASS OR TOUCHING EACH OTHER ARE TO BE ALLOWED TO GROW TOGETHER IN ORDER TO BE ABLE TO PERFORM AS A SCREEN OR HEDGE. PRUNE HEDGES WIDER AT BASE THAN TOP TO AVOID SHADE ON BOTTOM OF PLANT.

FERTILIZER: RATIO 2:1:1 AT 2–3 LBS. ACTUAL NITROGEN PER 1,000 SQ. FT. FERTILIZE IN SPRING ONLY.

PESTICIDE: APPLY PESTICIDES ONLY AS NEEDED FOR SPECIFIC DISEASES OR INSECT PESTS.

WEED CONTROL: WEED ALL BEDS AS NEEDED TO KEEP WELL GROOMED AND RELATIVELY WEED FREE.

WATER: WATER ALL NEW PLANT MATERIAL AS NEEDED THROUGH FIRST AND SECOND GROWING SEASON. IF RAIN IS INSUFFICIENT, WATER ALL WOODY PLANTS THOROUGHLY TWO TIMES PER WEEK.

MULCH: RENEW SHREDDED BARK MULCH TO 3" DEPTH EVERY YEAR.

LEAF REMOVAL: REMOVE LEAVES FROM ALL BEDS, TURF AREAS, PARKING AREAS, AND WALKS.

REPLACEMENTS: REPLACE ALL DEAD SHRUBS AND TREES WITHIN NEXT PLANTING SEASON. (2/15 TO 5/15 OR 10/15 TO 12/30).

TURF

RENEWAL PROCEDURES: OVER SEED THIN SPOTS IN SPRING AND FALL. THATCH AS NECESSARY. (4/1 TO 5/31 AND 8/16 TO 10/15).

FERTILIZER: RATIO 3:1:2 AT 1 LB. NITROGEN PER 1,000 SQ. FT. FERTILIZE TWO TIMES PER YEAR.

PESTICIDES: INSPECT AND APPLY AS NEEDED FOR DISEASES AND INSECTS.

MOW: MAINTAIN A 2" HEIGHT. MOW AT LEAST ONCE PER WEEK. REMOVE CLIPPINGS FROM DETENTION BASIN.

MANICURE: TRIM LAWN AND GROUND COVERS ALONG SIDEWALKS AND SHRUB BED EDGES. RAKE AS NEEDED.

GENERAL MAINTENANCE

DETENTION BASIN: CLEAN OUT OUTLET STRUCTURES AFTER EVERY STORM EVENT.

PAVEMENT: REPLACE ALL BROKEN OR MISSING PAVERS. REPAIR OR REPLACE ALL OTHER DAMAGED PAVING AS NECESSARY. REMOVE ALL STAINS.

PLANTS SHALL BE TYPICAL OF THEIR SPECIES AND VARIETY, HAVE NORMAL GROWTH HABITS, WELL DEVELOPED BRANCHES, DENSELY FOLIATED, VIGOROUS ROOT SYSTEMS, AND BE FREE FROM DEFECTS AND INJURIES.

QUALITY AND SIZE OF PLANTS, INCLUDING ROOT SIZE, SHALL BE IN ACCORDANCE WITH "AMERICAN STANDARDS FOR NURSERY STOCK" ANSI 260 (MOST RECENT EDITION) AS PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.

B&B PLANTS SHALL BE HANDLED FROM THE BOTTOM OF THE ROOT BALL ONLY. PLANT WITH BROKEN, SPLIT OR DAMAGED ROOT BALLS SHALL BE REJECTED.

ALL BEDLINES SHALL BE CUT FOUR INCHES DEEP INTO A "V" SHAPED GROOVE TO PROVIDE A WELL DEFINED EDGE. THE LAYOUT OF ALL BEDLINES SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT ON-SITE PRIOR TO CUTTING.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UTILITY MARK OUTS AND COMPLIANCE WITH ALL FEDERAL, STATE, OR LOCAL CODES; LAWFUL ORDERS; OR REGULATIONS GOVERNING UPON THIS WORK.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLANTING AT CORRECT GRADES AND ALIGNMENT AS SHOWN ON THE PLANTING PLAN.

THE CONTRACTOR SHALL REPORT ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE GROWTH OF THE PROPOSED PLANT MATERIAL.

INSOFAR AS IT IS PRACTICABLE, PLANTING MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THAT THIS IS NOT POSSIBLE, THE CONTRACTOR SHALL PROTECT ALL STOCK NOT PLANTED. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A TWO (2) DAY PERIOD AFTER DELIVERY.

PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH TOWNSHIP ORDINANCES:

FALL TREES	AUGUST 15 – DECEMBER 15 OCTOBER 15 – DECEMBER 15	EVERGREEN DECIDUOUS TREES
SPRING	MARCH 1 – MAY 15	ALL PLANTS

GENERAL NOTES

1. ALL PLANTS TO CONFORM TO THE AMERICAN STANDARD FOR NURSERY STOCK, ANSI, Z60.1–1996, AS PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN. THIS STANDARD IS SET BY THE AMERICAN NATIONAL STANDARDS INSTITUTE.
2. PLANT MATERIALS MUST BE WARRANTED TO LIVE FOR ONE YEAR, FROM BILLING DATE, PROVIDED THEY ARE PROPERLY MAINTAINED BY THE OWNER.
3. THE LANDSCAPE CONTRACTOR MUST PROVIDE THE OWNER WITH WRITTEN MAINTENANCE INTERVENTIONS.
4. ALL SHRUB MASSES TO BE MULCHED WITH AGED SHREDDED MULCH, DARK BROWN COLOR, 3" DEEP.
5. FINE LAWN SEED MIX TO BE 60% TURF TYPE FESCUE, 30% TURF TYPE PER. RYE, 10% KENTUCKY BLUEGRASS AT SEED RATE 5 LBS. PER 1,000 S.F.

EXISTING TREE DATA FROM SURVEYED TREE AREA (SEE DETAIL):

TREE CALIPER	QUANTITY	UNIT FACTOR	TOTAL TREE UNITS
8"	8	0.5	4.0
9"	4	0.5	2.0
10"	3	0.6	1.8
11"	2	0.7	1.4
13"	3	0.9	2.7
14"	2	1.1	2.2
16"	1	1.4	1.4
17"	2	1.6	3.2
19"	1	2.0	2.0
TOTAL	26 TREES	TOTAL	20.7 TREE UNITS (TU)

THE SURVEYED AREA WAS 15,812 SF WHICH IS EQUIVALENT TO 36%± OF AN ACRE. THIS AREA NEEDS TO BE MULTIPLIED APPROX 2.75 TIMES IN ORDER TO GET THE AMOUNT OF TU IN AN ACRE.

EXISTING TU PER AC = 20.7 TU X 2.75 = 56.93 TU/AC.

LAWRENCE TOWNSHIP DENSITY CALCULATIONS:

1. REQUIRED TREE DENSITY (RTD) = GROSS LOT AREA X 15 = 7.17 X 15 = 107.55 TREE UNITS.
2. EXISTING TREE DENSITY (ETD) TO REMAIN = AREA OF THE TREE SAVE ZONE X EXISTING TU PER AC 0.85 AC X 56.93 TU/AC = 48.39 TU
3. REPLACEMENT TU NEEDED = RTD – ETD = 107.55 – 48.39 = 59.16 TU

SEE LANDSCAPING PLAN FOR PROPOSED TREE DENSITY

GRAPHIC SCALE: FEET 0 30' 60'

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TREE PROTECTION & LANDSCAPING PLAN

FOR

SPRUCE STREET APARTMENTS
LOT 39 IN BLOCK 701

SITUATE IN

LAWRENCE TOWNSHIP, MERCER COUNTY, NEW JERSEY

Date:	11/18/21
Scale:	1" = 30'
Dsgn: AWS	Check: RMS
Proj: 1107537C	FB: NA
Dwg: SP01537C – VPS1	

STATE OF NEW JERSEY RUSSELL M. SMITH No. GE33065 LICENSED PROFESSIONAL ENGINEER

Digitally signed by Russell M Smith
Date: 2021.11.23 10:30:10 -05'00'

RUSSELL M. SMITH
N.J. PROFESSIONAL ENGINEER NO. 33065

NO.	DATE	DESCRIPTION OF REVISION	BY	CHK'D
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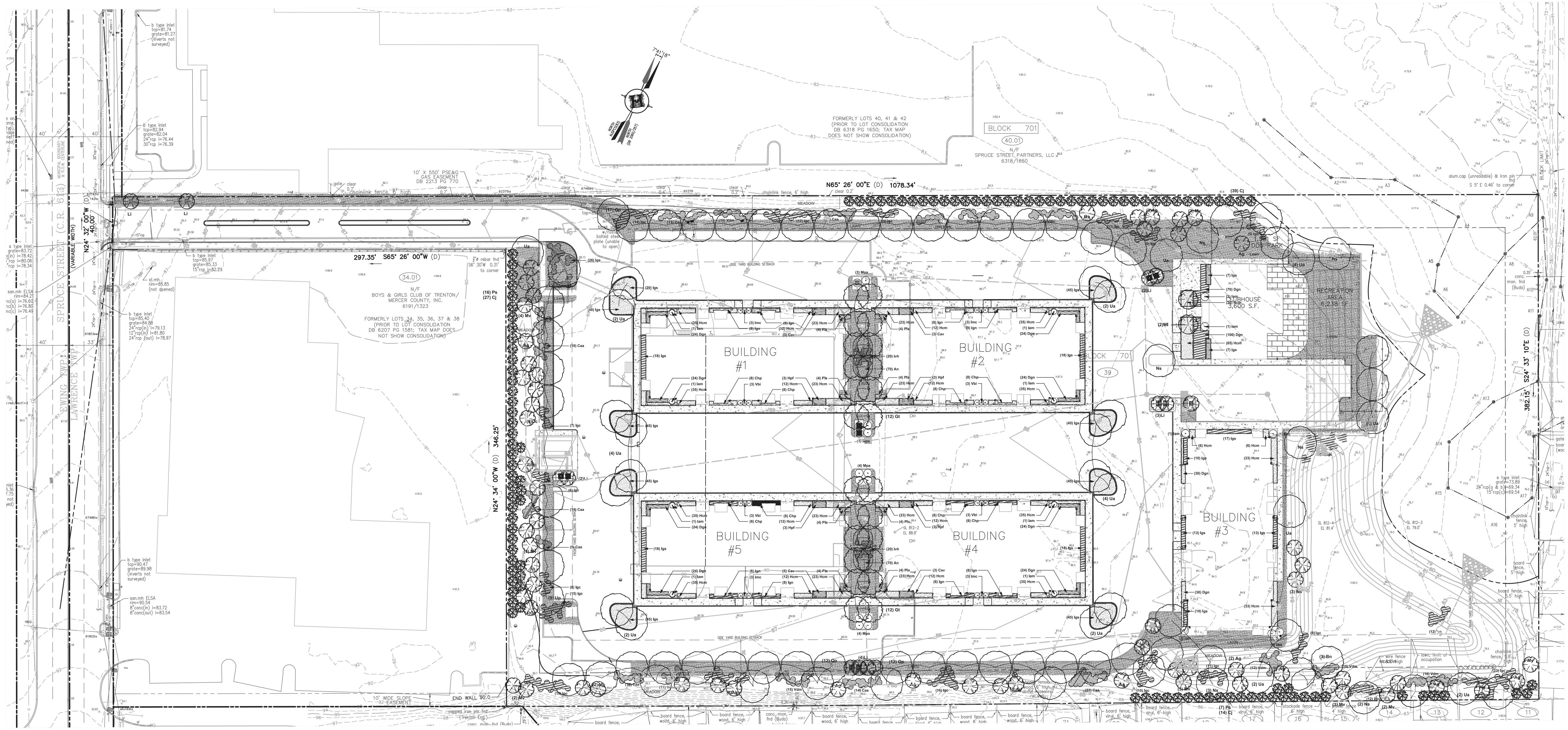


FOR ADDITIONAL LANDSCAPING NOTES
SEE SHEET 5 OF 14

THE LANDSCAPE DESIGNS SHOWN ON
THIS PLAN WERE PREPARED BY
STEPHEN LEDERACH CLA NJ #AS000717

PLANTING NOTES:

1. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD AND NOTIFY THE ENGINEER IF ANY DISCREPANCIES ARE ENCOUNTERED.
2. CONTRACTOR SHALL STAKE OUT TREE LOCATIONS AND BED CONFIGURATION FOR APPROVAL BY ENGINEER PRIOR TO INSTALLATION.\
3. CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ADVISE THE OWNER'S REPRESENTATIVE OF ANY CONDITION FOUND ON-SITE WHICH PROHIBITS INSTALLATION AS SHOWN ON THESE PLANS.
5. BEFORE PLANTING, CONTRACTOR SHALL TEST TOPSOIL AT AN APPROVED AGRICULTURAL TESTING FACILITY FOR PH, FERTILIZER SALTS, AND BULK DENSITY. DEPENDING ON TEST RESULTS, SOIL SHALL BE AMENDED WITH LIMESTONE, FERTILIZER, AND PEAT MOSS TO CREATE OPTIMUM GROWING CONDITIONS FOR SPECIFIED PLANTS.
6. TOPSOIL SHALL MEET THE STANDARDS SET FORTH IN THE "SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY STANDARDS" WITH THE FOLLOWING EXCEPTIONS: SOIL PH SHALL BE BETWEEN 6 AND 6.5. ORGANIC MATTER BETWEEN 4-6%.
7. COMPACTED SUBGRADE SHALL BE LOOSENED BEFORE SPREADING NEW TOPSOIL. NEW TOPSOIL SHALL BE SPREAD TO A DEPTH OF 8" TO MEET PROPOSED GRADE LINES.
8. LANDSCAPE PLAN SHALL TAKE PRECEDENCE REGARDING PLANT QUANTITY DISCREPANCIES BETWEEN PLANT SCHEDULE AND PLAN. ALL TREES, SHRUBS, AND GROUND COVERS SHALL BE PLANTED, STAKED, AND MULCHED IN ACCORDANCE WITH THE PLANTING DETAIL DRAWINGS.
9. PLANTS SHALL BE TYPICAL OF THEIR SPECIES AND VARIETY, HAVE NORMAL GROWTH HABITS, WELL DEVELOPED, SYMMETRICAL OR BALANCED BRANCHES AND HABIT, VIGOROUS ROOT SYSTEMS AND BE FREE FROM DEFECTS OR INJURIES. UNLESS OTHERWISE SPECIFIED, TREES SHALL HAVE A SINGLE TRUNK WITH UNCUT SINGLE LEADER. TREES WITH A CUT LEADER WILL BE REJECTED.
10. QUALITY AND SIZE OF PLANTS, INCLUDING ROOT SIZE, SHALL BE IN ACCORDANCE WITH THE AMERICAN STANDARD BY THE AMERICAN ASSOCIATION FOR NURSERY STOCK (ANSI Z60.1) AS PUBLISHED OF NURSERYMEN.
11. BALLED AND BURLAPPED PLANTS SHALL BE SUPPORTED FROM THE BOTTOM OF THE ROOTBALL. PLANTS WITH BROKEN, SPLIT, OR DAMAGED ROOTBALLS SHALL BE REJECTED.
12. PLANTS SHALL BE PRUNED OF DEAD, DAMAGED, OR DISEASED BRANCHES PRIOR TO DELIVERY. PRUNING SHALL MAINTAIN THE NATURAL FORM OR HABIT OF THE PLANT UNLESS A FORMAL HEDGE HAS BEEN SPECIFIED BY THE LANDSCAPE ARCHITECT. FLOWERING SHRUBS/TREES TO BE PRUNED AFTER FLOWERING. A CLEAN CUT SHALL BE MADE PERPENDICULAR TO THE BRANCH WITH A SHARP PRUNING TOOLS. ALL INJURED ROOTS SHALL BE PRUNED PRIOR TO PLANTING. A CLEAN CUT SHALL BE MADE PERPENDICULAR TO THE ROOT WITH A SHARP PRUNING TOOL.
13. PLANTS SHOULD BE PLANTED ON DAY OF DELIVERY; CONTRACTOR SHALL PROTECT AND WATER MATERIALS NOT PLANTED ON DAY OF DELIVERY. ALL MATERIALS TO BE PLANTED WITHIN THREE DAYS AFTER DELIVERY.
14. NEWLY INSTALLED PLANT MATERIAL SHALL BE WATERED AT TIME OF INSTALLATION. REGULAR WATERING SHALL BE PERFORMED TO ENSURE THE ESTABLISHMENT, GROWTH AND SURVIVAL OF ALL PLANTS.
15. THE CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A MINIMUM OF ONE-YEAR. TO BE ALIVE AND IN VIGOROUS GROWING CONDITION DURING AND AT THE END OF THE GUARANTEE PERIOD. REMOVE UNSATISFACTORY AND DEAD PLANTS EVERY MONTH DURING THE GUARANTEE PERIOD AND REPLACE WITH PLANTS OF THE SAME KIND, QUALITY, AND SIZE AS SPECIFIED. REPLACEMENT PLANTS SHALL BE GUARANTEED FOR ONE-YEAR FROM DATE OF PLANTING. CONTRACTOR SHALL ENSURE PLANTS ARE ADEQUATELY WATERED DURING THE ONE-YEAR GUARANTEE PERIOD.
16. ALL WATERING SAUCERS SHALL BE REMOVED AT END OF MAINTENANCE PERIOD.
17. ALL CLEARED GROUND NOT INDICATED FOR PLANTING OF GROUNDCOVERS SHALL BE SEEDED AS PER LAWN SEEDING NOTES. ALL SEEDED AREAS TO BE MULCHED IN ACCORDANCE WITH THE "STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY"
18. NO PLANT SUBSTITUTIONS SHALL BE PERMITTED WITH REGARD TO SIZE, SPECIES OR VARIETY WITHOUT WRITTEN PERMISSION OF THE ENGINEER. WRITTEN PROOF OF PLANT MATERIAL UNAVAILABILITY OR UNREASONABLE COST SHALL ALSO BE DOCUMENTED.
19. LANDSCAPE PLAN IS TO BE USED FOR PLANTING PURPOSES ONLY. SEE ENGINEER'S DRAWINGS FOR CONSTRUCTION DOCUMENTATION.

THIS PLAN IS FOR LANDSCAPING PURPOSES ONLY

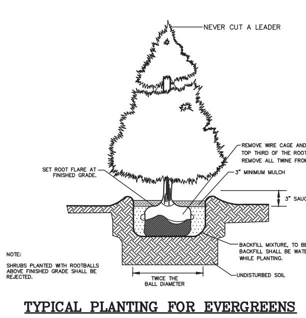
PLANT SCHEDULE

Key	Quantity	Botanical Name	Common Name	Caliper	Ht	Sprd	Notes	Tree Units
SITE								
SHADE / STREET TREES								
Bn	3	Betula nigra 'Heritage'	Heritage River Birch	—	12'-14'	6'-8'	B & B Multistem. Branched to 6' ht	
Gt	24	Gleditzia triacanthos inermis 'Shademaster'	Shademaster Honeylocust	3"-3.5"	14'-16'	8'-10'	B & B, Branched to 6' ht	14.4
Ns	9	Nyssa sylvatica 'Wildfire'	Wildfire Black Gum	3"-3.5"	14'-16'	8'-10'	B & B Branched to 6' ht	5.4
Qp	41	Quercus phellos	Willow Oak	3"-3.5"	14'-16'	8'-10'	B & B Branched to 6' ht	24.6
Ua	30	Ulmus americana 'Princeton'	Princeton American Elm	3"-3.5"	14'-16'	8'-10'	B & B Branched to 6' ht	18
Up	9	Ulmus parvifolia Allee'	Allee Lacebark Elm	3"-3.5"	14'-16'	8'-10'	B & B Branched to 6' ht	5.4
Total	116							67.8
ORNAMENTAL TREES								
Ag	23	Amelanchier grandiflora x Autumn Brilliance	Autumn Brilliance Serviceberry	2 1/2"-3"	12'-14'	6'-8'	B & B Multistem.	13.8
Cc	9	Cercis candensis	Eastern Redbud	—	6'-8'	4'-6'	B & B, Full symmetrical head	
Li	16	Lagerstroemia x Pink Velour	Pink Velour Crape Myrtle	2 1/2"-3"	8'-10'	6'-8'	B & B, Multistem, Branched to 6' ht	9.6
Ml	2	Magnolia loeberni 'Merrill	Merrill Magnolia	—	10'-12'	6'-8'	B & B, Multistem, Branched to 6' ht	
Mv	25	Magnolia virginiana 'Moonglow'	Moonglow Sweetbay Magnolia	—	10'-12'	6'-8'	B & B	
Total	75							23.4
EVERGREEN TREES								
Ps	23	Pinus strobus	White Pine	—	5'-6'	3'-4'	B&B Full symmetrical head, branched to ground	
Cj	80	Cryptomeria japonica Radicans	Radicans Japanese Cedar	—	5'-6'	2'-3'	B&B Full symmetrical head, branched to ground	51.2*
Total	103							51.2
SHRUBS								
Caa	117	Clethra alnifolia	Summersweet	-	18"-24"	18"-24"	Space @ 3' o.c.	
Cav	12	Clethra alnifolia 'Vanilla Spice'	Vanilla Spice Summersweet	-	30"-36"	30"-36"	Full symmetrical head	
Chp	64	Cephalotaxus harringtonia prostrata	Dwarf Japanese Plumb	-	12"-15"	18"-24"	Space @ 2.5' o.c.	
Dgn	423	Deutzia gracilia 'Nikko'	Dwarf Deutzia	-	18"-24"	18"-24"	Space @ 18" o.c.	
Hcm	787	Hypericum calycinum	Aaronsbeard St Johnswort	-	12"-18"	18"-24"	Space @ 2' o.c.	
Hpf	12	Hydrangea paniculata 'Fire and Ice'	Fir eand Ice Panicled Hydrangea	-	30"-36"	30"-36"	Full symmetrical head	
Iam	12	Ilex aquipernyi 'Meschick'	Dragon Lady Holly		5'-6'	3'-4'	Full symmetrical head, branched to ground	
Igc	272	Ilex glabra 'Compacta'	Compact Inkberry	-	18"-24"	18"-24"	Space @ 3' o.c.	
Ign	64	Ilex glabra 'Nordic'	Nordic Inkberry	-	18"-24"	18"-24"	Space @ 2.5' o.c.	
Igs	468	Ilex glabra 'Shamrock'	Shamrock Inkberry	-	18"-24"	18"-24"	Space @ 2.5' o.c.	
Imc	16	Ilex meservae 'China Girl'	China Girl Holly	-	30"-36"	30"-36"	Full symmetrical head, branched to ground	
Ivh	40	Itea virginica 'Henry Garnet'	Henry Garnet Sweetspire	-	18"-24"	18"-24"	Full symmetrical head	
Mpa	15	Myrica pennsylvanica	Northern Bayberry	-	30"-36"	30"-36"	Full symmetrical head	
Pls	32	Prunus laurocerasus 'Schipkaensis'	Skip Laurel	-	30"-36"	18"-24"	Full symmetrical head	
Vbi	12	Viburnum x birkwoodii	Birkwood Viburnum		30"-36"	30"-36"	Full symmetrical head	
Vdm	100	Viburnum dentatum	Arrowwood Viburnum		18"-24"	18"-24"	Full symmetrical head	
GROUNDCOVERS								
An	140	Athyrium nipponicum 'Pewter Lace'	Pewter Lace Painted Fern	-	-	-	1 qt cont. spaced @ 24" o.c.	

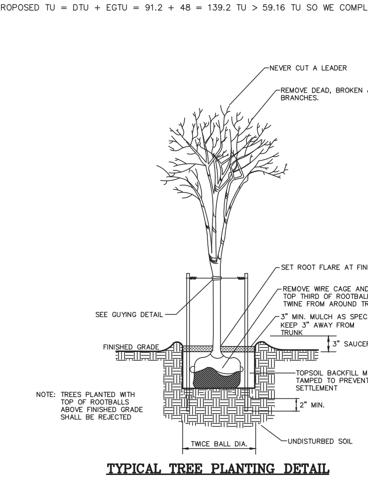
*per section 541 I. 4. only 40% of the replacement trees can be evergreen. This number represents the TU of the complying trees.

PROPOSED TREE DENSITY CALCULATIONS:

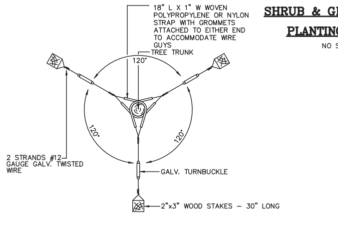
1. REPLACEMENT TREE UNITS (TU) NEEDED= 59.16 TU
2. REPLACEMENT TREE UNITS PROVIDED
   A. DECIDUOUS TREES PROPOSED FOR TREE REPLACEMENT = 152
      -ALL PROPOSED DECIDUOUS TREES PROPOSED TO BE FROM 2.5 - 3.5" IN CALIPER (SAY 3")
      -PER TABLE 5.20 IN SECTION 541 A 3" TREE COUNTS AS .6 TU
      DECIDUOUS TU (DTU)= 152 X 0.6 = 91.2 TU
   B. EVERGREEN TREES ALLOWED FOR TREE REPLACEMENT = DTU X .4 = 60.8 (SAY 60)
      -ALL PROPOSED EVERGREEN TREES ARE 5 TO 6' TALL
      -PER TABLE 5.21 IN SECTION 541 A 5 - 6' TALL TREE IS .8 TU
      EVERGREEN TU (EGTU) = 60 X .8 = 48.0 TU
3. TOTAL PROPOSED TU = DTU + EGTU = 91.2 + 48 = 139.2 TU > 59.16 TU SO WE COMPLY



TYPICAL PLANTING FOR EVERGREENS
NO SCALE

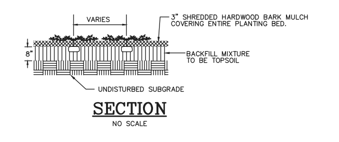


TYPICAL TREE PLANTING DETAIL
NO SCALE



TYPICAL GUYING DETAIL
NOT TO SCALE

NOTE:
NO TREE SHALL BE GUYED OR STAKED UNLESS IT IS UNSTABLE OR IN A HIGH WIND AREA. ALL STAKES AND GUYS SHALL BE REMOVED AFTER ONE YEAR GUARANTEE PERIOD.



SECTION
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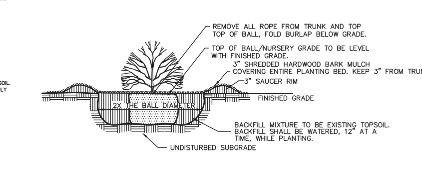
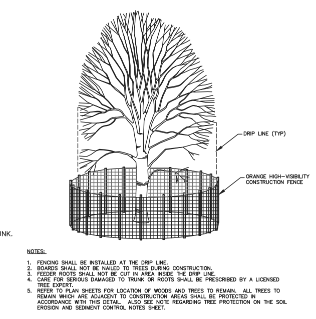


SHRUB & GROUNDCOVER PLANTING DETAIL
NO SCALE



NOTES:
1. FENCING SHALL BE INSTALLED AT THE DRIP LINE.
2. BOARDS SHALL NOT BE NAILED TO TREES DURING CONSTRUCTION.
3. FEEDER ROOTS SHALL NOT BE CUT IN AREA INSIDE THE DRIP LINE.
4. CARE FOR SERIOUS DAMAGED TO TRUNK OR ROOTS SHALL BE PRESCRIBED BY A LICENSED TREE EXPERT.
5. REFER TO PLAN SHEETS FOR LOCATION OF WOODS AND TREES TO REMAIN. ALL TREES TO REMAIN WHICH ARE ADJACENT TO CONSTRUCTION AREAS SHALL BE PROTECTED IN ACCORDANCE WITH THIS DETAIL. ALSO SEE NOTE REGARDING TREE PROTECTION ON THE SOIL EROSION AND SEDIMENT CONTROL NOTES SHEET.

TREE PROTECTION FENCE
NO SCALE

GRAPHIC SCALE: FEET (0, 30', 60')

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LANDSCAPING PLAN
FOR
SPRUCE STREET APARTMENTS
LOT 39 IN BLOCK 701
SITUATE IN
LAWRENCE TOWNSHIP, MERCER COUNTY, NEW JERSEY

STATE OF NEW JERSEY
RUSSELL M. SMITH
No. GE33065
LICENSED PROFESSIONAL ENGINEER
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Date: 2021.11.23 0:29:05 -05'00'
RUSSELL M. SMITH
N.J. PROFESSIONAL ENGINEER NO. 33065

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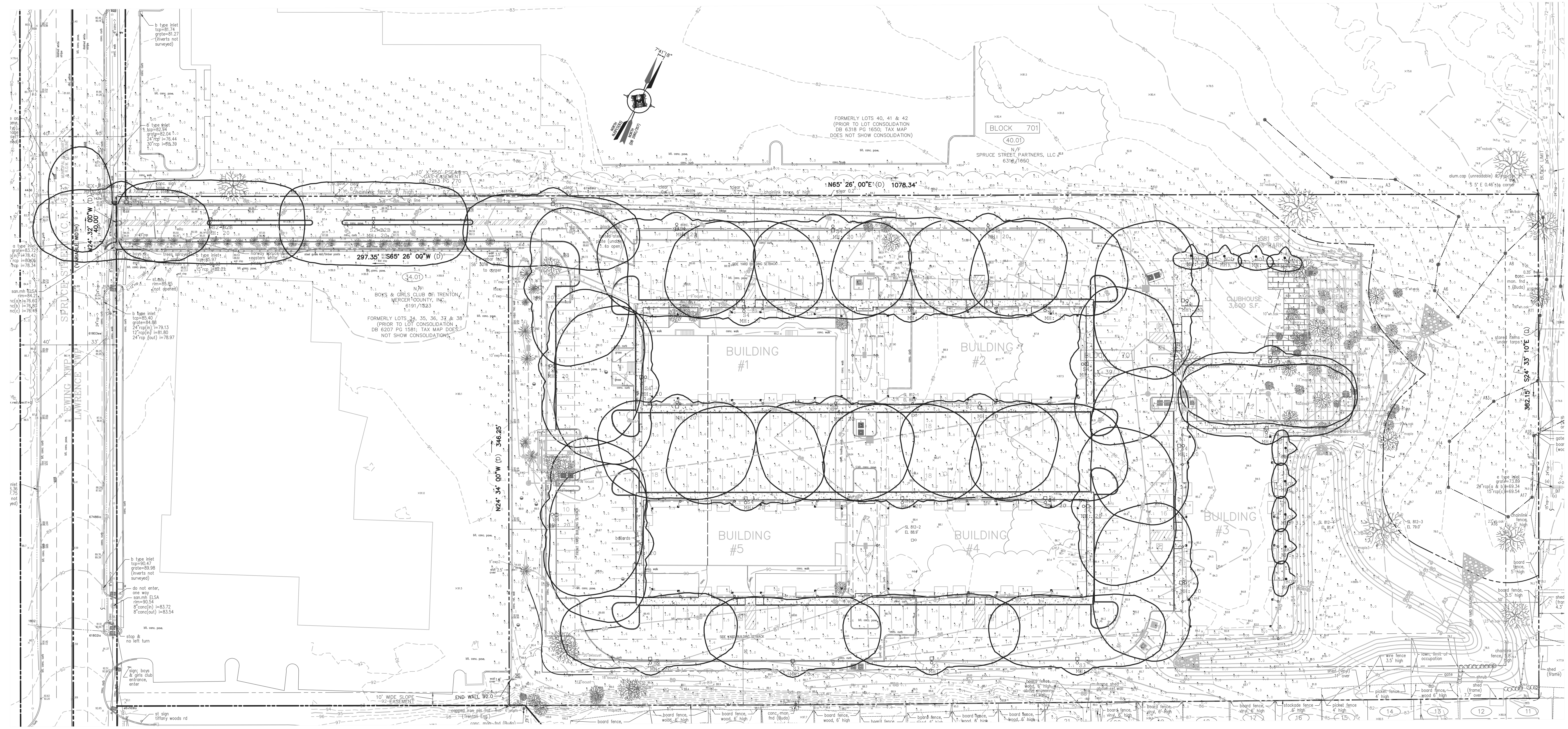
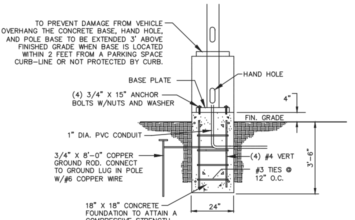
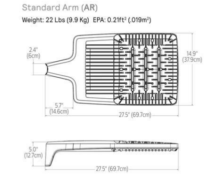




POLE MOUNTED LIGHT BASE

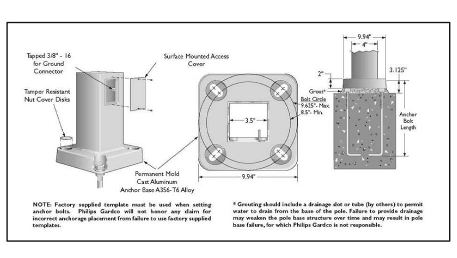
NO SCALE

NOTE:
THE CONTRACTOR SHALL PROVIDE STRUCTURAL CALCULATIONS SHOWING THAT THE LIGHT POLE AND FOUNDATION HAS BEEN DESIGNED TO WITHSTAND 100 MPH WINDS.



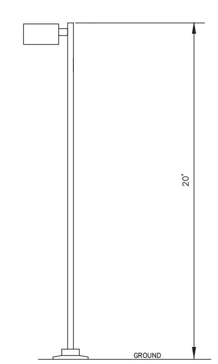
GARDCO ECF-S LIGHT HEAD DETAILS

NO SCALE



4" SQUARE ALUMINIUM LIGHT POLE DETAIL

NO SCALE

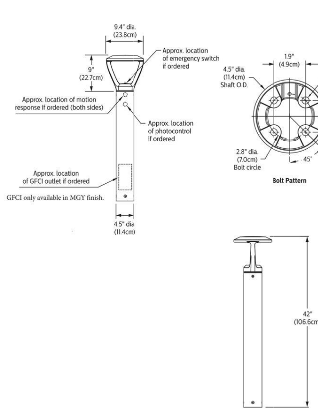


TYPE: A

NOTE:
20 FT. MOUNTING HEIGHT IS PROPOSED AND IS TO BE MEASURED FROM THE GROUND. 20 FT. POLE LENGTHS ARE TO BE ORDERED EXCEPT WHEN A CONCRETE EXTENSION BASE IS USED. WHEN A CONCRETE EXTENSION BASE IS USED THE POLE LENGTH IS OBTAINED BY SUBTRACTING HEIGHT OF CONCRETE BASE FROM 20 FT. MOUNTING HEIGHT.

LIGHT POLE HEIGHT DETAIL

NO SCALE



GARDCO BOLLARD LIGHT DETAILS

NO SCALE

Luminaire Schedule

Symbol	Qty	Label	Arrangement	LLF	Description	Lum. Watts	Lum. Lumens	BUG Rating
●	9	BOL	SINGLE	1.190	Gardco PBL-14L-350-NW-G2-3-UNV- 1600lm	10	1211	B0-U0-G0
	1	EX-Roadway	SINGLE	0.900	Lumec RFS-54W16LED4K-G2-R3S	53	6421	B1-U0-G2
□-○-□	2	S2-B2B	BACK-BACK	0.900	Gardco ECF-S-32L-1A-NW-G2-2	105.6	13685	B3-U0-G2
○□	8	S3	SINGLE	0.900	Gardco ECF-S-48L-900-NW-G2-3-HIS	135.1	14040	B1-U0-G3
○□	22	S4	SINGLE	0.900	Gardco ECF-S-48L-1_2A-NW-G2-4-HIS	182.71	18176	B1-U0-G4

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Max/Min	Avg/Min	Grid Z	PtSpcLr	PtSpcTb
Calc Grid	Illuminance	Fc	1.55	16.0	0.0	N.A.	N.A.	0	10	10
Center Parking	Illuminance	Fc	3.77	7.4	1.2	6.17	3.14			
Clubhouse Parking	Illuminance	Fc	3.66	6.0	1.5	4.00	2.44			
Driveway Entrance	Illuminance	Fc	3.68	5.8	1.0	5.80	3.68			
E Parking	Illuminance	Fc	3.82	7.4	1.2	6.17	3.18			
N Parking	Illuminance	Fc	3.87	7.5	1.0	7.50	3.87			
S Parking	Illuminance	Fc	2.30	5.2	1.0	5.20	2.30			
W Parking	Illuminance	Fc	4.28	8.1	1.3	6.23	3.29			

LIGHTING NOTES

1. THE LIGHTING INFORMATION ON THIS PLAN IS FOR PHOTOMETRIC INFORMATION ONLY. ELECTRICAL WIRING SHALL BE PER A WIRING PLAN BY OTHERS (IF PREPARED) AND/OR APPROPRIATE CONSTRUCTION CODES AND SPECIFICATIONS.
2. A TIMING DEVICE SHALL BE INSTALLED ON THE PARKING LOT AND SIGNAGE LIGHTS. A TIMER SHALL BE SET TO TURN ON AT DUSK AND OFF FOR THE DURATION OF THE NIGHT AT 10 PM.
3. ALL LIGHTS ADJACENT TO PARKING STALL AREAS SHALL BE INSTALLED A MINIMUM OF 2' FROM THE FACE OF CURB OR EDGE OF PAVEMENT AND ALIGNED WITH THE PARKING SPACE STRIPE TO MINIMIZE THE POSSIBILITY OF A VEHICLE HITTING A POLE.
4. ALL PROPOSED LIGHT FIXTURES ARE FULL CUT-OFF FIXTURES AS DEFINED BY THE IESNA.
5. A MAXIMUM POLE MOUNTING HEIGHT OF 20' IS PROPOSED WHERE 25' IS ALLOWED PER SECTION 527 C. 1.
6. THE LIGHTING DESIGN WAS PROVIDED BY PENN LIGHTING ASSOCIATES. IAN ELLER, A NCQLP CERTIFIED PROFESSIONAL PREPARED THE DESIGN.

0 30' 60'
GRAPHIC SCALE: FEET

HOPEWELL VALLEY ENGINEERING, PC
ENGINEERS, PLANNERS & LAND SURVEYORS
1600 Reed Road, Suite A
Pennington, NJ 08534-5002
Tel.: 609-745-5800
Fax: 609-745-5807
www.hopewellvalleyengineering.com

NO.	DATE	DESCRIPTION OF REVISION	BY	CHK'D

Date: 11/18/21
Scale: 1" = 30'
Dsgn: AWS Check: RMS
Proj: 1107537C FB: NA
Dwg: SP01537C – VPS1

LIGHTING PLAN

FOR

SPRUCE STREET APARTMENTS LOT 39 IN BLOCK 701

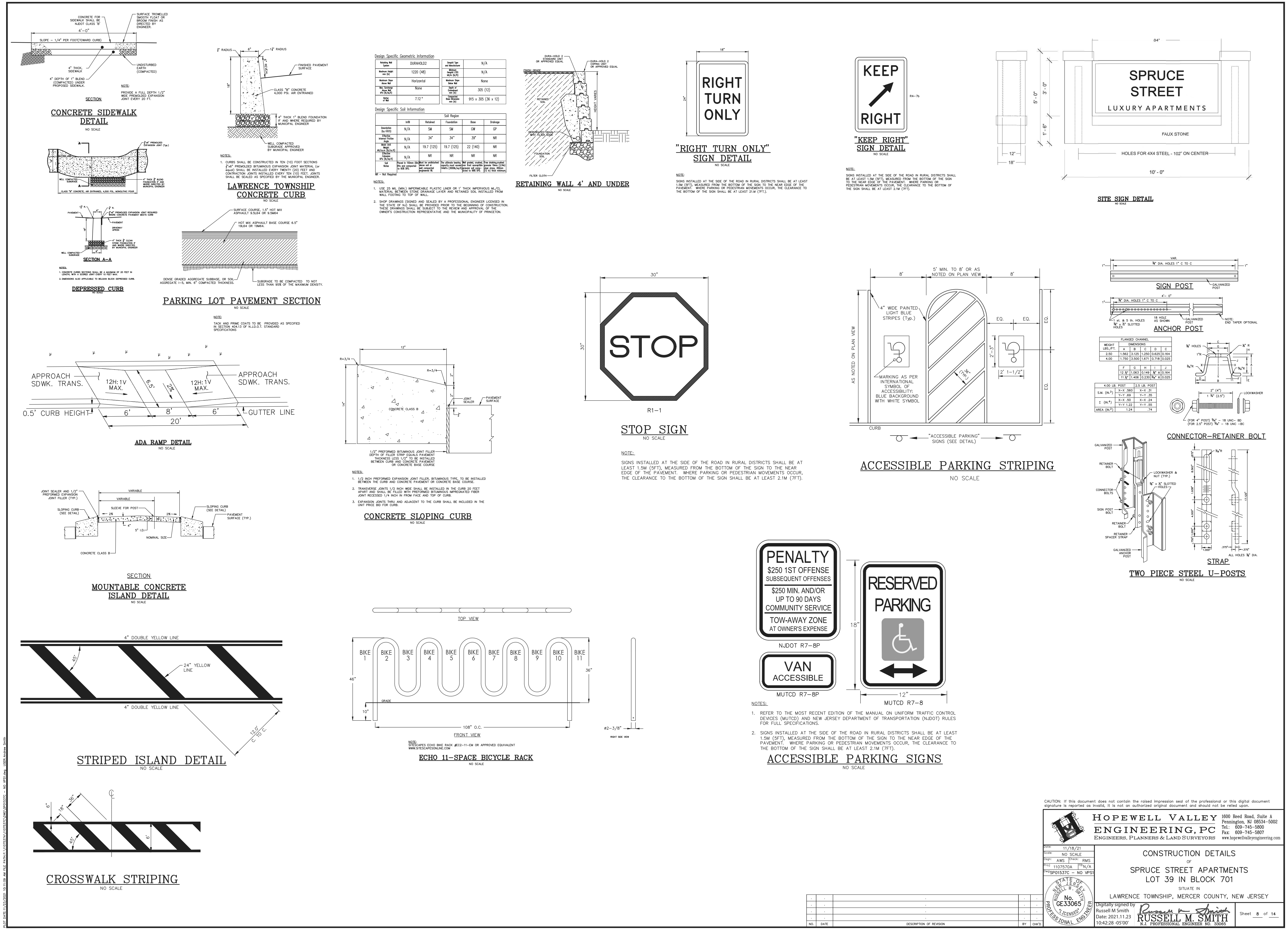
SITUATE IN

LAWRENCE TOWNSHIP, MERCER COUNTY, NEW JERSEY

STATE OF NEW JERSEY RUSSELL M. SMITH No. GE33065 *LICENSED* PROFESSIONAL ENGINEER

Digitally signed by Russell M Smith
Date: 2021.11.23 10:28:10 -05'00'

RUSSELL M. SMITH
N.J. PROFESSIONAL ENGINEER NO. 33065


CONCRETE SIDEWALK DETAIL
NO SCALE
LAWRENCE TOWNSHIP CONCRETE CURB
NO SCALE
1. CURBS SHALL BE CONSTRUCTED IN TEN (10) FOOT SECTIONS. ½"x4" PREMOLDED BITUMINOUS EXPANSION JOINT MATERIAL (or equal) SHALL BE INSTALLED EVERY TWENTY (20) FEET AND CONTRACTION JOINTS INSTALLED EVERY TEN (10) FEET. JOINTS SHALL BE SEALED AS SPECIFIED BY THE MUNICIPAL ENGINEER.
DEPRESSED CURB
PARKING LOT PAVEMENT SECTION
NO SCALE
TACK AND PRIME COATS TO BE PROVIDED AS SPECIFIED IN SECTION 404.13 OF N.J.D.O.T. STANDARD SPECIFICATIONS
RETAINING WALL 4' AND UNDER
NO SCALE
1. USE 25 MIL (MIN.) IMPERMEABLE PLASTIC LINER OR 1' THICK IMPERVIOUS ML/CL MATERIAL BETWEEN STONE DRAINAGE LAYER AND RETAINED SOIL INSTALLED FROM WALL FOOTING TO TOP OF WALL.
2. SHOP DRAWINGS (SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NJ) SHALL BE PROVIDED PRIOR TO THE BEGINNING OF CONSTRUCTION. THESE DRAWINGS SHALL BE SUBJECT TO THE REVIEW AND APPROVAL OF THE OWNER'S CONSTRUCTION REPRESENTATIVE AND THE MUNICIPALITY OF PRINCETON.
RIGHT TURN ONLY
"RIGHT TURN ONLY" SIGN DETAIL
NO SCALE
KEEP RIGHT
"KEEP RIGHT" SIGN DETAIL
NO SCALE
SPRUCE STREET
LUXURY APARTMENTS
FAUX STONE
HOLES FOR 4X4 STEEL - 102" ON CENTER
10' - 0"
SITE SIGN DETAIL
NO SCALE
APPROACH SDWK. TRANS.
12H:1V MAX.
0.5' CURB HEIGHT
GUTTER LINE
ADA RAMP DETAIL
NO SCALE
CONCRETE SLOPING CURB
NO SCALE
1. 1/2 INCH PREFORMED EXPANSION JOINT FILLER, BITUMINOUS TYPE, TO BE INSTALLED BETWEEN THE CURB AND CONCRETE PAVEMENT OR CONCRETE BASE COURSE.
2. TRANSVERSE JOINTS 1/2 INCH WIDE SHALL BE INSTALLED IN THE CURB 20 FEET APART AND SHALL BE FILLED WITH PREFORMED BITUMINOUS IMPREGNATED FIBER JOINT RECESSED 1/4 INCH IN FROM FACE AND TOP OF CURB.
3. EXPANSION JOINTS THRU AND ADJACENT TO THE CURB SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CURB.
STOP
R1-1
STOP SIGN
NO SCALE
NOTE:
SIGNS INSTALLED AT THE SIDE OF THE ROAD IN RURAL DISTRICTS SHALL BE AT LEAST 1.5M (5FT), MEASURED FROM THE BOTTOM OF THE SIGN TO THE NEAR EDGE OF THE PAVEMENT. WHERE PARKING OR PEDESTRIAN MOVEMENTS OCCUR, THE CLEARANCE TO THE BOTTOM OF THE SIGN SHALL BE AT LEAST 2.1M (7FT).
ACCESSIBLE PARKING STRIPING
NO SCALE
SIGN POST
ANCHOR POST
CONNECTOR-RETAINER BOLT
STRAP
TWO PIECE STEEL U-POSTS
NO SCALE
SECTION
MOUNTABLE CONCRETE ISLAND DETAIL
NO SCALE
4" DOUBLE YELLOW LINE
24" YELLOW LINE
STRIPED ISLAND DETAIL
NO SCALE
TOP VIEW
FRONT VIEW
108" O.C.
SITESCAPES ECHO BIKE RACK #EC2-11-EM OR APPROVED EQUIVALENT
WWW.SITESCAPESONLINE.COM
ECHO 11-SPACE BICYCLE RACK
NO SCALE
PENALTY
$250 1ST OFFENSE
SUBSEQUENT OFFENSES
$250 MIN. AND/OR UP TO 90 DAYS COMMUNITY SERVICE
TOW-AWAY ZONE AT OWNER'S EXPENSE
NJDOT R7-8P
VAN ACCESSIBLE
MUTCD R7-8P
RESERVED PARKING
MUTCD R7-8
NOTES:
1. REFER TO THE MOST RECENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND NEW JERSEY DEPARTMENT OF TRANSPORTATION (NJDOT) RULES FOR FULL SPECIFICATIONS.
2. SIGNS INSTALLED AT THE SIDE OF THE ROAD IN RURAL DISTRICTS SHALL BE AT LEAST 1.5M (5FT), MEASURED FROM THE BOTTOM OF THE SIGN TO THE NEAR EDGE OF THE PAVEMENT. WHERE PARKING OR PEDESTRIAN MOVEMENTS OCCUR, THE CLEARANCE TO THE BOTTOM OF THE SIGN SHALL BE AT LEAST 2.1M (7FT).
ACCESSIBLE PARKING SIGNS
NO SCALE
CROSSWALK STRIPING
NO SCALE
CAUTION: If this document does not contain the raised impression seal of the professional or this digital document signature is reported as invalid, it is not an authorized original document and should not be relied upon.
HOPEWELL VALLEY ENGINEERING, PC
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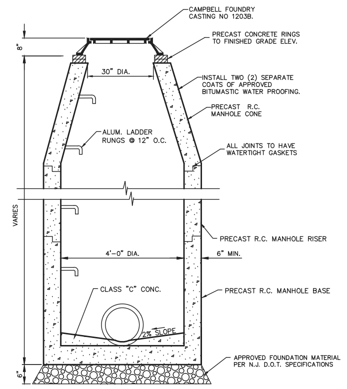
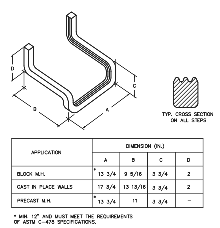
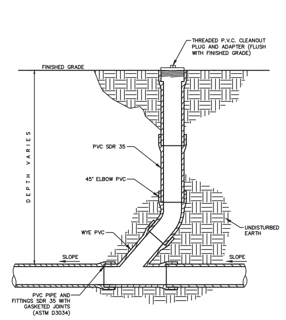
Tel: 609-745-5800
Fax: 609-745-5807
www.hopewellvalleyengineering.com
CONSTRUCTION DETAILS
OF
SPRUCE STREET APARTMENTS
LOT 39 IN BLOCK 701
SITUATE IN
LAWRENCE TOWNSHIP, MERCER COUNTY, NEW JERSEY
Digitally signed by Russell M Smith
Date: 2021.11.23 10:42:28 -05'00'
RUSSELL M. SMITH
N.J. PROFESSIONAL ENGINEER NO. 33065
Sheet 8 of 14
11/18/21
NO SCALE


CAMPBELL FOUNDRY CASTING NO 1203B.
PRECAST CONCRETE RINGS TO FINISHED GRADE ELEV.
30" DIA.
INSTALL TWO (2) SEPARATE COATS OF APPROVED BITUMASTIC WATER PROOFING.
PRECAST R.C. MANHOLE CONE
ALUM. LADDER RUNGS @ 12" O.C.
ALL JOINTS TO HAVE WATERTIGHT GASKETS
PRECAST R.C. MANHOLE RISER
4'-0" DIA.
PRECAST R.C. MANHOLE BASE
CLASS "C" CONC.
APPROVED FOUNDATION MATERIAL PER N.J. D.O.T. SPECIFICATIONS

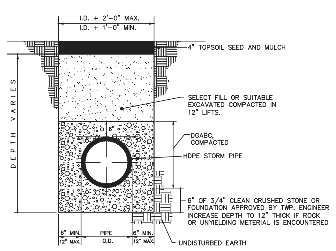
STORM SEWER MANHOLE
NO SCALE



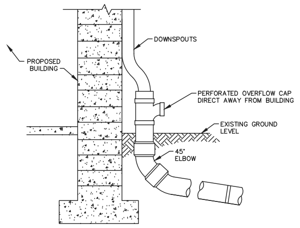
DROP FRONT MANHOLE STEP
NO SCALE



DRAIN CLEANOUT
NO SCALE


4" TOPSOIL SEED AND MULCH
SELECT FILL OR SUITABLE EXCAVATED COMPACTED IN 12" LIFTS
DGABC, COMPACTED
HDPE STORM PIPE
6" OF 3/4" CLEAN CRUSHED STONE OR FOUNDATION APPROVED BY TWP. ENGINEER INCREASE DEPTH TO 12" THICK IF ROCK OR UNYIELDING MATERIAL IS ENCOUNTERED
UNDISTURBED EARTH
DEPTH VARIES

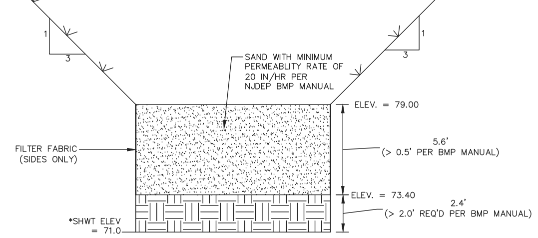
TYPICAL STORM SEWER TRENCH LAWN OR EASEMENT AREA
NO SCALE



NOTES:

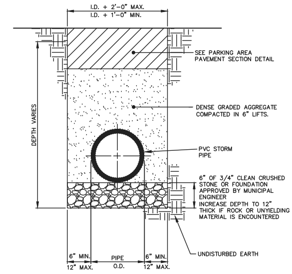
1. WATERTIGHT CONNECTIONS SHALL BE USED WHEREVER TRANSITIONS FROM PIPES OF DIFFERENT MATERIALS OCCUR BELOW GRADE.

ROOF DOWNSPOUT CONNECTION
NO SCALE

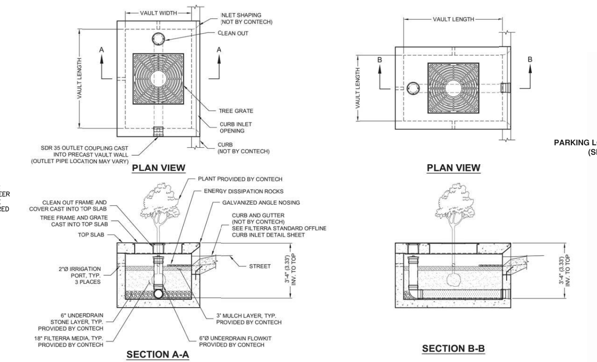


EXTENDED DETENTION/INFILTRATION BASIN SECTION
NO SCALE

* NOTE: SOIL LOGS AND TESTING WAS COMPLETED ON 08/12/21. TO DETERMINE THE SEASONAL HIGH WATER TABLE (SHWT) AND SUBSURFACE PERMEABILITY WE USED TESTS #4 AND #5. THE LOGS SHOWED AN AVERAGE SHWT ELEVATION OF 71.00± PERMEABILITY RATES WERE DETERMINED USING TUBE PERIMETER TEST RATES OF 2 IN/HR AT #4 AND 4.3 IN/HR AT #5. THESE TESTING RESULTS ARE INCLUDED IN APPENDIX A OF THE STORMWATER MANAGEMENT REPORT DATED 11/18/21



STORM SEWER TRENCH IN PAVEMENT
NO SCALE


PLAN VIEW
SECTION A-A
SECTION B-B
STREET
2"Ø IRRIGATION PORT, TYP. 3 PLACES
6" UNDERDRAIN STONE LAYER, TYP. PROVIDED BY CONTECH
18" FILTERRA MEDIA, TYP. PROVIDED BY CONTECH
3' MULCH LAYER, TYP. PROVIDED BY CONTECH
6"Ø UNDERDRAIN FLOWKIT PROVIDED BY CONTECH
3'-4" (3.33') INV. TO TOP

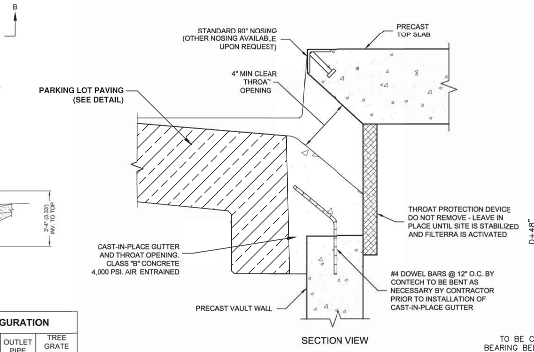
FT-HC LONG SIDE INLET CONFIGURATION					
DESIGNATION	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (L x W)	OUTLET PIPE DIA	TREE GRATE QTY & SIZE
FT0604-HC	N/A CA	6 x 4	6 x 4	6" SDR 35	(1) 3' x 3'
FT06504-HC	CA ONLY	6.5 x 4	6.5 x 4	6" SDR 35	(1) 3' x 3'
FT078045-HC	DE, MD, NJ, PA, VA, WV ONLY	7.83 x 4.5	7.83 x 4.5	6" SDR 35	(1) 3' x 3'
FT0804-HC	N/A DE, MD, NJ, PA, VA, WV	8 x 4	8 x 4	6" SDR 35	(1) 3' x 3'
FT0806-HC	ALL	8 x 6	8 x 6	6" SDR 35	(1) 4' x 4'
FT1006-HC	ALL	10 x 6	10 x 6	6" SDR 35	(1) 4' x 4'
FT1206-HC	ALL	12 x 6	12 x 6	6" SDR 35	(2) 4' x 4'
FT1307-HC	ALL	13 x 7	13 x 7	6" SDR 35	(2) 4' x 4'
FT1408-HC	CALL CONTECH	14 x 8	14 x 8	6" SDR 35	(2) 4' x 4'
FT1509-HC	CALL CONTECH	15 x 9	15 x 9	6" SDR 35	(2) 4' x 4'
FT1608-HC	CALL CONTECH	16 x 8	16 x 8	6" SDR 35	(2) 4' x 4'
FT1808-HC	CALL CONTECH	18 x 8	18 x 8	6" SDR 35	(2) 4' x 4'
FT2008-HC	CALL CONTECH	20 x 8	20 x 8	6" SDR 35	(3) 4' x 4'
FT2208-HC	CALL CONTECH	22 x 8	22 x 8	6" SDR 35	(3) 4' x 4'

N/A = NOT AVAILABLE

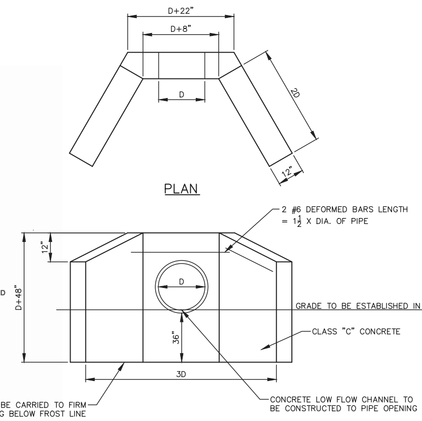
FT-HC SHORT SIDE INLET CONFIGURATION					
DESIGNATION	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	OUTLET PIPE DIA	TREE GRATE QTY & SIZE
FT0406-HC	N/A CA	4 x 6	4 x 6	6" SDR 35	(1) 3' x 3'
FT04065-HC	CA ONLY	4 x 6.5	4 x 6.5	6" SDR 35	(1) 3' x 3'
FT0408-HC	N/A DE, MD, NJ, PA, VA, WV	4 x 8	4 x 8	6" SDR 35	(1) 3' x 3'
FT045078-HC	DE, MD, NJ, PA, VA, WV ONLY	4.5 x 7.83	4.5 x 7.83	6" SDR 35	(1) 3' x 3'
FT0608-HC	ALL	6 x 8	6 x 8	6" SDR 35	(1) 4' x 4'
FT0610-HC	ALL	6 x 10	6 x 10	6" SDR 35	(1) 4' x 4'
FT0612-HC	ALL	6 x 12	6 x 12	6" SDR 35	(2) 4' x 4'
FT0713-HC	ALL	7 x 13	7 x 13	6" SDR 35	(2) 4' x 4'

N/A = NOT AVAILABLE

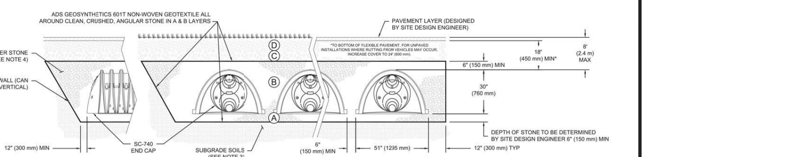
FILTERRA UNIT DETAIL
NO SCALE


PARKING LOT PAVING (SEE DETAIL)
STANDARD 90° NOSING (OTHER NOSING AVAILABLE UPON REQUEST)
4" MIN CLEAR THROAT OPENING
PRECAST TOP SLAB
THROAT PROTECTION DEVICE DO NOT REMOVE - LEAVE IN PLACE UNTIL SITE IS STABILIZED AND FILTERRA IS ACTIVATED
CAST-IN-PLACE GUTTER AND THROAT OPENING. CLASS "B" CONCRETE 4,000 PSI. AIR ENTRAINED
#4 DOWEL BARS @ 12" O.C. BY CONTECH TO BE BENT AS NECESSARY BY CONTRACTOR PRIOR TO INSTALLATION OF CAST-IN-PLACE GUTTER
PRECAST VAULT WALL
SECTION VIEW

FILTERRA UNIT THROAT AND GUTTER DETAIL
NO SCALE



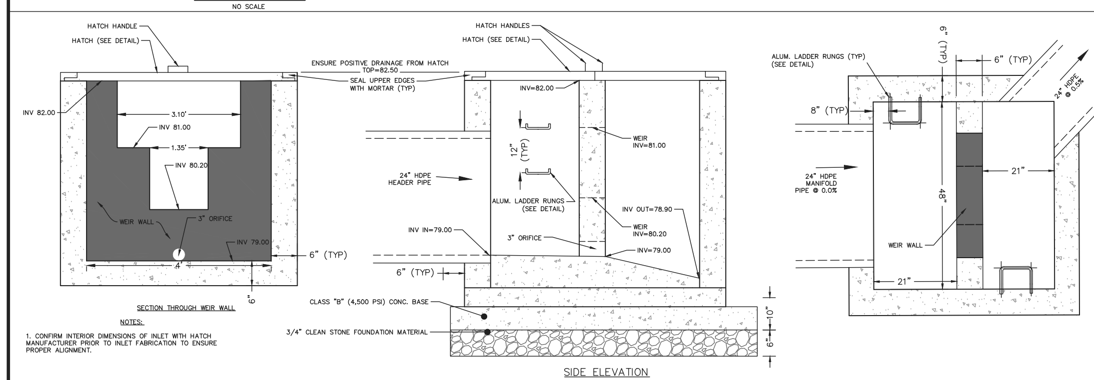
PRECAST CONCRETE WINGWALL DETAIL
NO SCALE


ADS GEOSYNTHETICS 601T NON-WOVEN GEOTEXTILE ALL AROUND CLEAN, CRUSHED, ANGULAR STONE IN A & B LAYERS
PAVEMENT LAYER (DESIGNED BY SITE DESIGN ENGINEER)
PERIMETER STONE (SEE NOTE 4)
EXCAVATION WALL (CAN BE SLOPED OR VERTICAL)
SC-740 END CAP
SUBGRADE SOILS (SEE NOTE 3)
12" (300 mm) MIN
6" (150 mm) MIN
51" (1295 mm)
12" (300 mm) TYP
30" (760 mm)
DEPTH OF STONE TO BE DETERMINED BY SITE DESIGN ENGINEER 6" (150 mm) MIN

NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

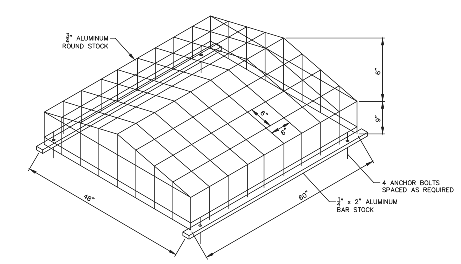
UNDERGROUND BASIN CROSS SECTIONS
NO SCALE


HATCH HANDLE
HATCH (SEE DETAIL)
ENSURE POSITIVE DRAINAGE FROM HATCH
TOP=82.50
SEAL UPPER EDGES WITH MORTAR (TYP)
INV 82.00
INV 81.00
INV 80.20
3" ORIFICE
WEIR WALL
INV 79.00
SECTION THROUGH WEIR WALL
24" HDPE HEADER PIPE
ALUM. LADDER RUNGS (SEE DETAIL)
INV OUT=78.90
CLASS "B" (4,500 PSI) CONC. BASE
3/4" CLEAN STONE FOUNDATION MATERIAL
SIDE ELEVATION
24" HDPE MANIFOLD PIPE @ 0.0%
PLAN

NOTES:

1. CONFIRM INTERIOR DIMENSIONS OF INLET WITH HATCH MANUFACTURER PRIOR TO INLET FABRICATION TO ENSURE PROPER ALIGNMENT.

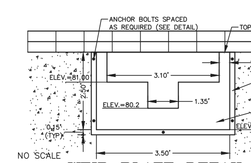
OUTLET CONTROL STRUCTURE #1
NO SCALE



NOTES:

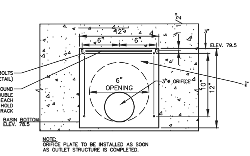
1. ALL JOINTS SHALL BE WELDED.
2. ALL ALUMINUM TO COME IN CONTACT WITH CONCRETE SHALL BE COATED WITH ASPHALTIC PAINT TO PREVENT OXIDATION.

TRASH RACK FOR TOP OF OUTLET STRUCTURE
NO SCALE

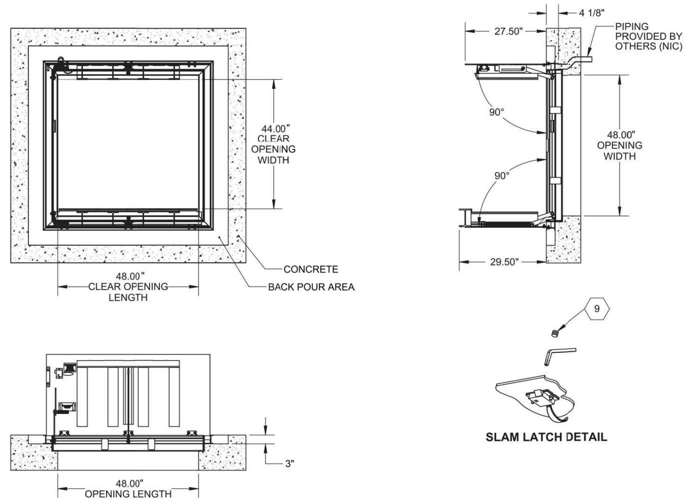


NO SCALE

WEIR PLATE DETAIL
NO SCALE



ORIFICE PLATE
NO SCALE



SPECIFICATIONS:

(1) DOOR: ALUMINUM 1/4" DIAMOND PLATE, MILL FINISH WITH AN HS20 LOAD RATING FOR INFREQUENT LOW SPEED TRAFFIC WITH A MAX SPAN DEFLECTION OF 1/150

(2) FRAME: ALUMINUM, 1/4" EXTRUSION, GRAY PRIMER FINISH ON EXTERIOR SURFACES THAT COME INTO CONTACT WITH CONCRETE

(3) HINGES: TYPE 316 STAINLESS STEEL

(4) SLAM LATCH: TYPE 316 STAINLESS STEEL WITH INSIDE LEVER HANDLE AND OUTSIDE REMOVABLE HANDLE

(5) COUNTER-BALANCE SPRING: ENCLOSED, TYPE 17-7 SST SPRING

(6) HOLD-OPEN ARM: TYPE 316 STAINLESS STEEL WITH RED VINYL GRIP HANDLE

(7) FLUSH LIFT HANDLE: TYPE 316 STAINLESS STEEL

(8) DRAINAGE COUPLING: 1-1/2"

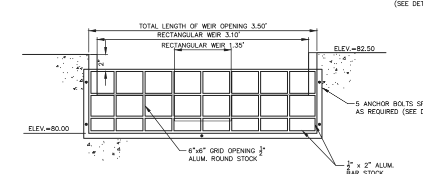
(9) FLUSH TYPE PLUG SEAL: TYPE 316 STAINLESS STEEL

(10) GASKET: EPDM

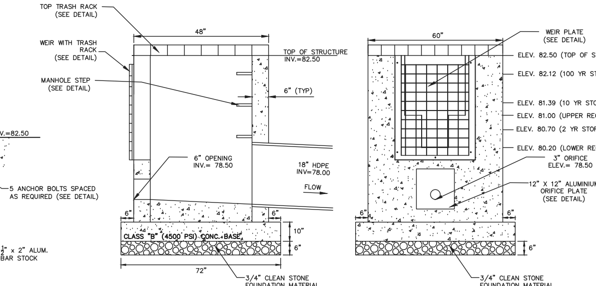
FLOOR DOOR SIZE: 48 (WIDTH) X 48 (LENGTH)

PART#:	FDDSA48X48DFL
nystrom 9300 73rd Avenue North, Minneapolis, MN 55428	TITLE: FD, Drainable HS20, Dbl Dr, Alum, 1/4" Dmd, Mill, Cast-in, SST Spring Assist, 316 SST HDW, Gasket, Slam Latch Removbl L Hdl

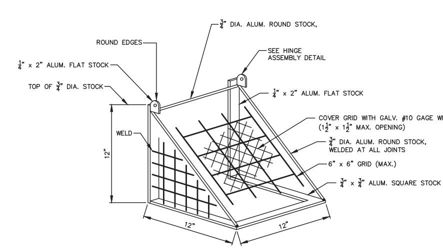
OUTLET STRUCTURE HATCH DETAIL
NO SCALE



TRASH RACK FOR WEIR
NO SCALE


TOP TRASH RACK (SEE DETAIL)
WEIR WITH TRASH RACK (SEE DETAIL)
MANHOLE STEP (SEE DETAIL)
TOP OF STRUCTURE INV.=82.50
6" OPENING INV.= 78.50
18" HDPE INV.=78.00
FLOW
CLASS "B" (4,500 PSI) CONC. BASE
3/4" CLEAN STONE FOUNDATION MATERIAL
WEIR PLATE (SEE DETAIL)
ELEV. 82.50 (TOP OF STRUCTURE)
ELEV. 82.12 (100 YR STORM)
ELEV. 81.39 (10 YR STORM)
ELEV. 81.00 (UPPER RECT. WEIR)
ELEV. 80.70 (2 YR STORM)
ELEV. 80.20 (LOWER RECT. WEIR)
3" ORIFICE ELEV.= 78.50
12" X 12" ALUMINUM ORIFICE PLATE (SEE DETAIL)

OUTLET CONTROL STRUCTURE #2 DETAILS
NO SCALE



TRASH RACK FOR ORIFICE
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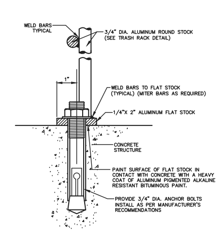

ANCHOR BOLT
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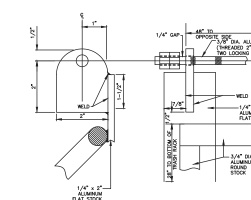

TRASH RACK HINGE ASSEMBLY
NO SCALE

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Dsgn: AWS	Check: RMS
Proj: 1107570A	FB: N/A
Dwg: SP01537C – NO VPS1	

CONSTRUCTION DETAILS
OF
SPRUCE STREET APARTMENTS
LOT 39 IN BLOCK 701
SITUATE IN
LAWRENCE TOWNSHIP, MERCER COUNTY, NEW JERSEY

STATE OF NEW JERSEY RUSSELL M. SMITH No. GE33065 *LICENSED* PROFESSIONAL ENGINEER

Digitally signed by Russell M Smith
Date: 2021.11.23 10:40:29 -05'00'

RUSSELL M. SMITH
N.J. PROFESSIONAL ENGINEER NO. 33065

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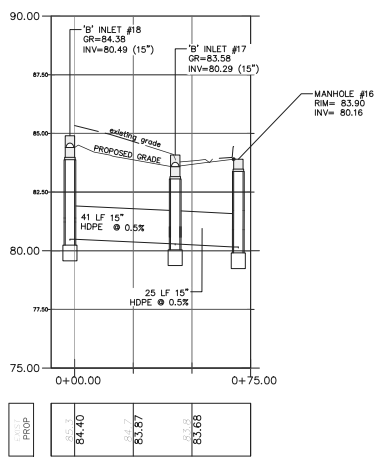
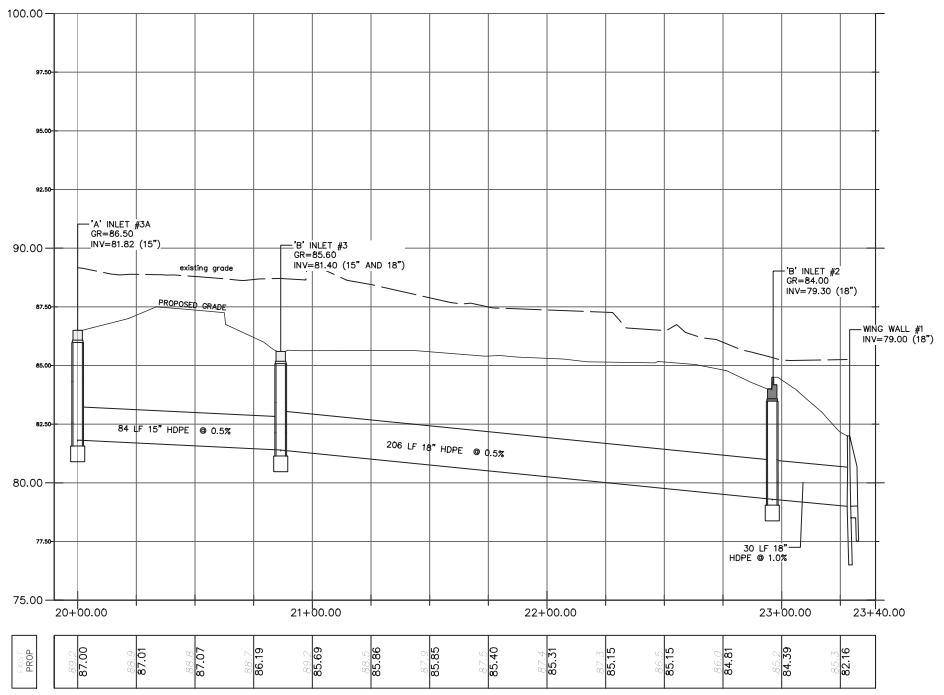
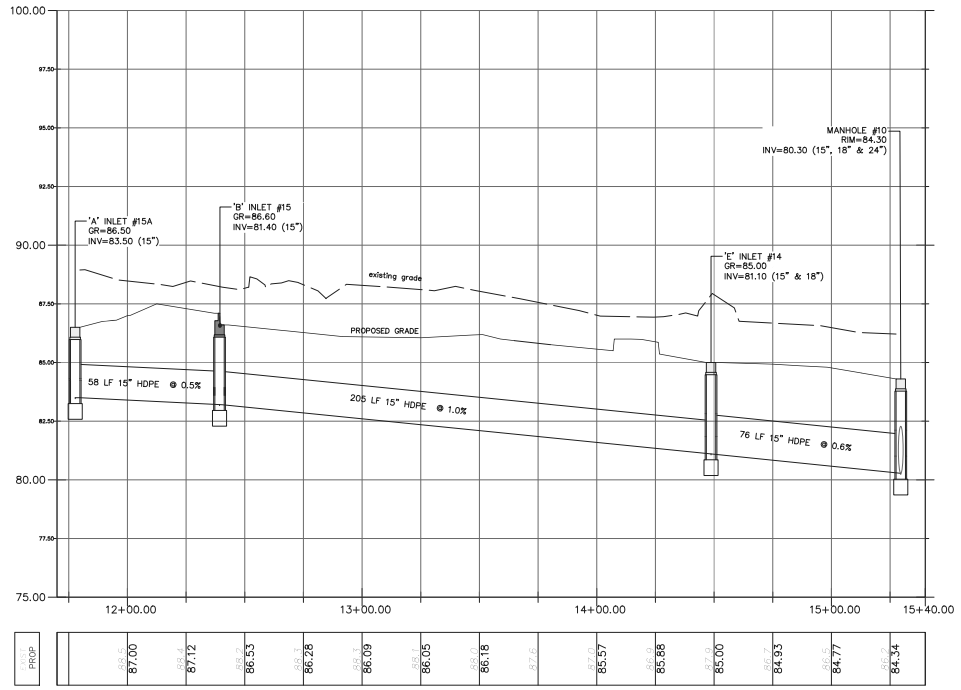


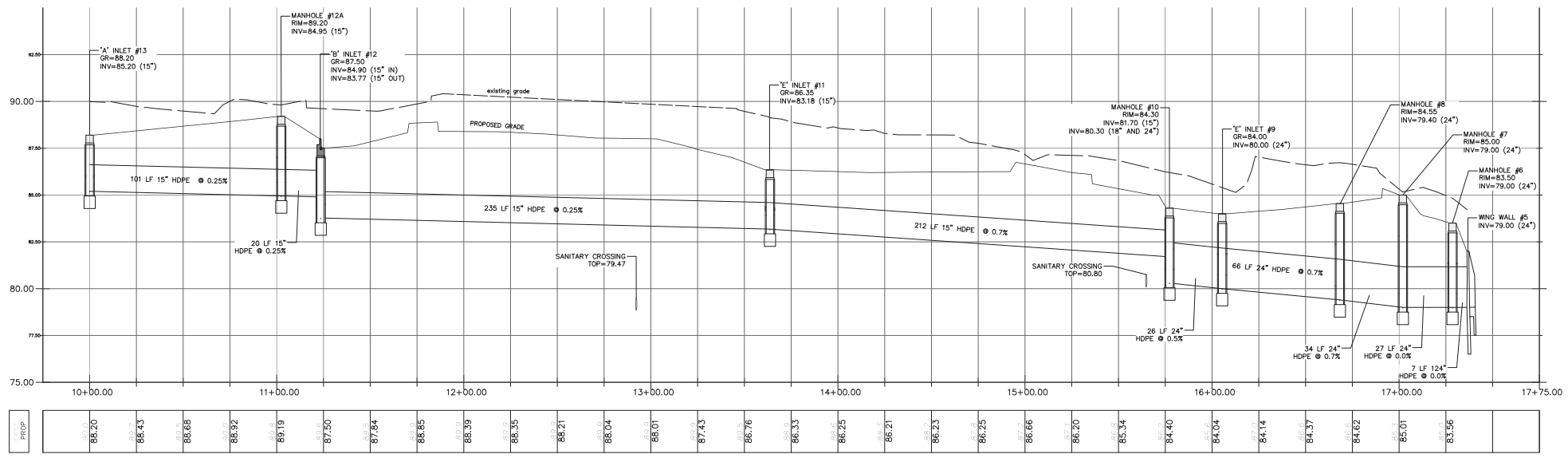
STORM SEWER PROFILE
'B' INLET #18 TO MANHOLE #16



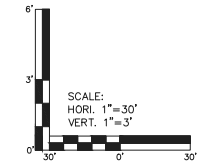
STORM SEWER PROFILE
'A' INLET #3A TO WING WALL #1

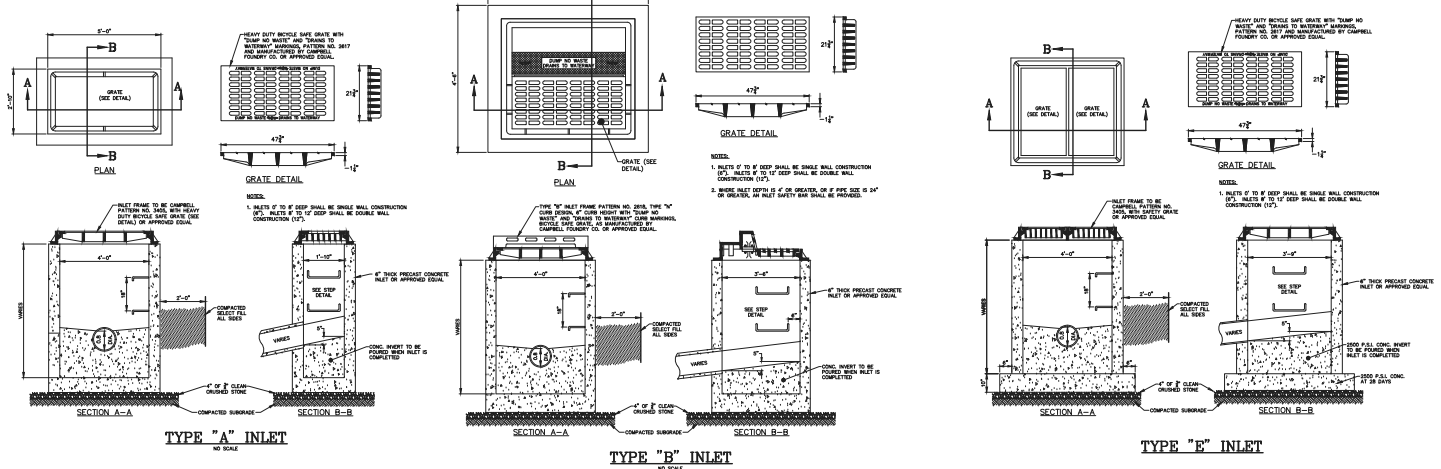


STORM SEWER PROFILE
'A' INLET #15A TO MANHOLE #10



STORM SEWER PROFILE
'A' INLET #13 TO WING WALL #5





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Proj: 1107570A TM: N/A
Dwg: SP01537C – NO VPSI

STORM PROFILES AND INLET DETAILS
OF
SPRUCE STREET APARTMENTS
LOT 39 IN BLOCK 701
SITUATE IN
LAWRENCE TOWNSHIP, MERCER COUNTY, NEW JERSEY

PROFESSIONAL ENGINEER
No. GE33065
LICENSED

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N.J. PROFESSIONAL ENGINEER NO. 33065

Sheet 10 of 14

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-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

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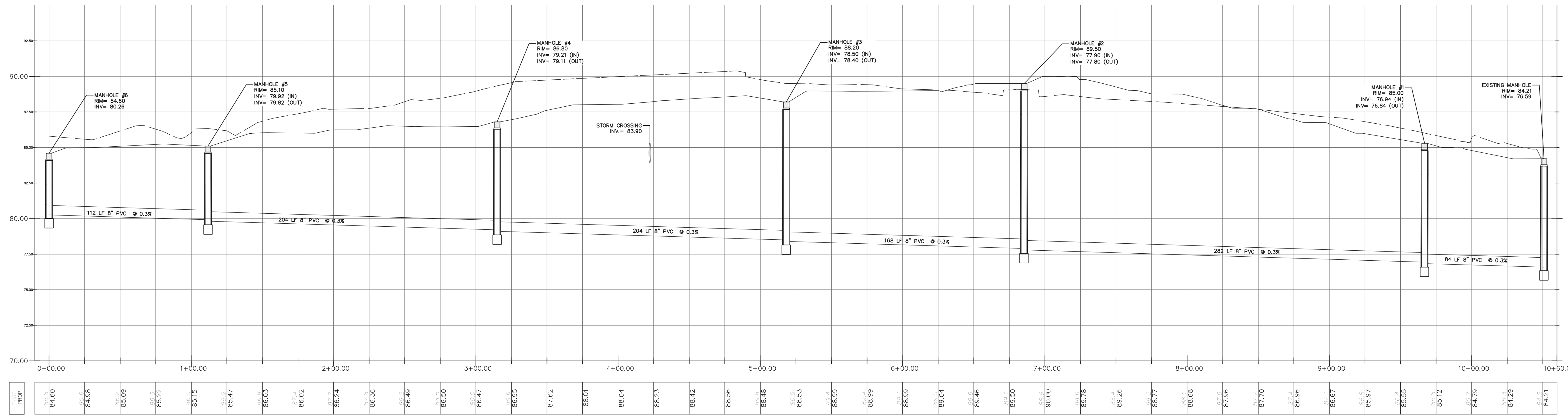
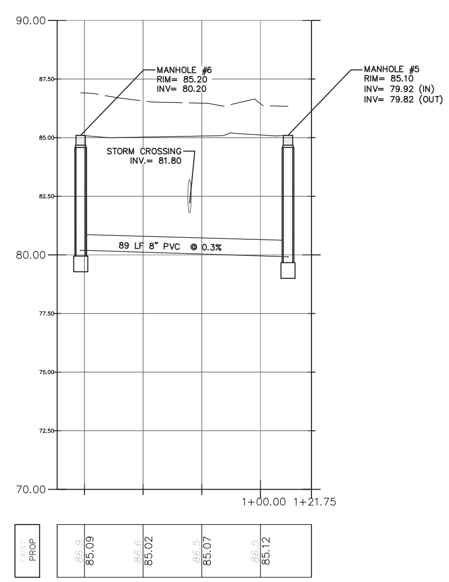
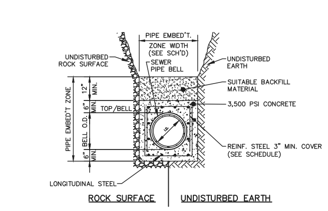


SANITARY SEWER PROFILE
MANHOLE #7 TO EXISTING MANHOLE

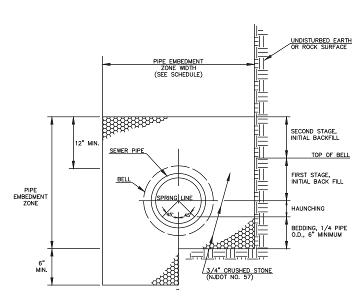


SANITARY SEWER PROFILE
MANHOLE #6 TO MANHOLE #5



PIPE ID	4", 6", 8", 10", 12"	14", 15", 16"	18"	20", 21"	24", 27"	30"
TRANS. STEEL CL. A MOD., CL. A-1 MOD., CL. A-2 MOD.	#4 @ 12	#4 @ 10	#4 @ 8	#4 @ 8	#4 @ 8	#4 @ 8
LONG STEEL #6 BARS CLASS A MODIFIED	3	3	3	3	4	5
LONG STEEL #6 BARS CLASS A-1 MODIFIED	8	10	10	10	14	14
LONG STEEL #6 BARS CLASS A-2 MODIFIED	3	3	3	3	4	5

SANITARY FULL ENCASEMENT
NO SCALE



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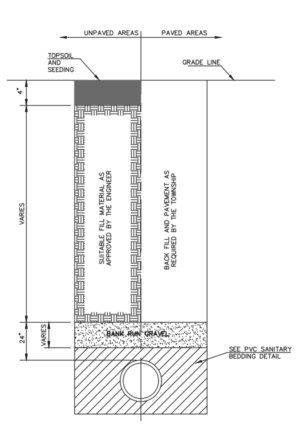

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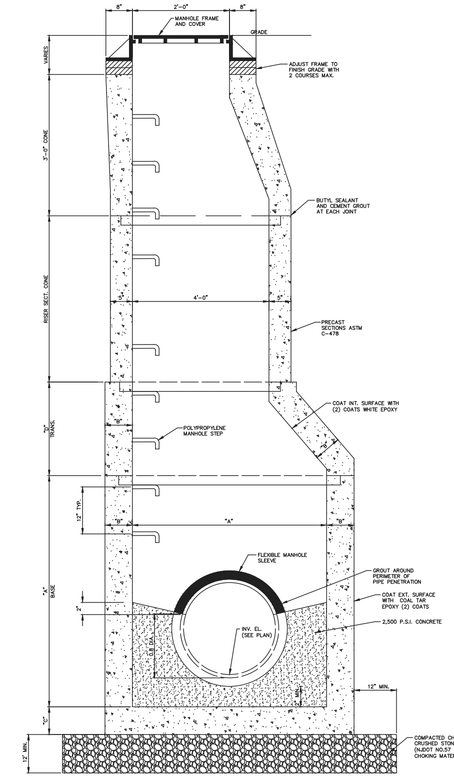

MANHOLE NOTES:

GENERAL

1. SHORTS SHALL BE USED AT MANHOLES.
2. EXTERIOR SURFACES SHALL BE PAINTED WITH (2) COATS OF BITUMINOUS WATERPROOFING MATERIAL. INTERIOR SHALL BE PAINTED WITH (2) COATS OF WHITE EPOXY WATERPROOFING.
3. ALL CONSTRUCTION SHALL MEET STANDARD SPECIFICATIONS; THE LATEST REVISIONS.
4. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST O.S.H.A. STANDARD WHERE POSSIBLE.

PRECAST CONCRETE MANHOLE (ASTM C-478)

1. WHERE 5' AND 6' I.D. BASES ARE USED, A TAPER SECTION CONNECTING BASE SECTION AND RISER SHALL BE REQUIRED AND SHALL HAVE A THICKNESS AS SHOWN. THE BASE SECTION AND RISER ALLOW FOR AT LEAST 6' MINIMUM VERTICAL CLEARANCE WHERE POSSIBLE.
2. BASES TO BE AS SHOWN IN THE SCHEDULE.

BRICK OR CONCRETE BLOCK MANHOLES (NOT SHOWN)

1. BRICK OR CONCRETE BLOCK MANHOLES MUST BE APPROVED BY THE AUTHORITY.
2. DRAWINGS MUST BE SUBMITTED FOR ALL DETAILS.

WORK AT EXISTING MANHOLES

1. THE CONTRACTOR SHALL CUT INTO THE MANHOLE AND COMPLETE A CONNECTION USING A SUITABLE ADAPTOR AS REQUITED AND APPROVED BY THE AUTHORITY.
2. THE CONTRACTOR SHALL NOT INTERFERE WITH EXISTING SEWERAGE SERVICE DURING THE PERIOD OF CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO KEEP DEBRIS OUT OF MANHOLE.

PIPE DIA.	DIMENSIONS "A"	"B"	"C"	"D"
8" TO 24"	4'-0"	5"	6"	---
27" TO 36"	5'-0"	6"	8"	2'-0"
42" TO 48"	6'-0"	7"	8"	3'-0"

SANITARY PRECAST MANHOLE
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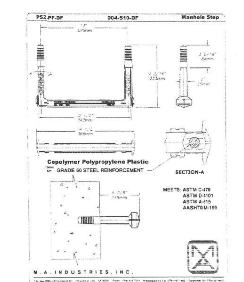

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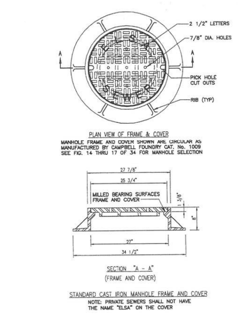

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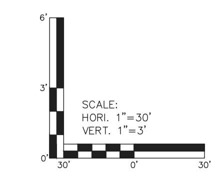

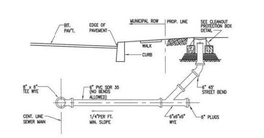

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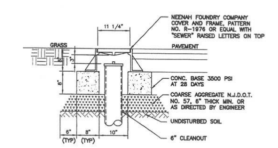

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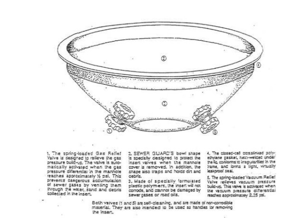

SANITARY GAS RELEASE VALVE
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Proj	1107570A / TP N/A
Dwg	SP01537C - NO VPS1

SANITARY PROFILES AND DETAILS
OF
SPRUCE STREET APARTMENTS
LOT 39 IN BLOCK 701
SITUATE IN
LAWRENCE TOWNSHIP, MERCER COUNTY, NEW JERSEY

STATE OF NEW JERSEY · RUSSELL M. SMITH · No. GE33065 · LICENSED · PROFESSIONAL ENGINEER

Digitally signed by Russell M Smith
Date: 2021.11.23 10:34:29 -05'00'

RUSSELL M. SMITH
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Sheet 11 of 14

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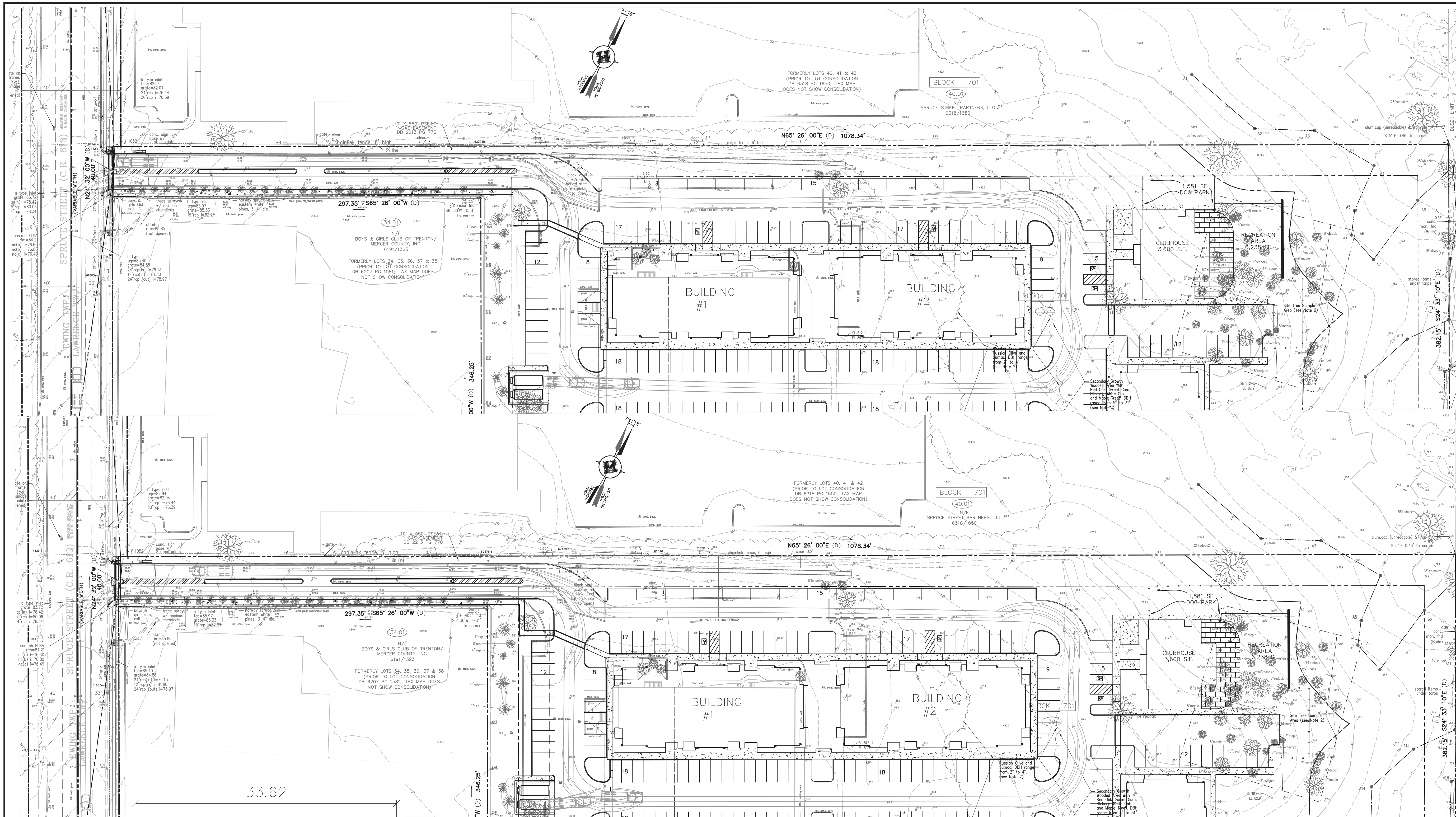

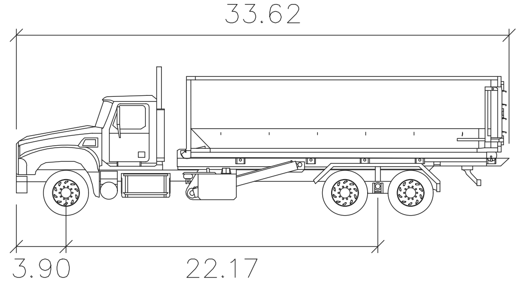

ROLL OFF REFUSE TRUCK

Width	: 8.17 feet
Track	: 8.02 feet
Lock to Lock Time	: 6.0 sec
Steering Angle	: 32.7°

0 30' 60'
GRAPHIC SCALE: FEET

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Scale: 1" = 30'
Dsgn: AWS Check: RMS
Proj: 1107537C FB: NA
Dwg: SP01537C – VPS1

REFUSE TRUCK CIRCULATION PLAN
FOR
SPRUCE STREET APARTMENTS
LOT 39 IN BLOCK 701
SITUATE IN
LAWRENCE TOWNSHIP, MERCER COUNTY, NEW JERSEY

STATE OF NEW JERSEY RUSSELL M. SMITH No. GE33065 *LICENSED* PROFESSIONAL ENGINEER

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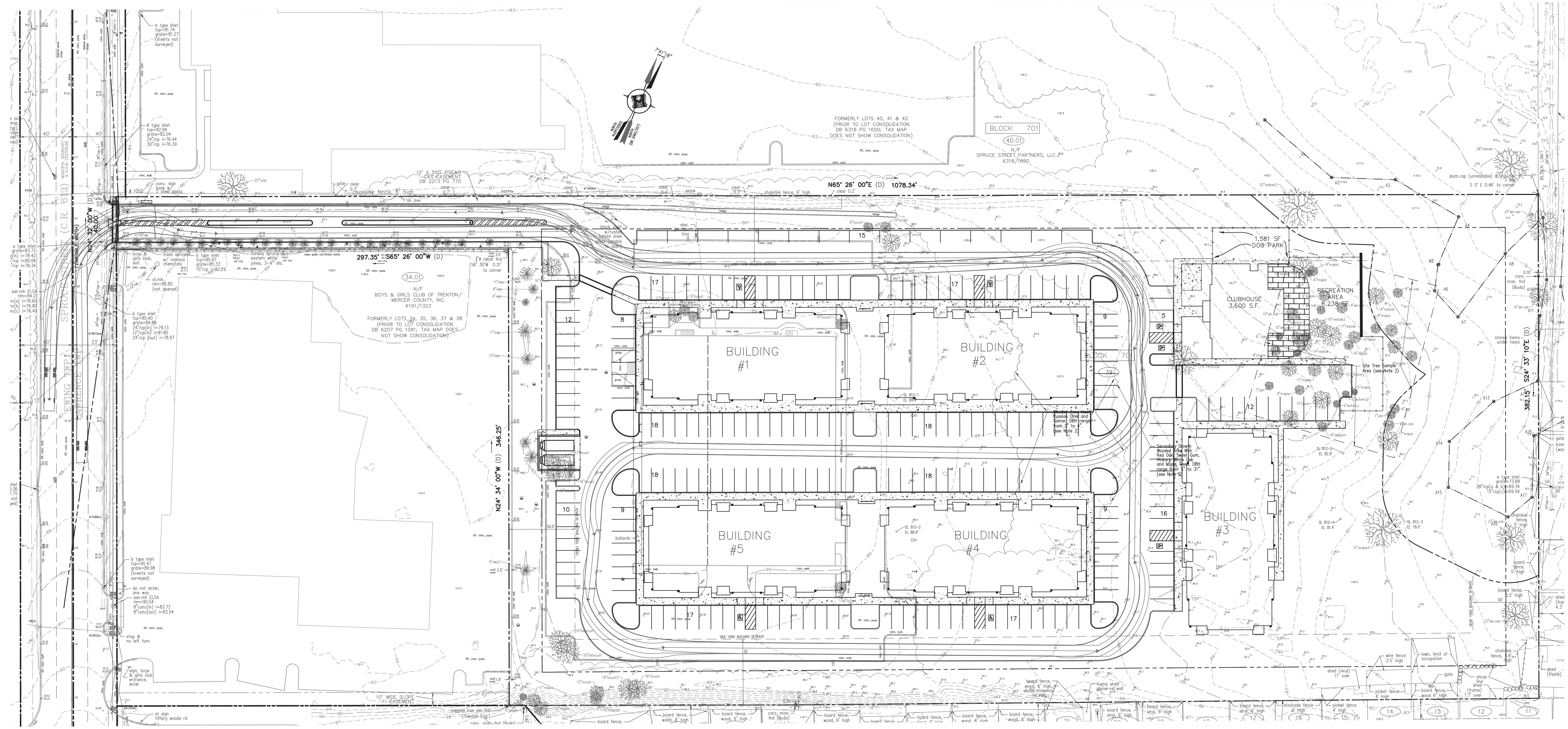

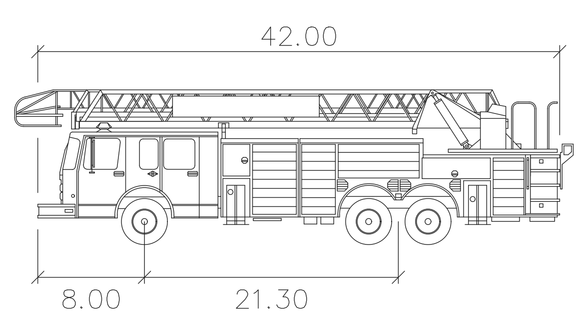

LAWRENCE TWSP FIRE TRUCK

Width	: 8.00 feet
Track	: 8.50 feet
Lock to Lock Time	: 6.0 sec
Steering Angle	: 24.1°

GRAPHIC SCALE: FEET (0, 30', 60')

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Drawn: AWS Checked: RMS
Job: 1107537C Field: NA
Dwg: SP01537C – VPS1

FIRE TRUCK CIRCULATION PLAN
FOR
SPRUCE STREET APARTMENTS
LOT 39 IN BLOCK 701
SITUATE IN
LAWRENCE TOWNSHIP, MERCER COUNTY, NEW JERSEY

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N.J. PROFESSIONAL ENGINEER NO. 33065

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Sheet 13 of 14

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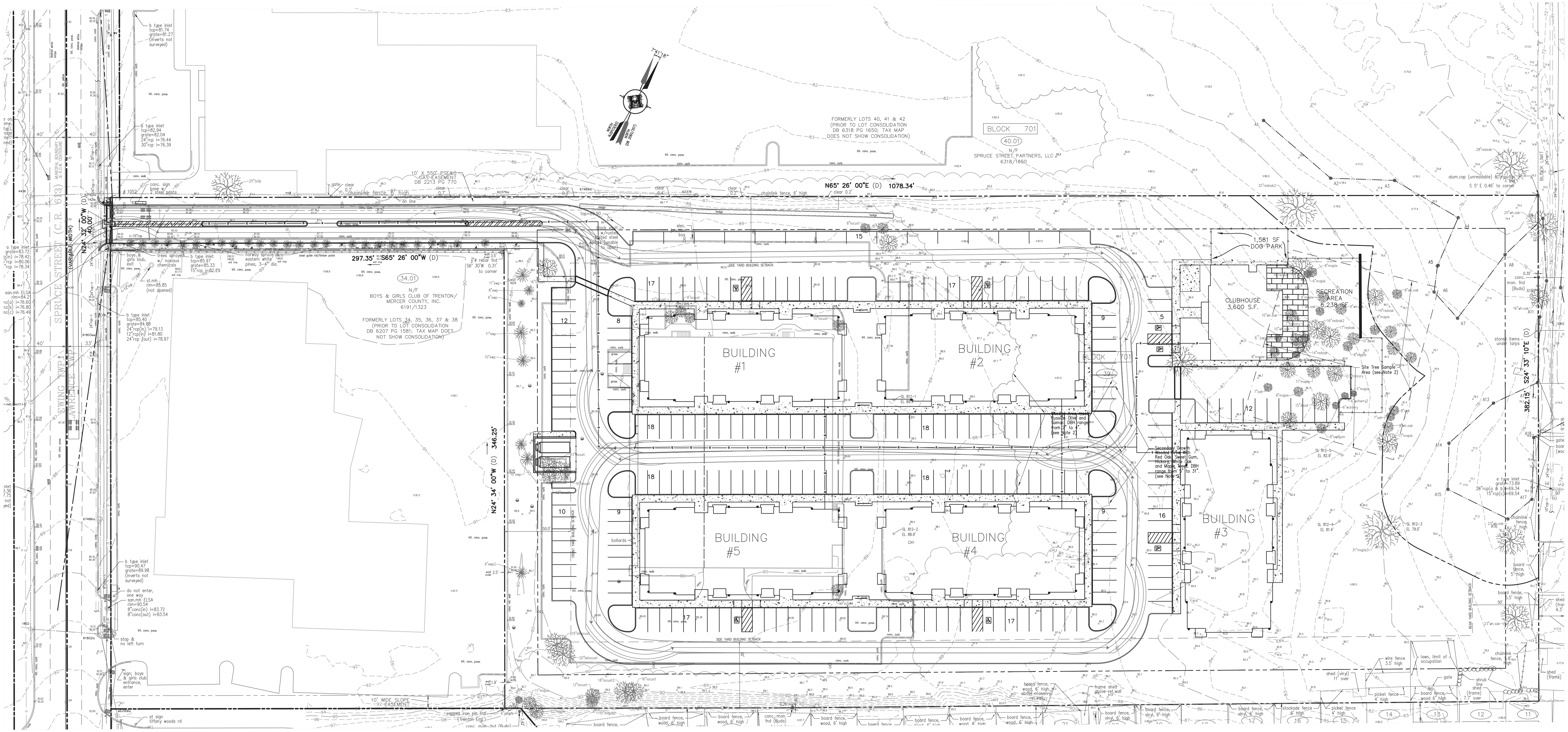

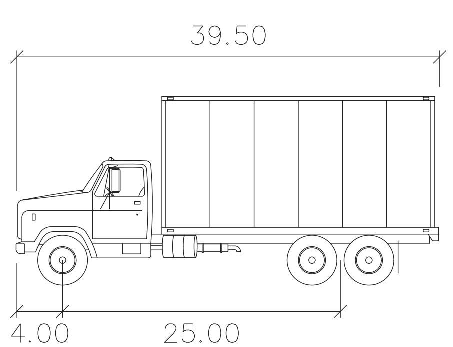

SU-40

Width : 8.00 feet
Track : 8.00 feet
Lock to Lock Time : 6.0 sec
Steering Angle : 31.8°

GRAPHIC SCALE: FEET (0, 30', 60')

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Dwg:	SP01537C – VPS1

MOVING TRUCK CIRCULATION PLAN

FOR

SPRUCE STREET APARTMENTS
LOT 39 IN BLOCK 701

SITUATE IN

LAWRENCE TOWNSHIP, MERCER COUNTY, NEW JERSEY

STATE OF NEW JERSEY RUSSELL M. SMITH No. GE33065 LICENSED PROFESSIONAL ENGINEER

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Appendix E: Magicpak HVAC Unit Specifications

magicpak™
All-In-One HVAC Systems

One Choice. Greater Impact.

M-SERIES™ - Optimized for Multi-family

Integrated heating and cooling systems in a tiny 3′ x 3′ footprint.

Design Your Vision | All-In-One HVAC Products | Faster Installation | Simplified Maintenance

MagicPak™ makes every job easier.

MagicPak M-Series™ heating and cooling units are the ideal choice for multi-family buildings. The perfect combination of performance, convenience and flexibility, these self-contained units are simple to install and easy to maintain.

Concealed in a closet, the M-Series unit is easily accessible for maintenance.

Efficiency At Every Step

Plug-and play design

- Saves time and money during installation.

Self-contained design

- Reduces commissioning time at building completions.

Forward-facing components

- Make units easy to access from one location.

No outdoor elements

- Such as refrigerant lines or condensing units are needed.

Simplifying the specification & installation process.

All-in-one, compact units

- Simplify specification during the design phase.

Uniform design offers consistency

- From room to room and floor to floor, reducing installation time and costs.

Internally fastened units

- Reduce the need for external base pads, chaseways and utility connections.

1. Self-contained unit arrives.

Free Your Vision.

Compact design

- Minimizes building penetration.

Maintains indoor design aesthetic

- With closet-mounted units installed discreetly out of sight.

Customizable exterior louvers

- Extend creative possibilities, without compromising the building's façade.

2. Plug-and-play installation.

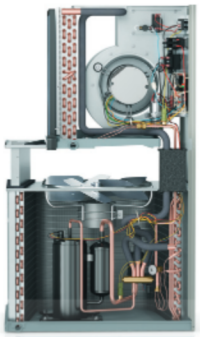
3. Installation Complete.

4. Out of sight, out of mind.

Inside MagicPak™
M-Series™

Specifications

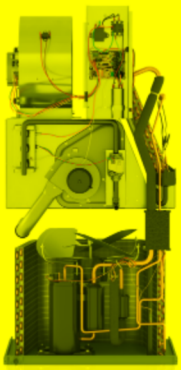
- Available in 0.75-, 1-, 1.5-, 2-, 2.5- and 3-ton capacities
- Minimum 11 EER efficiency rating on all units
- Convenient toolless filter access
- Optional Climate Guard™ epoxy-coated coils
- Standard stainless-steel heat exchanger on MGE model
- Top supply and return ducting
- Factory-installed evaporator drain float switch
- Factory-installed ventilation capabilities
- 5-year limited warranty on parts
- 20-year warranty on stainless-steel heat exchanger



MCE MODEL

ELECTRIC/ELECTRIC | MCE MODEL

- Electric heating range of 3 - 10 KW
- Cooling range of 8,600 - 34,800 BTU/HR



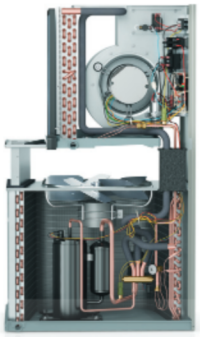
MGE MODEL

GAS/ELECTRIC | MGE MODEL

- Gas heating range of 15,000 - 60,000 BTU/HR
- Cooling range of 8,600 - 34,200 BTU/HR

ELECTRIC HEAT PUMP | MHP MODEL

- A COP of 3.3; Electric heating range of 3 - 10KW
- Cooling range of 8,600 - 34,600 BTU/HR
- Heating range of 5,200 - 32,400 BTU/HR



MHP MODEL

magicpak™
All-In-One HVAC Systems

To learn more about the new self-contained M-Series™ heating and cooling units or how MagicPak™ can benefit your next project, visit our website at magicpak.com.

Form No. MPMS-300 PC91030 (1/21)

magicpak™

M-SERIES™
MGE4-11

ELECTRIC COOLING/
GAS HEATING
PACKAGED UNIT

FORM NO. MGE4-100 (12/2020)

AHRI CERTIFIED™ www.ahridirectory.org
Single Package Vertical AC
AHRI Standard 390

AHRI CERTIFIED™ www.ahridirectory.org
Single Package Vertical AC
AHRI Standard 390
C

ETL US
Intertek

MODEL NUMBER GUIDE

36 M GE 4 - 11 - 18 1 N P - 1

- **36** — GAS HEATING INPUT
  - 15 = 15,000 BTU/HR
  - 24 = 24,000 BTU/HR
  - 36 = 36,000 BTU/HR
  - 48 = 48,000 BTU/HR
  - 60 = 60,000 BTU/HR
- **M** — M = MAGIC-PAK
- **GE** — GE = GAS/ELECTRIC
- **4** — 4 = R410A REFRIGERANT
- **11** — 11 = 11 EER
- **18** — NOMINAL COOLING CAPACITY
  - 09 = 9,000 BTU/HR
  - 12 = 12,000 BTU/HR
  - 18 = 18,000 BTU/HR
  - 24 = 24,000 BTU/HR
  - 30 = 30,000 BTU/HR
  - 36 = 36,000 BTU/HR
- **1** — SERIES
- **N** — N = STAINLESS STEEL HEAT EXCHANGER
  C = COIL CORROSION PROTECTION & STAINLESS STEEL HEAT EXCHANGER
- **P** — P = 208/230V - 1 PHASE - 60HZ
- **1** — REVISION CODE

*** Check that equipment complies with all applicable building codes, laws, and regulations for its intended use prior to installation.**

CONTENTS

APPLICATIONS

- Magic-Pak units are designed for use in all multifamily residential and commercial applications, such as: apartments, condominiums, student housing and senior living
- Installation in conditioned and non-conditioned mechanical spaces
- Units are approved for installations up to 5,500 ft. without any modifications or adjustments
- For installations above 5,500 ft., refer to High Altitude Application Data table and installation instructions for additional details

UNIT APPROVALS

ETL (INTERTEK)

- Design certified by ETL (Intertek) to latest edition of UL 1995
- Certified as a direct vent appliance in accordance with ANSI Z21.47
- Certified for the U.S. only
- Certified for less than 2% cabinet air leakage using ASHRAE Standard 193
- Rated with a 5kA Short Circuit Current Rating (SCCR) in accordance with RMS Symmetrical per UL 508A
- Refer to Unit Electrical and Physical Data table for additional details

AHRI/DOE

- Certified to AHRI Standard 390 for single package vertical units (SPVAC); refer to the AHRI Directory for AHRI certificates
- Cooling and heating system rated in accordance with Department of Energy (DOE) test procedures
- Heating system rated in accordance with Federal Trade Commission (FTC) labeling regulations

CORROSION PROTECTION

- Coating is specifically designed for use on HVAC type coils and demonstrates 6800+ hours of Sea Water Acetic Acid Testing (SWAAT) per ASTM G85:A3

SOUND RATING

- Outdoor sound level measurements tested per ANSI/AHRI Standard 270
- Refer to Outdoor Sound Rating & Cabinet Air Leakage table for additional details

LOUVER - PAINT SPECS

- Standard and impact-resistant louvers meet AAMA 2605 specifications

WARRANTY (RESIDENTIAL AND COMMERCIAL)

COMPRESSOR

- Five (5) years limited parts warranty

HEAT EXCHANGER

- Twenty (20) years limited parts warranty on stainless steel heat exchanger in all residential and commercial applications

ALL OTHER COVERED COMPONENTS

- Refer to Equipment Limited Warranty for additional details

STANDARD FEATURES

ELECTRICAL CONNECTIONS & GAUGE PORTS

- Line voltage knockouts (two concentric) to accommodate field required wire size
- Thermostat connections are located at the top of the cabinet
- Two gauge ports are located within the lower compartment of the unit
- Refer to Unit Dimension figure for additional details

CABINET

- Embossed steel cabinet
- Indoor section of the cabinet insulated with 0.5 in. dual density fiberglass insulation
- Outdoor section of the cabinet insulated with 0.5 in. weather-resistant polystyrene insulation

INTERNAL FILTER

- Tool-less filter access
- Factory-installed 1 in. filter rack with washable filter
- Field-provided filters up to MERV 6 can typically be installed in the unit's factory filter location in lieu of washable filter, when proper duct design is applied
- If a higher resistance filter is field installed in the unit, the added resistance must be included in the external static pressure and must not exceed 0.5 in. w.c. including ductwork
- Refer to Factory Filter Size and Pressure Drop and Blower Performance tables for additional details

REFRIGERATION SYSTEM
- Factory charged with R-410A refrigerant
- Factory sealed and tested
- Refer to Unit Electrical and Physical Data table for additional details

Indoor and Outdoor Coils
- Copper tube with aluminum fin coils

High Pressure Switch
- Shuts off unit if abnormal operating conditions cause the refrigerant discharge pressure to rise above acceptable levels

Low Pressure Switch
- Provides loss of charge protection by shutting off unit if refrigerant liquid pressure falls below acceptable levels

TRANSFORMER
- Rated for 40VA
- Factory wired for 230/240V power supply, and includes field selectable terminal for 208V
- Converts line voltage to 24V for the thermostat and control circuits within the unit

INDUCER BLOWER CYCLING
- Pests are discouraged from nesting in the unit's flue pipe during summer months by briefly energizing the gas furnace inducer blower at the beginning of each cooling cycle

SUPPLY AIR BLOWER
ECM Constant Torque Blower Motor
- Electrically efficient motor for reduced electrical consumption
- Motor provides specified air volume at 0.1 in. - 0.5 in. w.c. external static pressure
- Motor is resiliently mounted for quiet operation
- Blower assembly is easily removed for servicing
- Refer to Blower Performance tables for additional details

Electronic Blower Control
- Dedicated blower speed taps for continuous fan, cooling, and heating operation are programmed for optimal airflow and controlled by 24V thermostat signals
- Blower speed adjustment is easily accomplished by speed tap selection
- Fixed blower delays have been selected to enhance comfort
- Refer to Blower Performance tables for additional details

OUTDOOR COIL FAN
- Heavy duty, fully enclosed and weatherproof
- Aluminum fan blades

CONDENSATE MANAGEMENT
Primary Drain Pan
- Antimicrobial protection: drain pan is injected with an antibacterial agent that destabilizes the membrane of microorganism cells, disrupting the cellular function of odor-causing mold and bacteria so that they can no longer grow or reproduce

Overflow Protection
- Indoor drain pan overflow switch, which monitors the condensate level in primary drain pan
- Prevents units from operating if drain clogs and water is sensed

Secondary Drain Pan
- Polypropylene wall sleeve base is specifically designed to direct rain water out of the building and in the event of any restriction in the primary drain will act as a redundant overflow protection

OPTIONS & ACCESSORIES

FACTORY-INSTALLED OPTIONS

CORROSION PROTECTION
- Epoxy coated indoor and outdoor coils

FIELD-INSTALLED ACCESSORIES

WALL SLEEVES & LOUVERS
- Units must be installed with approved wall sleeve and louver accessories for safe operation and are required for all new construction installations

WALL SLEEVES (ASLEEVE)
- Penetrates the building envelope and creates a path for condenser air intake and exhaust
- Provides a sealed connection to the unit and a secure attachment foundation for the louvers
- Available in 6 in. to 12 in. depths

WALL SLEEVE EXTENSION (ASLEEVEXT4)
- Option provides an additional 4 in. of depth to the wall sleeve, for a maximum depth of 16 in.

LOUVERS

Polypropylene Louvers (ALVRP)
- Constructed from durable, corrosion-resistant plastic
- Available in four standard colors

Aluminum Louvers (ALVRAL)
- Constructed with 6063-T6 grade aluminum
- Available in anodized clear coat, primer (to be painted in the field), standard paint colors and custom colors with paint matching*

Impact-Resistant Aluminum Louvers (ALVRALC)
- 29” and 33” impact-resistant louvers are impact and wind load certified up to 186 MPH, risk categories III and IV, and wind exposures C and D (FBC Notice of Acceptance number 18-0522.03)
- Constructed with 6063-T6 grade aluminum
- Available in anodized clear coat, primer (to be painted in the field), standard paint colors and custom colors with paint matching*

LIQUID PROPANE (LP) CONVERSION KIT (ALPKT*)
- Enables simple conversion from natural gas to liquid propane
- Refer to LP Conversion Kit table for additional details

SHORT CIRCUIT CURRENT RATING KIT (ASCCR)
- Provides 200kA of SCCR protection
- Refer to SCCR Accessory table for additional details

CRANKCASE HEATER (ACASE841)
- Warms compressor crankcase to limit migration of liquid refrigerant back to compressor during off cycle
- Available for models with scroll compressors
- Refer to Crankcase Heater table for additional details

THERMOSTAT
- Required for all installations (field-supplied)
- Units are individually controlled with conventional 24V thermostat
- Thermostat must be capable of single stage cooling and single stage heating operation
- Refer to Unit Electrical and Physical Data table for additional details

** Certain exclusions apply. Refer to louver manufacturer’s literature and warranty documentation.*

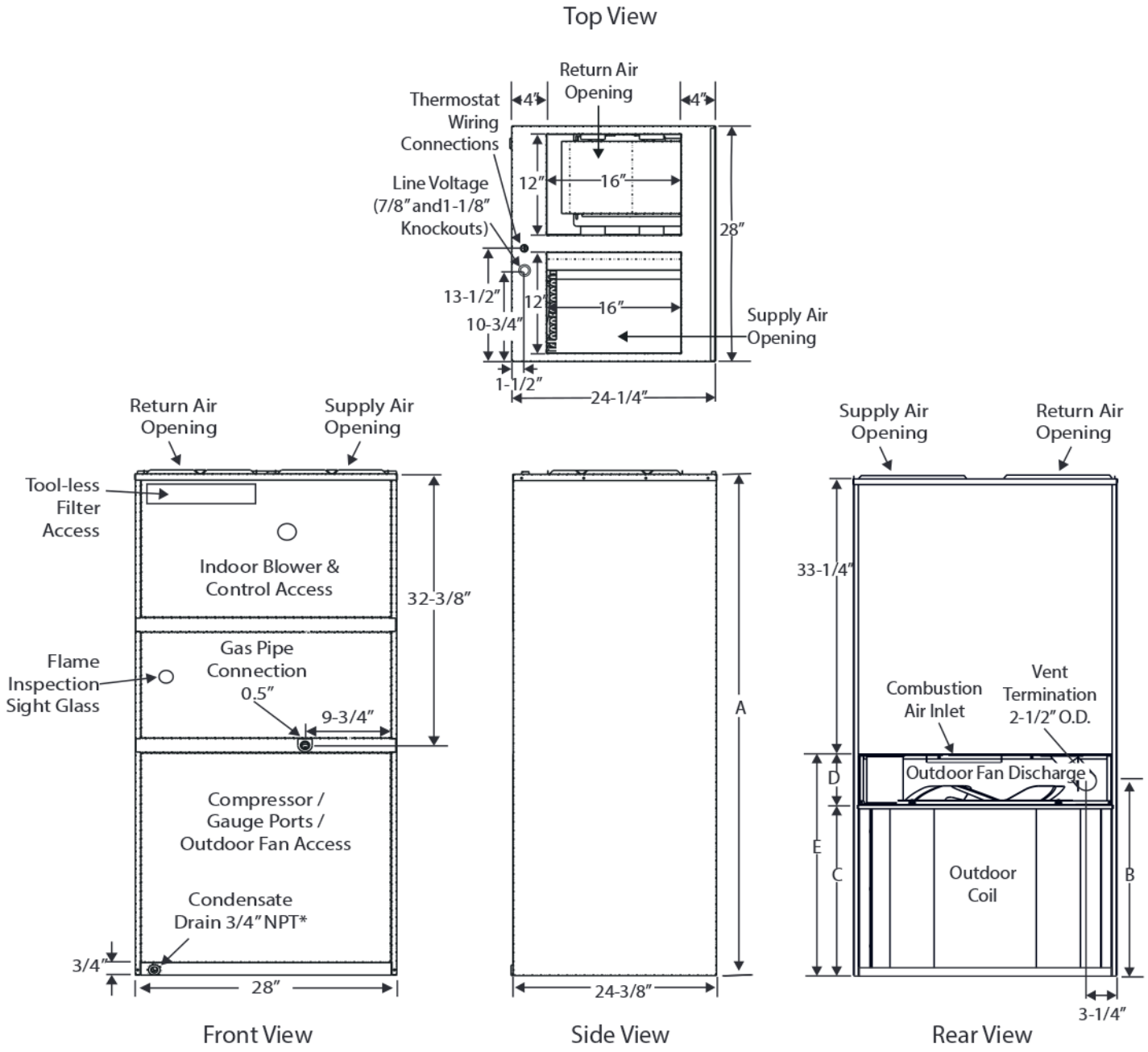
UNIT ELECTRICAL AND PHYSICAL DATA (208/230 Volt - 1 Phase - 60HZ)[1]

Model	MCA[2]	MOCP[3]	Default SCCR (kA)[4]	Compressor		Outdoor Fan				Indoor Blower			R410A Refrigerant Charge (oz)	Approx. Shipping Weight (lbs)
				Rated Load Amps (RLA)	Locked Rotor Amps (LRA)	Dia. (in)	Nominal RPM	Rated Load Amps (RLA)	Rated HP	Wheel D x W (in.)	Rated Load Amps (RLA)	Rated HP		
15MGE4-11-091*P	6.4	15	5	3.5	21.0	18	1050	0.9	1/8	10 x 6	2.8	1/3	40	238
24MGE4-11-091*P														
15MGE4-11-121*P	7.6	15	5	5.0	27.0	18	1025	0.9	1/8	10 x 6	2.8	1/3	63	273
24MGE4-11-121*P														
36MGE4-11-121*P														
15MGE4-11-181*P	10.7	15	5	6.5	37.5	18	1025	0.9	1/8	10 x 6	2.8	1/3	68	276
24MGE4-11-181*P														
36MGE4-11-181*P														
48MGE4-11-181*P														
60MGE4-11-181*P														
15MGE4-11-241*P	13.2	20	5	8.4	38.0	18	1050	0.9	1/8	10 x 6	2.8	1/3	75	301
24MGE4-11-241*P														
36MGE4-11-241*P														
48MGE4-11-241*P														
60MGE4-11-241*P														
24MGE4-11-301*P	21.8	35	5	15.0	72.5	18	1200	2.8	1/3	10 x 6	4.1	1/2	82	319
36MGE4-11-301*P														
48MGE4-11-301*P														
60MGE4-11-301*P														
24MGE4-11-361*P	23.9	35	5	14.7	75.0	18	1200	2.8	1/3	10 x 7	4.1	1/2	96	349
36MGE4-11-361*P														
48MGE4-11-361*P														
60MGE4-11-361*P														

1 Acceptable voltage range: 197 - 253V
2 MCA = Minimum Circuit Ampacity
3 MOCP = Maximum Over Current Protection
4 SCCR = Short Circuit Current Rating; refer to SCCR Accessory table, up to 200kA
NOTE: Units are rated at 208/230V, but MOCP & MCA values are calculated at 240V

UNIT DIMENSIONS (IN.)

Model	A	B	C	D	E
*MGE4-11-091*P *MGE4-11-121*P	57-7/8	20-3/4	18-5/8	6	24-5/8
*MGE4-11-181*P *MGE4-11-241*P	59-7/8	22-3/4	20-5/8		26-5/8
*MGE4-11-301*P	63-7/8	26-3/4	24-5/8		30-5/8
*MGE4-11-361*P	71-7/8	34-3/4	28-5/8	10	38-5/8



* Provisions must be made to properly drain the primry and secondary drain pan. Piping the condensate to an inside drain is required.

MINIMUM CLEARANCES

Accessibility Clearances

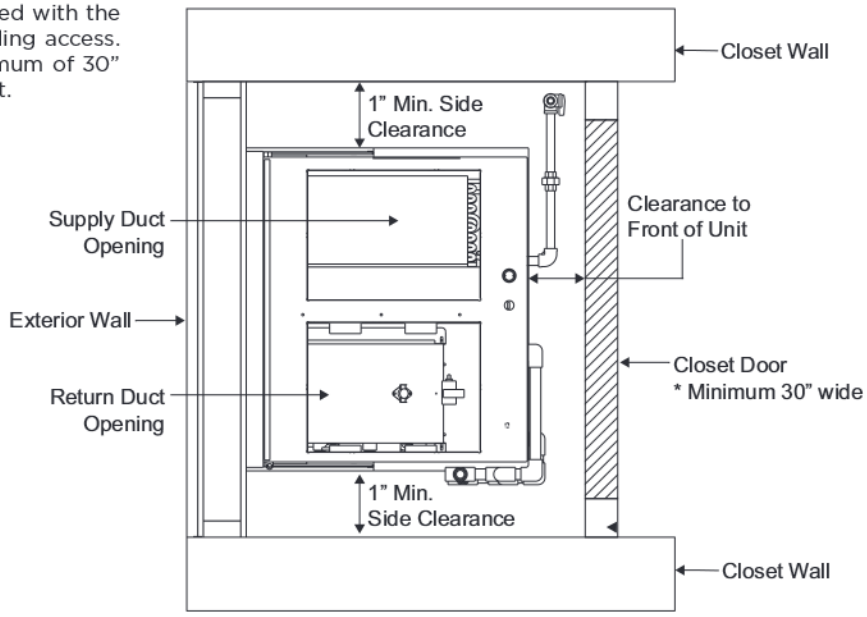
The front of the unit must be accessible for service. A minimum clearance of 30" in front of unit is required for service.

If the unit is enclosed, a door or access panel aligned with the front of the unit is the preferred method of providing access. The door or access panel opening must be a minimum of 30" wide (centered on the unit) and be as tall as the unit.

IMPORTANT

The unit must be installed with approved wall sleeve and louver accessories for safe operation. Improper installations could result in property damage, personal injury, or death.

Top View



Supply Duct Clearances

Minimum Clearances to Combustible Materials [1]		
Front	**Sides**	**Top**
0"	0"	0"

[1] Accessibility clearances take precedence.

Unit Clearances

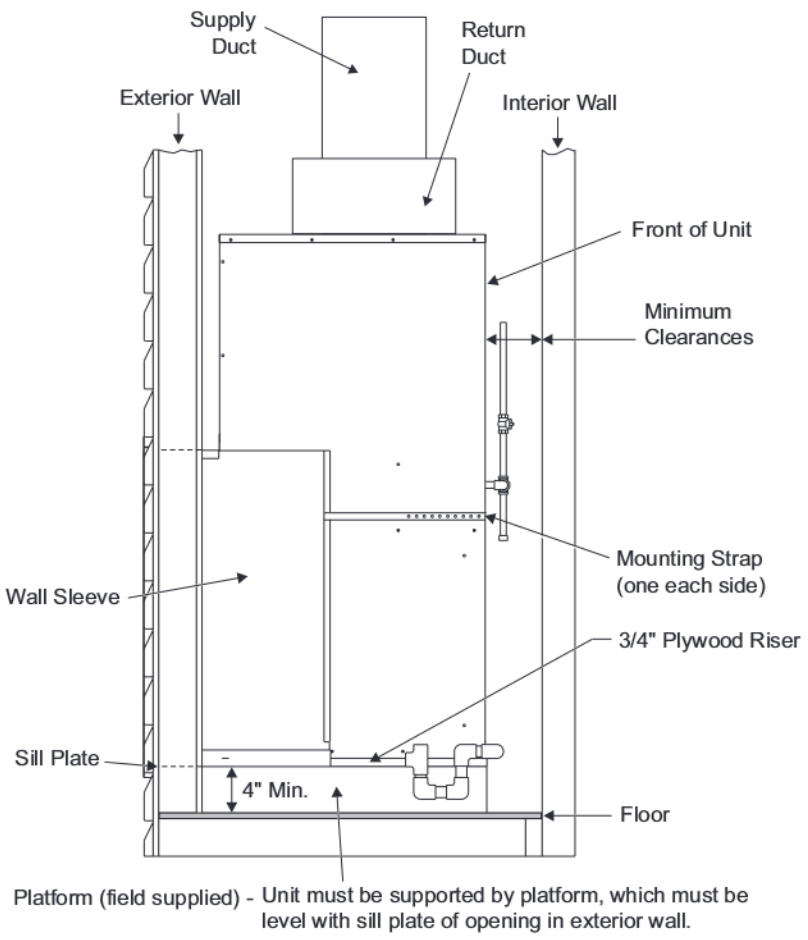
Minimum Clearances [1]	
Front[2]	**Sides [3]**
1"	1"

[1] Accessibility clearances take precedence.

[2] Clearance must accommodate field-installed condensate drain line / drain trap and gas line.

[3] Additional clearance required if field-installed condensate drain line / drain trap is routing alongside unit.

Side View



OUTDOOR SOUND RATING & CABINET AIR LEAKAGE

Model	Outdoor Sound Rating (dBa)[1]	Cabinet Air Leakage (%)[2]
*MGE4-11-091*P	75	2.0
*MGE4-11-121*P	75	2.0
*MGE4-11-181*P	75	1.4
*MGE4-11-241*P	76	1.4
*MGE4-11-301*P	81	1.4
*MGE4-11-361*P	77	1.4

1 Per ANSI / AHRI Standard 270
2 Per ASHRAE Standard 193

FACTORY FILTER SIZE (IN.) AND PRESSURE DROP (IN. W.C.)

		Indoor Airflow (CFM)																	
Model	Filter Size	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
All	12 x 24 x 1 [1]	0.01	0.02	0.03	0.04	0.04	0.05	0.08	0.09	0.10	0.12	0.14	0.15	0.17	0.18	0.20	0.22	0.24	0.26

1 Effective filter area 12 x 16.
If a higher resistance filter is field installed within the unit, the added resistance must be included as additional system static pressure.

SCCR ACCESSORY

Model	Kit*
*MGE4-11-091*P	ASCCR1
*MGE4-11-121*P	
*MGE4-11-181*P	
*MGE4-11-241*P	
*MGE4-11-301*P	ASCCR3
*MGE4-11-361*P	

** 200kA RMS Symmetrical (per UL 508A)*

CRANKCASE HEATER

Model	Kit
*MGE4-11-091*P	N/A
*MGE4-11-121*P	
*MGE4-11-181*P	
*MGE4-11-241*P	
*MGE4-11-301*P	ACASE841
*MGE4-11-361*P	

LP CONVERSION KIT

Model	Kit
*MGE4-11-091*P	ALPKT613
*MGE4-11-121*P	ALPKT614
*MGE4-11-181*P	
*MGE4-11-241*P	
*MGE4-11-301*P	
*MGE4-11-361*P	

HIGH ALTITUDE APPLICATION DATA

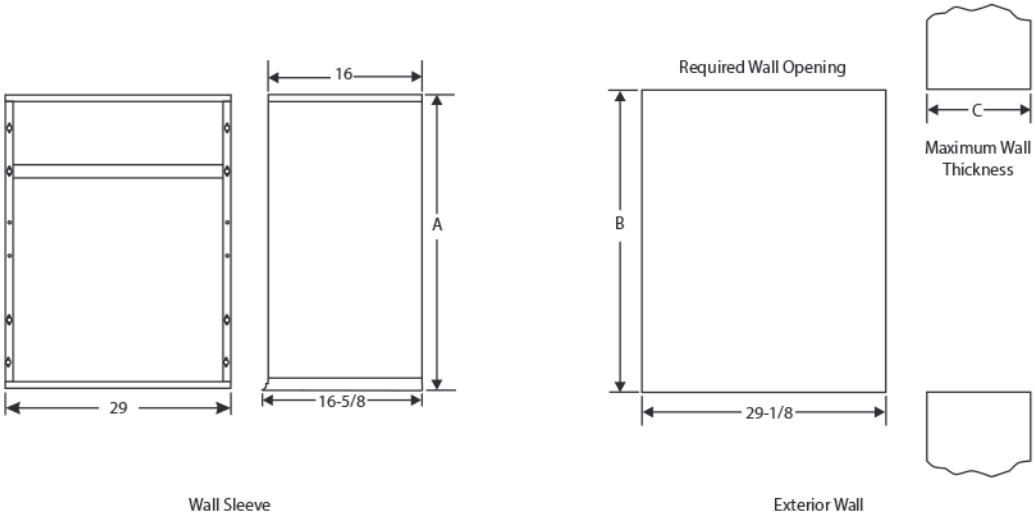
Altitude	Natural Gas		LP Gas	
	Burner Orifices	Manifold Pressure	Burner Orifices LP Kit	Manifold Pressure
0-5,500 ft.	As shipped	3.5” w.c.	ALPKT613 or 614 (model dependent)	10.0” w.c.
5,500 - 8,500 ft.		3.0” w.c.		8.0” w.c.
Above 8,500 ft.	Per National Fuel Gas Code	3.5” w.c.	Per National Fuel Gas Code	10.0” w.c.

WALL SLEEVES & LOUVERS

Wall Sleeves		Louvers			Model						Dimensions (in.)			
											Wall Sleeve	Wall Opening		
Wall Sleeve	Wall Sleeve Extension	Polypropylene Louvers	Aluminum Louvers	Impact Louvers	*MGE4-11-091*P	*MGE4-11-121*P	*MGE4-11-181*P	*MGE4-11-241*P	*MGE4-11-301*P	*MGE4-11-361*P	Height (A)	Height (B)	Depth (C)	
													Sleeve Only	Sleeve Plus Extension
ASLEEVE6-1	---	ALVRP***MGE-1	ALVRAL-1^	ALVRALC-1^	•	•	•	•			29	29-1/8	6	---
ASLEEVE8-1	---	ALVRP***MGE-1	ALVRAL-1^	ALVRALC-1^	•	•	•	•			29	29-1/8	8	---
ASLEEVE10-1	ASLEEVEXT4-1	ALVRP***MGE-1	ALVRAL-1^	ALVRALC-1^	•	•	•	•			29	29-1/8	10	14
ASLEEVE12-1	ASLEEVEXT4-1	ALVRP***MGE-1	ALVRAL-1^	ALVRALC-1^	•	•	•	•			29	29-1/8	12	16
ASLEEVE6-2	---	ALVRP***MGE-2	ALVRAL-2^	ALVRALC-2^					•		32-3/4	32-7/8	6	---
ASLEEVE8-2	---	ALVRP***MGE-2	ALVRAL-2^	ALVRALC-2^					•		32-3/4	32-7/8	8	---
ASLEEVE10-2	ASLEEVEXT4-2	ALVRP***MGE-2	ALVRAL-2^	ALVRALC-2^					•		32-3/4	32-7/8	10	14
ASLEEVE12-2	ASLEEVEXT4-2	ALVRP***MGE-2	ALVRAL-2^	ALVRALC-2^					•		32-3/4	32-7/8	12	16
ASLEEVE6-2	---	---	ALVRAL-7^	---	○	○	○	○			32-3/4	32-7/8	6	---
ASLEEVE8-2	---	---	ALVRAL-7^	---	○	○	○	○			32-3/4	32-7/8	8	---
ASLEEVE10-2	ASLEEVEXT4-2	---	ALVRAL-7^	---	○	○	○	○			32-3/4	32-7/8	10	14
ASLEEVE12-2	ASLEEVEXT4-2	---	ALVRAL-7^	---	○	○	○	○			32-3/4	32-7/8	12	16
ASLEEVE6-5	---	---	ALVRAL-3^	---	○	○	○	○			45	45-1/8	6	---
ASLEEVE8-5	---	---	ALVRAL-3^	---	○	○	○	○			45	45-1/8	8	---
ASLEEVE10-5	ASLEEVEXT4-3	---	ALVRAL-3^	---	○	○	○	○			45	45-1/8	10	14
ASLEEVE12-5	ASLEEVEXT4-3	---	ALVRAL-3^	---	○	○	○	○			45	45-1/8	12	16
ASLEEVE6-5	---	ALVRP***MGE-3	ALVRAL-4^	---						•	45	45-1/8	6	---
ASLEEVE8-5	---	ALVRP***MGE-3	ALVRAL-4^	---						•	45	45-1/8	8	---
ASLEEVE10-5	ASLEEVEXT4-3	ALVRP***MGE-3	ALVRAL-4^	---						•	45	45-1/8	10	14
ASLEEVE12-5	ASLEEVEXT4-3	ALVRP***MGE-3	ALVRAL-4^	---						•	45	45-1/8	12	16
ASLEEVE6-5	---	---	ALVRAL-4^	---					○	•	45	45-1/8	6	---
ASLEEVE8-5	---	---	ALVRAL-4^	---					○	•	45	45-1/8	8	---
ASLEEVE10-5	ASLEEVEXT4-3	---	ALVRAL-4^	---					○	•	45	45-1/8	10	14
ASLEEVE12-5	ASLEEVEXT4-3	---	ALVRAL-4^	---					○	•	45	45-1/8	12	16

**** Louver colors: WHT = white, SAN = sandstone, BGE = beige, TPST = taupestone*
^ -P: Option to paint standard, aluminum, and impact-resistant louver
○ Optional: Wall sleeves and louvers can be oversized to maintain a uniform appearance
*Note: ALVRP**MGE louvers may not be oversized due to exhaust grill location*
*MGE4-11-091*P through MGE4-11-241*P ton CANNOT be upsized to a ASLEEVE*-5*

WALL SLEEVE & WALL OPENING DIMENSIONS (IN.)



RATED COOLING & HEATING PERFORMANCE

Model	Cooling				Gas Heating			
	Supply Airflow (SCFM)	Net Capacity (Btu/hr)	Efficiency (EER)	S/T^	Input (Btu/hr)	Output (Btu/hr)	Rise Range (F°)	Thermal Efficiency (%)
15MGE4-11-091*P	350	8,600	11.0	0.77	15,000	12,000	15 - 45	80
24MGE4-11-091*P					24,000	19,200	25 - 55	
15MGE4-11-121*P	400	12,000	11.2	0.70	15,000	12,000	15 - 45	80
24MGE4-11-121*P					24,000	19,200	25 - 55	
36MGE4-11-121*P					36,000	28,800	30 - 60	
15MGE4-11-181*P	650	17,200	11.2	0.77	15,000	12,000	15 - 45	80
24MGE4-11-181*P					24,000	19,200	25 - 55	
36MGE4-11-181*P					36,000	28,800	30 - 60	
48MGE4-11-181*P					48,000	38,400	35 - 65	
60MGE4-11-181*P					60,000	48,000	40 - 70	
15MGE4-11-241*P	800	22,600	11.2	0.77	15,000	12,000	15 - 45	80
24MGE4-11-241*P					24,000	19,200	25 - 55	
36MGE4-11-241*P					36,000	28,800	30 - 60	
48MGE4-11-241*P					48,000	38,400	35 - 65	
60MGE4-11-241*P					60,000	48,000	40 - 70	
24MGE4-11-301*P	900	28,200	11.0	0.73	24,000	19,200	25 - 55	80
36MGE4-11-301*P					36,000	28,800	30 - 60	
48MGE4-11-301*P					48,000	38,400	35 - 65	
60MGE4-11-301*P					60,000	48,000	40 - 70	
24MGE4-11-361*P	1,000	34,200	11.0	0.72	24,000	19,200	25 - 55	80
36MGE4-11-361*P					36,000	28,800	30 - 60	
48MGE4-11-361*P					48,000	38,400	35 - 65	
60MGE4-11-361*P					60,000	48,000	40 - 70	

^ Not a rated value
S/T = ratio of sensible to total cooling load
SCFM = standard cubic feet per minute

EXTENDED COOLING PERFORMANCE DATA

Tonnage	Model	Indoor Temp DB/WB (°F)	Outdoor Temperature - DB (°F)														
			65			85			95			105			115		
			Net Capacity (Btu/hr)	S/T	System Power Input (kW)	Net Capacity (Btu/hr)	S/T	System Power Input (kW)	Net Capacity (Btu/hr)	S/T	System Power Input (kW)	Net Capacity (Btu/hr)	S/T	System Power Input (kW)	Net Capacity (Btu/hr)	S/T	System Power Input (kW)
0.75	*MGE4-11-091*P	85/72	10,400	0.61	0.62	9,600	0.65	0.73	9,200	0.67	0.78	8,600	0.71	0.85	8,000	0.74	0.91
		80/67	9,600	0.69	0.62	8,900	0.74	0.73	8,600	0.77	0.78	8,000	0.81	0.85	7,400	0.85	0.91
		75/63	9,000	0.71	0.63	8,300	0.77	0.73	8,000	0.80	0.78	7,400	0.86	0.84	6,700	0.92	0.91
		75/57	8,100	1.00	0.63	7,800	1.00	0.73	7,700	1.00	0.78	7,100	1.00	0.84	6,500	1.00	0.91
1.0	*MGE4-11-121*P	85/72	14,300	0.58	0.83	13,800	0.60	0.99	13,500	0.61	1.07	12,600	0.64	1.17	11,600	0.67	1.28
		80/67	13,500	0.64	0.84	12,500	0.68	0.99	12,000	0.70	1.07	11,300	0.73	1.17	10,600	0.76	1.27
		75/63	12,900	0.68	0.83	12,200	0.72	0.99	11,800	0.74	1.07	10,700	0.77	1.17	9,600	0.80	1.27
		75/57	11,000	1.00	0.84	10,600	1.00	0.99	10,400	1.00	1.07	9,600	1.00	1.16	8,800	1.00	1.26
1.5	*MGE4-11-181*P	85/72	20,100	0.62	1.18	19,000	0.66	1.41	18,500	0.68	1.52	17,100	0.73	1.65	15,800	0.77	1.79
		80/67	19,500	0.69	1.18	18,000	0.74	1.41	17,200	0.77	1.52	15,700	0.83	1.65	14,200	0.88	1.78
		75/63	18,700	0.73	1.19	17,000	0.79	1.41	16,200	0.82	1.52	14,600	0.87	1.64	13,000	0.92	1.77
		75/57	17,300	1.00	1.19	14,100	1.00	1.41	12,500	1.00	1.52	12,500	1.00	1.64	12,500	1.00	1.77
2.0	*MGE4-11-241*P	85/72	26,100	0.61	1.55	25,100	0.66	1.88	24,500	0.68	2.05	22,900	0.72	2.24	21,200	0.75	2.44
		80/67	25,000	0.68	1.54	23,400	0.74	1.86	22,600	0.77	2.02	20,900	0.82	2.22	19,200	0.87	2.42
		75/63	24,100	0.71	1.54	22,400	0.78	1.86	21,500	0.81	2.02	19,500	0.86	2.20	17,500	0.91	2.39
		75/57	23,200	1.00	1.52	21,300	1.00	1.84	20,400	1.00	2.00	18,900	1.00	2.02	17,300	1.00	2.04
2.5	*MGE4-11-301*P	85/72	27,000	0.63	1.96	28,800	0.65	2.38	29,800	0.66	2.58	28,300	0.68	2.87	26,900	0.70	3.15
		80/67	30,300	0.68	1.95	28,900	0.71	2.36	28,200	0.73	2.56	26,700	0.76	2.84	25,200	0.79	3.12
		75/63	29,100	0.71	1.94	27,700	0.74	2.35	26,900	0.76	2.55	25,300	0.80	2.82	23,600	0.83	3.08
		75/57	26,300	1.00	1.93	25,600	1.00	2.33	25,300	1.00	2.53	23,700	1.00	2.80	22,100	1.00	3.08
3.0	*MGE4-11-361*P	85/72	38,400	0.63	2.37	37,200	0.64	2.89	36,600	0.65	3.15	34,900	0.67	3.50	33,200	0.68	3.85
		80/67	36,400	0.68	2.35	34,900	0.71	2.86	34,200	0.72	3.11	32,600	0.74	3.46	31,000	0.76	3.81
		75/63	35,300	0.71	2.34	33,700	0.73	2.85	32,900	0.74	3.11	30,700	0.77	3.44	28,600	0.79	3.78
		75/57	30,900	1.00	2.33	30,100	1.00	2.82	29,600	1.00	3.07	27,900	1.00	3.10	26,200	1.00	3.12

BLOWER PERFORMANCE

- Performance based on factory-provided washable filter installed in the unit.
- If a higher resistance filter is field installed in the unit, the added resistance must be included in the external static pressure and must not exceed 0.5 in. w.c. including ductwork
- Refer to Factory Filter Size and Pressure Drop table for additional details

					SUPPLY AIRFLOW PERFORMANCE AS A FUNCTION OF EXTERNAL STATIC PRESSURE																			
	Model	Gas Heating		Indoor Blower Speed	0.1" w.c.				0.2" w.c.				0.3" w.c.				0.4" w.c.				0.5" w.c.			
		Rise Range (F°)	Mid Rise (F°)		SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise
3/4 Ton	15MGE4-11-091*P	15 - 45	30	TAP 1 (FAN)	430	46	0.06	---	370	50	0.07	---	320	53	0.07	---	265	57	0.08	---	200	62	0.08	---
				TAP 2 (COOL)†	375	39	0.05	---	315	42	0.06	---	N/A	N/A	N/A	---	N/A	N/A	N/A	---	N/A	N/A	N/A	---
				TAP 3 (COOL)	N/A	N/A	N/A	---	N/A	N/A	N/A	---	440	83	0.11	---	390	87	0.12	---	340	92	0.12	---
				TAP 4 (HEAT)*	365	35	0.05	31	300	39	0.05	37	240	42	0.06	47	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	460	83	0.11	24	415	88	0.12	27	370	98	0.13	30
	24MGE4-11-091*P	25 - 55	40	TAP 1 (FAN)	430	46	0.06	---	370	50	0.07	---	320	53	0.07	---	265	57	0.08	---	200	62	0.08	---
				TAP 2 (COOL)†	375	39	0.05	---	315	42	0.06	---	N/A	N/A	N/A	---	N/A	N/A	N/A	---	N/A	N/A	N/A	---
				TAP 3 (COOL)	N/A	N/A	N/A	---	N/A	N/A	N/A	---	440	83	0.11	---	390	87	0.12	---	340	92	0.12	---
				TAP 4 (HEAT)*	445	48	0.06	40	390	53	0.07	46	340	56	0.08	53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	530	102	0.14	34	480	108	0.14	37	440	114	0.15	41
1 Ton	15MGE4-11-121*P	15 - 45	30	TAP 1 (FAN)	415	39	0.05	---	350	43	0.06	---	285	47	0.06	---	240	51	0.07	---	165	54	0.07	---
				TAP 2 (COOL)†	425	46	0.06	---	370	49	0.07	---	315	53	0.07	---	N/A	N/A	N/A	---	N/A	N/A	N/A	---
				TAP 3 (COOL)	N/A	N/A	N/A	---	N/A	N/A	N/A	---	475	93	0.12	---	430	97	0.13	---	385	101	0.14	---
				TAP 4 (HEAT)*	370	36	0.05	30	315	39	0.05	35	260	42	0.06	43	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	470	80	0.11	24	415	85	0.11	27	370	89	0.12	30
	24MGE4-11-121*P	25 - 55	40	TAP 1 (FAN)	415	39	0.05	---	350	43	0.06	---	285	47	0.06	---	240	51	0.07	---	165	54	0.07	---
				TAP 2 (COOL)†	425	46	0.06	---	370	49	0.07	---	315	53	0.07	---	N/A	N/A	N/A	---	N/A	N/A	N/A	---
				TAP 3 (COOL)	N/A	N/A	N/A	---	N/A	N/A	N/A	---	475	93	0.12	---	430	97	0.13	---	385	101	0.14	---
				TAP 4 (HEAT)*	450	50	0.07	40	405	53	0.07	44	355	57	0.08	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	525	101	0.14	34	485	105	0.14	37	450	110	0.15	40
	36MGE4-11-121*P	30 - 60	45	TAP 1 (FAN)	415	39	0.05	---	350	43	0.06	---	285	47	0.06	---	240	51	0.07	---	165	54	0.07	---
				TAP 2 (COOL)†	425	46	0.06	---	370	49	0.07	---	315	53	0.07	---	N/A	N/A	N/A	---	N/A	N/A	N/A	---
				TAP 3 (COOL)	N/A	N/A	N/A	---	N/A	N/A	N/A	---	475	93	0.12	---	430	97	0.13	---	385	101	0.14	---
				TAP 4 (HEAT)*	590	87	0.12	45	555	91	0.12	48	515	96	0.13	52	475	100	0.134	56	N/A	N/A	N/A	N/A
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	680	138	0.19	39	650	143	0.19	41	615	148	0.198	44	585	153	0.21	46

N/A: Do not operate unit using this blower speed at this external static pressure.
† As shipped speed for Cooling operation. Blower speed must be field adjusted to speed Tap 3 for higher duct static applications.
** As shipped speed for Heating operation. Blower speed must be field adjusted to speed Tap 5 for higher duct static applications.*

BLOWER PERFORMANCE CONTINUED

- Performance based on factory-provided washable filter installed in the unit.
- If a higher resistance filter is field installed in the unit, the added resistance must be included in the external static pressure and must not exceed 0.5 in. w.c. including ductwork
- Refer to Factory Filter Size and Pressure Drop table for additional details

				SUPPLY AIRFLOW PERFORMANCE AS A FUNCTION OF EXTERNAL STATIC PRESSURE																			
	Model	Gas Heating		Indoor Blower Speed	0.1" w.c.				0.2" w.c.				0.3" w.c.				0.4" w.c.				0.5" w.c.			
		Rise Range (F°)	Mid Rise (F°)		SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise
1.5 Ton	15MGE4-11-181*P	15-45	30	TAP 1 (FAN)	470	54	0.07	---	400	59	0.08	---	345	63	0.08	---	290	67	0.09	---	235	70	0.09	---
				TAP 2 (COOL)†	670	118	0.16	---	625	123	0.16	---	565	131	0.18	---	525	136	0.18	---	N/A	N/A	N/A	N/A
				TAP 3 (COOL)	N/A	N/A	N/A	---	765	184	0.25	---	730	191	0.26	---	675	201	0.27	---	630	206	0.28	---
				TAP 4 (HEAT)*	370	39	0.05	30	305	43	0.06	37	250	46	0.06	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	460	92	0.12	24	415	96	0.13	27	370	101	0.14	30
	24MGE4-11-181*P	25-55	40	TAP 1 (FAN)	470	54	0.07	---	400	59	0.08	---	345	63	0.08	---	290	67	0.09	---	235	70	0.09	---
				TAP 2 (COOL)†	670	118	0.16	---	625	123	0.16	---	565	131	0.18	---	525	136	0.18	---	N/A	N/A	N/A	N/A
				TAP 3 (COOL)	N/A	N/A	N/A	---	765	184	0.25	---	730	191	0.26	---	675	201	0.27	---	630	206	0.28	---
				TAP 4 (HEAT)*	450	52	0.07	40	385	57	0.08	46	330	61	0.08	54	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	540	116	0.16	33	490	121	0.16	37	450	127	0.17	40
	36MGE4-11-181*P	30-60	45	TAP 1 (FAN)	470	54	0.07	---	400	59	0.08	---	345	63	0.08	---	290	67	0.09	---	235	70	0.09	---
				TAP 2 (COOL)†	670	118	0.16	---	625	123	0.16	---	565	131	0.18	---	525	136	0.18	---	N/A	N/A	N/A	N/A
				TAP 3 (COOL)	N/A	N/A	N/A	N/A	765	184	0.25	---	730	191	0.26	---	675	201	0.27	---	630	206	0.28	---
				TAP 4 (HEAT)*	590	86	0.12	45	555	90	0.12	48	515	95	0.13	52	475	99	0.13	56	N/A	N/A	N/A	N/A
				TAP 5 (HEAT)	715	129	0.17	38	680	135	0.18	39	650	140	0.19	41	615	146	0.20	44	585	151	0.20	46
	48MGE4-11-181*P	35-65	50	TAP 1 (FAN)	470	54	0.07	---	400	59	0.08	---	345	63	0.08	---	290	67	0.09	---	235	70	0.09	---
				TAP 2 (COOL)†	670	118	0.16	---	625	123	0.16	---	565	131	0.18	---	525	136	0.18	---	N/A	N/A	N/A	N/A
				TAP 3 (COOL)	N/A	N/A	N/A	N/A	765	184	0.25	---	730	191	0.26	---	675	201	0.27	---	630	206	0.28	---
				TAP 4 (HEAT)*	695	141	0.19	51	655	147	0.20	54	620	153	0.21	58	580	161	0.22	62	N/A	N/A	N/A	N/A
				TAP 5 (HEAT)	830	214	0.29	43	795	221	0.30	45	760	228	0.31	47	730	236	0.32	49	690	242	0.32	52
	60MGE4-11-181*P	40-70	55	TAP 1 (FAN)	470	54	0.07	---	400	59	0.08	---	345	63	0.08	---	290	67	0.09	---	235	70	0.09	---
				TAP 2 (COOL)†	670	118	0.16	---	625	123	0.16	---	565	131	0.18	---	525	136	0.18	---	N/A	N/A	N/A	N/A
				TAP 3 (COOL)	N/A	N/A	N/A	N/A	765	184	0.25	---	730	191	0.26	---	675	201	0.27	---	630	206	0.28	---
				TAP 4 (HEAT)*	800	182	0.24	56	770	187	0.25	58	740	191	0.26	60	710	198	0.27	63	675	204	0.27	66
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	850	263	0.35	53	825	270	0.36	54	805	276	0.37	56

N/A: Do not operate unit using this blower speed at this external static pressure.
† As shipped speed for Cooling operation. Blower speed must be field adjusted to speed Tap 3 for higher duct static applications.
** As shipped speed for Heating operation. Blower speed must be field adjusted to speed Tap 5 for higher duct static applications.*

BLOWER PERFORMANCE CONTINUED

- Performance based on factory-provided washable filter installed in the unit.
- If a higher resistance filter is field installed in the unit, the added resistance must be included in the external static pressure and must not exceed 0.5 in. w.c. including ductwork
- Refer to Factory Filter Size and Pressure Drop table for additional details

					SUPPLY AIRFLOW PERFORMANCE AS A FUNCTION OF EXTERNAL STATIC PRESSURE																			
	Model	Gas Heating		Indoor Blower Speed	0.1" w.c.				0.2" w.c.				0.3" w.c.				0.4" w.c.				0.5" w.c.			
		Rise Range (F°)	Mid Rise (F°)		SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise
2 Ton	15MGE4-11-241*P	15-45	30	TAP 1 (FAN)	450	49	0.07	---	400	52	0.07	---	345	56	0.08	---	285	59	0.08	---	235	65	0.09	---
				TAP 2 (COOL)†	815	206	0.28	---	780	210	0.28	---	750	215	0.29	---	720	219	0.29	---	690	224	0.30	---
				TAP 3 (COOL)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	850	283	0.38	---	820	287	0.38	---	785	286	0.38	---
				TAP 4 (HEAT)*	370	36	0.05	30	320	38	0.05	35	250	42	0.06	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	465	82	0.110	24	420	85	0.11	26	370	90	0.12	30
	24MGE4-11-241*P	25-55	40	TAP 1 (FAN)	450	49	0.07	---	400	52	0.07	---	345	56	0.08	---	285	59	0.08	---	235	65	0.09	---
				TAP 2 (COOL)†	815	206	0.28	---	780	210	0.28	---	750	215	0.29	---	720	219	0.29	---	690	224	0.30	---
				TAP 3 (COOL)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	850	283	0.38	---	820	287	0.38	---	785	286	0.38	---
				TAP 4 (HEAT)*	450	49	0.07	40	400	52	0.07	45	345	56	0.08	52	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	530	99	0.13	34	490	103	0.14	37	450	107	0.14	40
	36MGE4-11-241*P	30-60	45	TAP 1 (FAN)	450	49	0.07	---	400	52	0.07	---	345	56	0.08	---	285	59	0.08	---	235	65	0.09	---
				TAP 2 (COOL)†	815	206	0.28	---	780	210	0.28	---	750	215	0.29	---	720	219	0.29	---	690	224	0.30	---
				TAP 3 (COOL)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	850	283	0.38	---	820	287	0.38	---	785	286	0.38	---
				TAP 4 (HEAT)*	600	89	0.12	45	560	93	0.12	48	520	96	0.13	52	485	100	0.13	56	N/A	N/A	N/A	N/A
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	700	148	0.20	38	665	153	0.21	40	635	157	0.21	42	600	162	0.22	45
	48MGE4-11-241*P	35-65	50	TAP 1 (FAN)	450	49	0.07	---	400	52	0.07	---	345	56	0.08	---	285	59	0.08	---	235	65	0.09	---
				TAP 2 (COOL)†	815	206	0.28	---	780	210	0.28	---	750	215	0.29	---	720	219	0.29	---	690	224	0.30	---
				TAP 3 (COOL)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	850	283	0.38	---	820	287	0.38	---	785	286	0.38	---
				TAP 4 (HEAT)*	720	145	0.19	50	675	151	0.20	53	635	157	0.21	56	595	164	0.22	60	N/A	N/A	N/A	N/A
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	820	223	0.30	44	780	232	0.31	46	745	238	0.32	48	710	246	0.33	50
	60MGE4-11-241*P	40-70	55	TAP 1 (FAN)	450	49	0.07	---	400	52	0.07	---	345	56	0.08	---	285	59	0.08	---	235	65	0.09	---
				TAP 2 (COOL)†	815	206	0.28	---	780	210	0.28	---	750	215	0.29	---	720	219	0.29	---	690	224	0.30	---
				TAP 3 (COOL)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	850	283	0.38	---	820	287	0.38	---	785	286	0.38	---
				TAP 4 (HEAT)*	810	182	0.24	55	775	186	0.25	58	745	191	0.26	60	710	195	0.26	63	680	200	0.27	66
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	860	258	0.35	52	830	265	0.36	54	800	270	0.36	56

N/A: Do not operate unit using this blower speed at this external static pressure.
† As shipped speed for Cooling operation. Blower speed must be field adjusted to speed Tap 3 for higher duct static applications.
** As shipped speed for Heating operation. Blower speed must be field adjusted to speed Tap 5 for higher duct static applications.*

BLOWER PERFORMANCE CONTINUED

- Performance based on factory-provided washable filter installed in the unit.
- If a higher resistance filter is field installed in the unit, the added resistance must be included in the external static pressure and must not exceed 0.5 in. w.c. including ductwork
- Refer to Factory Filter Size and Pressure Drop table for additional details

				SUPPLY AIRFLOW PERFORMANCE AS A FUNCTION OF EXTERNAL STATIC PRESSURE																			
	Model	Gas Heating		Indoor Blower Speed	0.1" w.c.				0.2" w.c.				0.3" w.c.				0.4" w.c.				0.5" w.c.			
		Rise Range (F°)	Mid Rise (F°)		SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise
2.5 Ton	24MGE4-11-301*P	25-55	40	TAP 1 (FAN)	490	55	0.07	---	465	65	0.09	---	435	72	0.10	---	415	81	0.11	---	390	89	0.12	---
				TAP 2 (COOL)†	930	239	0.32	---	900	243	0.33	---	885	250	0.34	---	835	256	0.34	---	805	262	0.35	---
				TAP 3 (COOL)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	930	325	0.44	---	900	328	0.44	---
				TAP 4 (HEAT)*	450	47	0.06	40	400	49	0.07	45	350	53	0.07	51	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	530	93	0.12	34	490	98	0.13	37	450	103	0.14	40
	36MGE4-11-301*P	30-60	45	TAP 1 (FAN)	490	55	0.07	---	465	65	0.09	---	435	72	0.10	---	415	81	0.11	---	390	89	0.12	---
				TAP 2 (COOL)†	930	239	0.32	---	900	243	0.33	---	885	250	0.34	---	835	256	0.34	---	805	262	0.35	---
				TAP 3 (COOL)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	930	325	0.44	---	900	328	0.44	---
				TAP 4 (HEAT)*	600	80	0.11	45	560	84	0.11	48	515	89	0.12	52	475	93	0.12	56	N/A	N/A	N/A	N/A
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	705	136	0.18	38	670	141	0.19	40	635	146	0.20	42	600	151	0.20	45
	48MGE4-11-301*P	35-65	50	TAP 1 (FAN)	490	55	0.07	---	465	65	0.09	---	435	72	0.10	---	415	81	0.11	---	390	89	0.12	---
				TAP 2 (COOL)†	930	239	0.32	---	900	243	0.33	---	885	250	0.34	---	835	256	0.34	---	805	262	0.35	---
				TAP 3 (COOL)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	930	325	0.44	---	900	328	0.44	---
				TAP 4 (HEAT)*	715	140	0.19	50	670	146	0.20	53	630	152	0.20	57	590	159	0.21	61	N/A	N/A	N/A	N/A
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	815	218	0.30	44	775	227	0.30	46	740	233	0.31	48	705	241	0.32	51
	60MGE4-11-301*P	40-70	55	TAP 1 (FAN)	490	55	0.07	---	465	65	0.09	---	435	72	0.10	---	415	81	0.11	---	390	89	0.12	---
				TAP 2 (COOL)†	930	239	0.32	---	900	243	0.33	---	885	250	0.34	---	835	256	0.34	---	805	262	0.35	---
				TAP 3 (COOL)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	930	325	0.44	---	900	328	0.44	---
				TAP 4 (HEAT)*	810	163	0.22	55	775	169	0.23	58	740	173	0.23	60	710	179	0.24	63	680	185	0.25	66
				TAP 5 (HEAT)	935	233	0.31	48	900	240	0.32	50	870	245	0.33	52	835	254	0.34	53	810	257	0.34	55

N/A: Do not operate unit using this blower speed at this external static pressure.
† As shipped speed for Cooling operation. Blower speed must be field adjusted to speed Tap 3 for higher duct static applications.
** As shipped speed for Heating operation. Blower speed must be field adjusted to speed Tap 5 for higher duct static applications.*

BLOWER PERFORMANCE CONTINUED

- Performance based on factory-provided washable filter installed in the unit.
- If a higher resistance filter is field installed in the unit, the added resistance must be included in the external static pressure and must not exceed 0.5 in. w.c. including ductwork
- Refer to Factory Filter Size and Pressure Drop table for additional details

				SUPPLY AIRFLOW PERFORMANCE AS A FUNCTION OF EXTERNAL STATIC PRESSURE																	
	Model	Gas Heating		Indoor Blower Speed	0.1" w.c.				0.2" w.c.				0.3" w.c.				0.4" w.c.				0.5" w.c.			
		Rise Range (F°)	Mid Rise (F°)		SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise	SCFM	Watts	HP	Temp Rise
3 Ton	24MGE4-11-361*P	25-55	40	TAP 1 (FAN)	615	82	0.11	---	580	86	0.12	---	540	91	0.12	---	500	96	0.13	---	450	102	0.14	---
				TAP 2 (COOL)†	1020	307	0.41	---	980	313	0.42	---	940	314	0.42	---	900	318	0.43	---	865	323	0.43	---
				TAP 3 (COOL)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	965	333	0.45	---	930	338	0.45	---	890	344	0.46	---
				TAP 4 (HEAT)*	450	48	0.06	40	385	52	0.07	46	325	55	0.07	55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	550	107	0.14	33	500	112	0.15	36	450	117	0.16	40
	36MGE4-11-361*P	30-60	45	TAP 1 (FAN)	615	82	0.11	---	580	86	0.12	---	540	91	0.12	---	500	96	0.13	---	450	102	0.14	---
				TAP 2 (COOL)†	1020	307	0.41	---	980	313	0.42	---	940	314	0.42	---	900	318	0.43	---	865	323	0.43	---
				TAP 3 (COOL)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	965	333	0.45	---	930	338	0.45	---	890	344	0.46	---
				TAP 4 (HEAT)*	615	82	0.11	44	580	86	0.12	46	540	91	0.12	50	500	96	0.13	54	460	102	0.14	58
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	710	129	0.17	38	685	135	0.18	39	650	140	0.19	41	615	145	0.19	44
	48MGE4-11-361*P	35-65	50	TAP 1 (FAN)	615	82	0.11	---	580	86	0.12	---	540	91	0.12	---	500	96	0.13	---	450	102	0.14	---
				TAP 2 (COOL)†	1020	307	0.41	---	980	313	0.42	---	940	314	0.42	---	900	318	0.43	---	865	323	0.43	---
				TAP 3 (COOL)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	965	333	0.45	---	930	338	0.45	---	890	344	0.46	---
				TAP 4 (HEAT)*	715	135	0.18	50	675	142	0.19	53	640	148	0.20	56	600	155	0.21	60	560	162	0.22	64
				TAP 5 (HEAT)	N/A	N/A	N/A	N/A	820	212	0.28	44	785	219	0.29	46	745	227	0.30	48	715	234	0.31	50
	60MGE4-11-361*P	40-70	55	TAP 1 (FAN)	615	82	0.11	---	580	86	0.12	---	540	91	0.12	---	500	96	0.13	---	450	102	0.14	---
				TAP 2 (COOL)†	1020	307	0.41	---	980	313	0.42	---	940	314	0.42	---	900	318	0.43	---	865	323	0.43	---
				TAP 3 (COOL)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	965	333	0.45	---	930	338	0.45	---	890	344	0.46	---
				TAP 4 (HEAT)*	825	175	0.23	54	790	179	0.24	57	755	185	0.25	59	720	191	0.26	62	690	197	0.26	65
				TAP 5 (HEAT)	935	240	0.32	48	905	246	0.33	49	870	254	0.34	51	845	260	0.35	53	815	266	0.36	55

N/A: Do not operate unit using this blower speed at this external static pressure.
† As shipped speed for Cooling operation. Blower speed must be field adjusted to speed Tap 3 for higher duct static applications.
** As shipped speed for Heating operation. Blower speed must be field adjusted to speed Tap 5 for higher duct static applications.*

magicpak™

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800-448-5872
Product Support 866-282-7257
www.magic-pak.com

FORM NO. MGE4-100 (12/2020)

Printed in the U.S.A.

Appendix F: Design Specifications For Highly Efficient Plumbing Fixtures

STERLING
A KOHLER. COMPANY

Windham™
Pro Force® Toilet
403081

Features
- Elongated bowl.
- Two-piece design.
- Pro Force® flushing technology.
- 1.28 gpf (4.8 lpf).
- 8" (203 mm) x 9" (229 mm) water surface.
- Fully-glazed 2-inch trapway.
- 12" (305 mm) rough-in.
- Includes left-hand polished chrome trip lever.
- Less seat and supply.
- 27-1/4" (692 mm) x 15" (381 mm) x 29-1/2" (749 mm)

Material
- Vitreous china.

Installation
- Floor-mount/floor outlet.

Recommended Accessories
K-4636 Cachet® Quiet-Close™ Elongated Toilet Seat
K-5588 Purefresh® Elongated Toilet Seat
K-4108 C3®-230 Elongated Cleansing Toilet Seat
K-5420 Low-Profile Bolt Caps

Components
Product includes:
404551 Toilet Tank
403215 Toilet Bowl
Additional included component/s: Tank cover, trip lever, tank hardware accessory pack, and bolt caps.

WaterSense · Meets EPA Criteria · Certified by IAPMO R&T

Codes/Standards
ASME A112.19.2/CSA B45.1
DOE - Energy Policy Act 1992
EPA WaterSense®
California Energy Commission (CEC)

STERLING® Warranty - Toilets and Lavatories
See website for detailed warranty information.

Available Color/Finishes
Color tiles intended for reference only.

Color	Code	Description
✓	0	White
	96	KOHLER Biscuit

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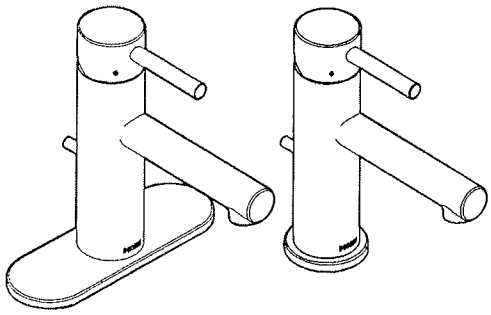
Specifications

There is more than 1 version of this model.
Page down to identify the version you have.



ALIGN™
Single-Handle Lavatory Faucet

Models: 6190 series

NOTE: THIS FAUCET IS DESIGNED TO BE INSTALLED THROUGH 1 HOLE, 1-1/4" MIN. DIA.

DESCRIPTION
- Metal construction with various finishes identified by suffix
- Flexible supply lines with 3/8" compression fittings
- Includes metal pop-up waste assembly
- Includes optional 3 hole deck plate (escutcheon)
- Includes Red/Blue Temperature Indicators

OPERATION
- Lever style handle
- Temperature controlled by 100° arc of handle travel

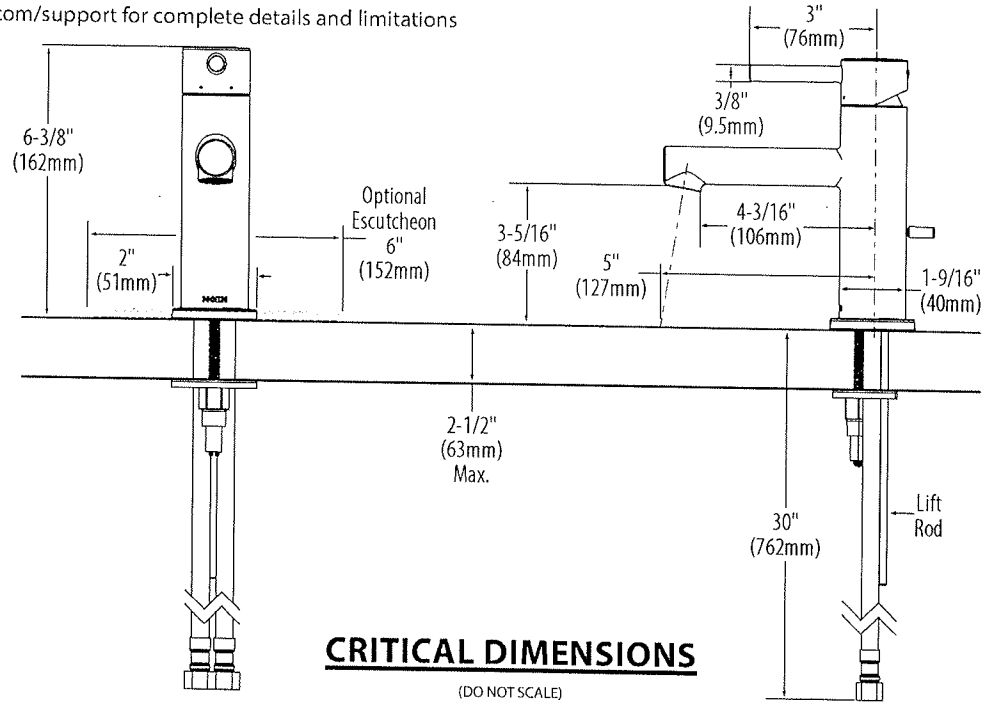
FLOW
- Water usage is limited to these maximum flow rates as indicated by the corresponding product markings
  ° 1.2 gpm max (4.5L/min) at 60 psi

CARTRIDGE
- 1255™ Duralast™ cartridge
- Nonmetallic/nonferrous and ceramic material

STANDARDS
- Third party certified to WaterSense,® ASME A112.18.1/CSA B125.1, and all applicable requirements referenced therein
- Certified to NSF 61/9 & 372
- Products marked with 1.2 gpm are compliant with California water efficiency regulations
- Complies with California Proposition 65 and with the Federal Safe Drinking Water Act
- ADA for lever handle

WARRANTY
- Lifetime limited warranty against leaks, drips and finish defects to the original homeowner
- 10 year limited warranty when used in a multifamily installation
- 5 year limited warranty when used in a commercial installation

Visit www.moen.com/support for complete details and limitations



CRITICAL DIMENSIONS

(DO NOT SCALE)

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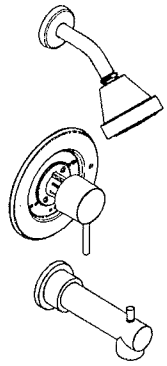
Specifications



ALIGN™ POSI-TEMP®
Single-Handle Tub/Shower Trim Kit

Models: T2191 series - valve trim only
T2192 series - shower trim only
T2193 series - tub/shower trim

Valves: 62300 series
2500 series

FAUCET DESCRIPTION
- Metal construction with various finishes identified by suffix
- Includes showerhead, arm, flange and diverter spout
- Includes red and blue temperature markings

OPERATION
- Handle operates counterclockwise through a 270° arc with off at 6 o'clock and maximum hot at the 9 o'clock position. Shut off in clockwise direction
- Adjustable temperature limit stop to control maximum hot water temperature
- Pressure balancing mechanism maintains selected discharge temperature to ± 3°

FLOW
- Showerhead is limited to 2.5 gpm (9.5 L/min) at 80 psi
- EP suffix models are limited to 1.75 gpm (6.6 L/min) at 80 psi
- NH suffix models contain no showerhead

CARTRIDGE
- 1222 cartridge design
- Nonmetallic/nonferrous and stainless steel materials
- Accommodates back to back installations

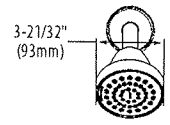
STANDARDS
- Third party certified to meet ASME A112.18.1/CSA B125.1 and all applicable requirements referenced therein
- EP suffix models are third party certified to WaterSense®
- **ADA** for lever handle

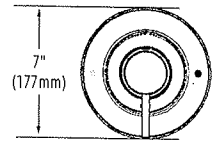
WARRANTY
- Lifetime limited warranty against leaks, drips and finish defects to the original homeowner
- 10 year limited warranty when used in a multifamily installation
- 5 year limited warranty when used in a commercial installation

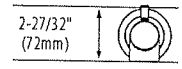
Visit www.moen.com/support for complete details and limitations

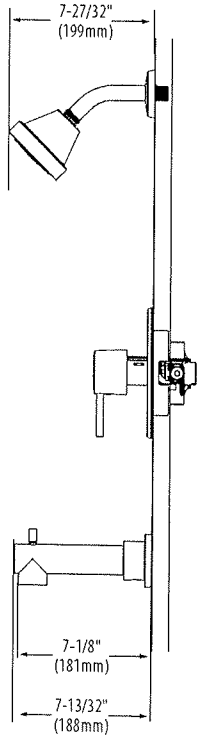
WaterSense Meets EPA Criteria — GREEN UPC ®

EP Suffix Models Only









M•pact System

CRITICAL DIMENSIONS
(DO NOT SCALE)

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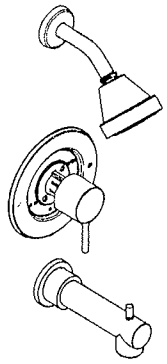
Specifications



ALIGN™ POSI-TEMP®
Single-Handle Tub/Shower Trim Kit

Models: T2191 series - valve trim only
T2192 series - shower trim only
T2193 series - tub/shower trim

Valves: 62300 series
2500 series

FAUCET DESCRIPTION
- Metal construction with various finishes identified by suffix
- Includes showerhead, arm, flange and diverter spout
- Includes red and blue temperature markings

OPERATION
- Handle operates counterclockwise through a 270° arc with off at 6 o'clock and maximum hot at the 9 o'clock position. Shut off in clockwise direction
- Adjustable temperature limit stop to control maximum hot water temperature
- Pressure balancing mechanism maintains selected discharge temperature to ± 3°

FLOW
- Showerhead is limited to 2.5 gpm (9.5 L/min) at 80 psi
- EP suffix models are limited to 1.75 gpm (6.6 L/min) at 80 psi
- NH suffix models contain no showerhead

CARTRIDGE
- 1222 cartridge design
- Nonmetallic/nonferrous and stainless steel materials
- Accommodates back to back installations

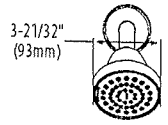
STANDARDS
- Third party certified to meet ASME A112.18.1/CSA B125.1 and all applicable requirements referenced therein
- EP suffix models are third party certified to WaterSense®
- **ADA** for lever handle

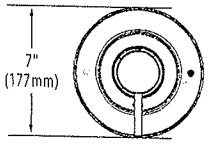
WARRANTY
- Lifetime limited warranty against leaks, drips and finish defects to the original homeowner
- 10 year limited warranty when used in a multifamily installation
- 5 year limited warranty when used in a commercial installation

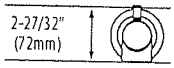
Visit www.moen.com/support for complete details and limitations

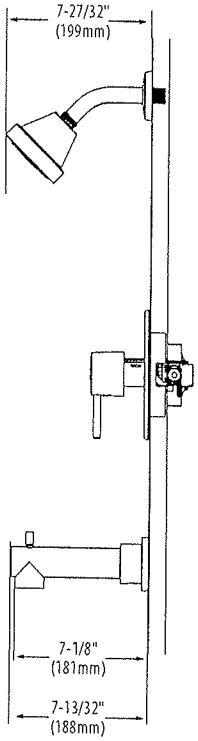
WaterSense Meets EPA Criteria — GREEN UPC ®

EP Suffix Models Only









M•pact System

CRITICAL DIMENSIONS
(DO NOT SCALE)

FOR MORE INFORMATION CALL: 1-800-289-6636
www.moen.com

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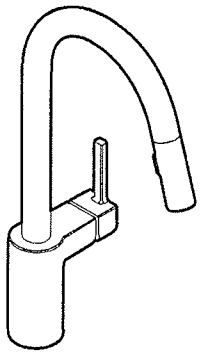
Specifications

There is more than 1 version of this model.
Page down to identify the version you have.



ALIGN™
Single Handle High Arc Pulldown Kitchen Faucet

Models: 7565 series

FAUCET DESCRIPTION
- Reflex™ pulldown system offers smooth operation, easy movement and secure docking
- Power Clean™ spray technology
- Metal construction with various finishes identified by suffix
- Duralock™ connect installation
- Pulldown spray with 68" braided hose
- Flexible supply lines with 3/8" compression fittings
- High arc spout provides height and reach to fill or clean large pots while pulldown wand provides the maneuverability for cleaning or rinsing
- 360° rotating spout provides ability to install handle on either side
- Faucet designed for handle to be mounted on right side

OPERATION
- Lever style handle
- Temperature controlled by 100° arc of handle travel
- Operates with less than 5 lbs. of force
- Operates in stream or spray mode in the pullout or retracted position

FLOW
- Flow is limited to 1.5 gpm (5.7 L/min) max at 60 psi

CARTRIDGE
- 1255™ Duralast™ cartridge

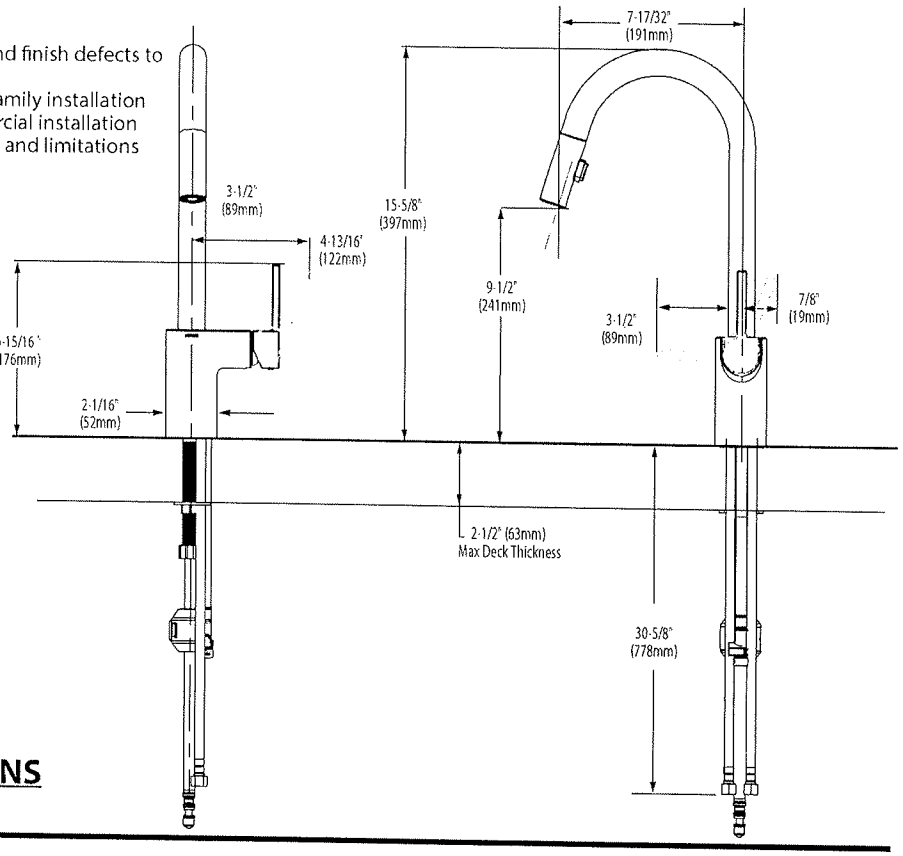
STANDARDS
- Third party certified to IAPMO Green, ASME A112.18.1/CSA B125.1 and all applicable requirements therein including NSF 61/9G & 372
- Meets CalGreen and Georgia SB370 requirements
- Complies with California Proposition 65 and with the Federal Safe Drinking Water Act
- The backflow protection system in the device consists of two independently operating check valves, a primary and a secondary which prevent backflow
- **ADA** for lever handle

WARRANTY
- Lifetime limited warranty against leaks, drips and finish defects to the original homeowner
- 10 year limited warranty when used in a multifamily installation
- 5 year limited warranty when used in a commercial installation

Visit www.moen.com/support for complete details and limitations

NOTE: THIS FAUCET IS DESIGNED TO BE INSTALLED THROUGH 1 HOLE, 1-1/2" (38mm) MIN. DIA. (OPTIONAL 3-HOLE ESCUTCHEON 141002 AVAILABLE)

GREEN UPC



CRITICAL DIMENSIONS
(DO NOT SCALE)

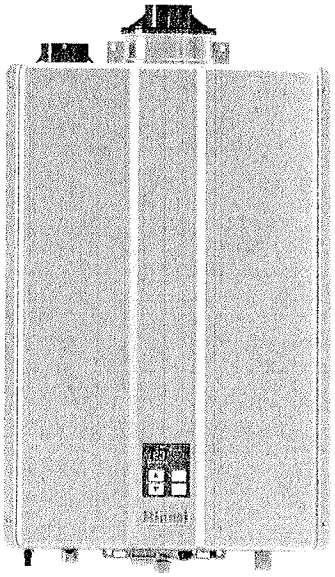
Rinnai

SENSEI™

RU199i, RU180i, RU160i, RU130i

INTERNAL (INDOOR) CONDENSING TANKLESS WATER HEATER

RESIDENTIAL



FLEXIBLE VENTING OPTIONS

- Concentric or Schedule 40 PVC/CPVC
- Direct Vent (Concentric and Twin Pipe)
- Non-Direct Vent (Room Air)
- Common Vent (Direct Vent and Room Air)
- Maximum Equivalent Vent Lengths:

Twin Pipe

Vent Sizes	2 in. (51 mm)	3 in. (76 mm)
Vent Lengths	65 ft (20 m)	150 ft (46 m)

Concentric

Vent Sizes	2 in. X 4 in.	3 in. X 5 in.
Vent Lengths	65 ft (20 m)	150 ft (46 m)

EASE OF INSTALLATION AND SERVICEABILITY

- Compact Design to Save Space
- Wi-Fi Technology for Remote Monitoring and Management
- Sliding Mounting Bracket for Easy Installation
- Simple Gas Conversion

OPTIONAL ACCESSORIES

Room Air Screen, Condensate Neutralizer, ScaleCutter, Drain Down Kit, Additional Controllers, Pipe Cover, Recirculation Pump, DPS/MIS Switch, EZ Connect Cables, Control-R™ WI-FI Module, Wireless Accessories, and many more.

Visit rinnai.us for a complete list of accessories.

SUPER-HIGH-EFFICIENCY (CONDENSING)

Installation Type	Internal (Indoor) Residential Applications. Manufactured (Mobile) Home Certified	
Model Numbers	RU199i (REU-N3237FF-US) RU180i (REU-N2934FF-US) RU160i (REU-N2530FF-US) RU130i (REU-N2024FF-US)	
Approved Gas Types	Natural and Propane	
Uniform Energy Factor (UEF)	RU199i: RU180i and RU160i: RU130i:	0.93 0.92 0.91
Energy Factor (EF) (Canada)	RU199i: RU180i, RU160i, RU130i:	0.96 0.95
High Altitude Approved	Up to 10,200 Ft (3,109 M)	
Water Flow Control	Water Flow Sensor, Electronic Water Control and Bypass Control	
Controller	Standard: Integrated Controller Optional: MC-195T-US, MC-100V-1US, BC-100V-1US, MCC-91-2US	
Certifications	AHRI, ANSI Z21.10.3, CSA 4.3, and Energy Star®	

Warranty

- Heat Exchanger: 15 years or 12,000 operation hours, whichever occurs first
- All Other Parts and Components: 5 Years
- Reasonable Labor: 1 Year

Safety Devices

Flame Failure - Flame Rod, Boiling Protection, Combustion Fan RPM Check, Over Current - Glass Fuse, Remaining Flame (OHS) and Automatic Frost Protection

Included with Purchase

Tankless Water Heater, Wall Mounting Bracket, Pressure Relief Valve and Adapter, Isolation Valve Kit, Vent Screens (x2), Vent Screen Screws (x2) and Self-Tapping Screws (x2)

Additional Features

- Mobile Home Certified
- Complies with South Coast Air Quality Management District 14 ng/J or 20 ppm NOx Emission Levels
- Ultra Low NOx
- Tankless Rack System™ Compatible
- 1/2 in. (13 mm) Gas Line Compatible

LOW LEAD CONTENT SANITATION ENERGY STAR

CERTIFIED TO ANSI Z21.10.3 — CSA 4.3

Appendix G: Trenton Water Works Will Serve Letter

W. REED GUSCIORA
MAYOR

MARK LAVENBERG
DIRECTOR, WATER & SEWER

Trenton Water Works
Department of Water and Sewer
PO Box 528, Trenton, NJ 08604-0528

July 28, 2021

Mr. Joseph Kline
Nexus Properties Inc.
1333 Brunswick Pike

RE: Will Serve Letter
Spruce Street Apts
1052 Spruce Street, Block 701, Lot 39
Lawrence Twp., NJ
TWW ID# - TBD

Dear Mr. Kline:

Our review of the above referenced subject reveals that Trenton Water owns an existing 8" main that runs along Spruce Street adjacent to the project site. This water main can be utilized to provide water service to the project site. An area map showing the location of the existing water main is attached for your use and record.

Note that this will serve letter does not substantiate that the existing water main provides sufficient volume and pressure to meet the required fire protection and domestic uses for the project. The adequacy of the existing system's ability to serve the project's water needs will be determined during design review.

To assist you in the subsequent steps in this process, we offer the following guidance for your use and consideration:

1. Submit a water service application to our office for our record. A blank application is attached for your use.
2. Submit an engineering report or letter from the design engineer that includes the following information:
    a. Project Description (including site location, proposed site and water system improvements, locations to be sprinklered, and confirmation on the intended use of potable water for irrigation)
    b. Water System Demand Calculations in accordance with NJAC 7:10-12.6
    c. TWW Connection Fee Calculation. Per City Ordinance, water system connection fees are assessed at a rate of $1000 per Effective Dwelling Unit (EDU). 1 EDU = 300 gpd of projected flow as determined in accordance with NJAC 7:14A-23. Connection fees can be

discounted proportionally to the amount of pre-existing flows at the site location. If existing uses occurred at the site, provide flow calculations (per NJAC 7:14A) pre and post development. Connection fees will apply to the net increase in projected flow.

d. If the building is sprinklered, provide signed sprinkler system design calculations in accordance with the prevailing regulations. Provide a written statement signed and sealed by the design engineer that the sprinkler system design is in accordance with the applicable standards.
e. If the building is not sprinklered, provide needed fire flow calculations in accordance with ISO Guidelines for Determination of Needed Fire Flow.
f. Hydrant flow test results (see Item #4 below)

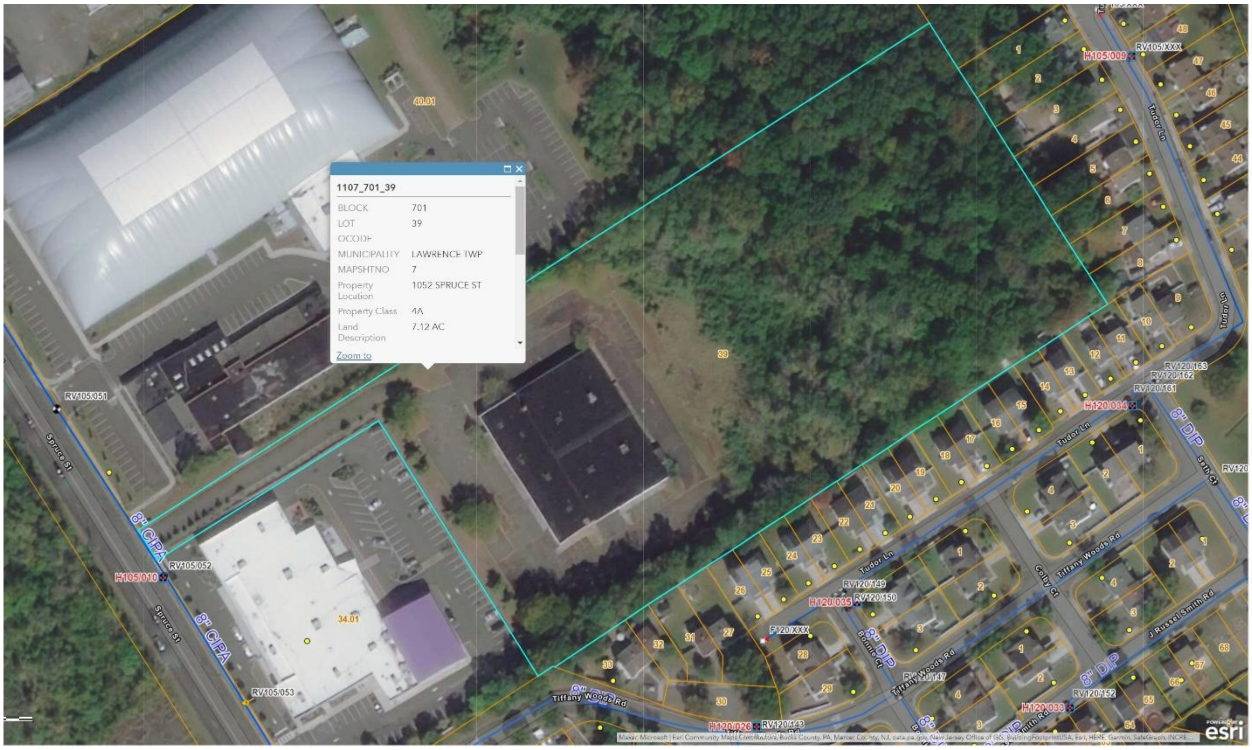
3. Provide design plans for the project. Utilize the TWW Developer's Packet to assist in the preparation of the design documents. Note that TWW standard water distribution system materials shall be utilized in all areas to be owned by TWW, no exceptions.
4. A hydrant flow test is required for this project. Contact TWW Distribution at (609) 989-3822 for instructions and coordination of the hydrant testing. Submit hydrant test records to my attention upon completion. Be sure to include the name of the TWW inspector who witnessed the flow test on the testing record.
5. It is the responsibility of the owner/developer to verify from local authorities that the road is not under a street opening moratorium at the time of the construction.

If you have any questions concerning this response, please email me at ndelapuente@trentonnj.org, Hector Weah at hweah@trentonnj.org, or David Smith, Chief Engineer at davidsmith@trentonnj.org.

Sincerely,

Noemi de la Puente, Principal Engineer
For David Smith, Chief Engineer

encl
cc: Hector Weah, TWW
David Smith, TWW

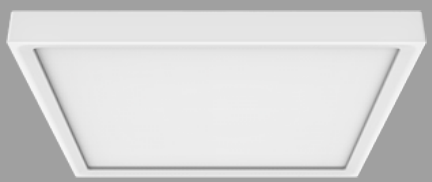

1107_701_39
BLOCK 701
LOT 39
OCODE
MUNICIPALITY LAWRENCE TWP
MAPSHTNO 7
Property Location 1052 SPRUCE ST
Property Class 4A
Land Description 7.12 AC
Zoom to
40.01
39
34.01
RV105/051
RV105/052
RV105/053
H105/010
H105/009
RV105/XXX
H120/034
H120/035
H120/033
RV120/149
RV120/150
RV120/152
RV120/153
RV120/162
RV120/161
F120/XXX
8" CIPA
8" DIP
Spruce St
Tudor Ln
Tiffany Woods Rd
Colby Ct
J Russel Smith Rd
esri

Appendix H: Design Specifications For Highly Efficient Lighting Fixtures

Submitted by MAXWELL LIGHTING & ENERGY			
MAXWELL LIGHTING & ENERGY	**Job Name:** NEXUS BERLIN VILLAGES Unit 24	**Catalog Number:** SM7S15830120W Notes:	**Type:** A MAXWELL20-1602

SM7S15830120W

RAB



UPC: 019813513492

Color: White

Weight: 0.9 lbs

Project:	**Type:**
Prepared By:	**Date:**

Driver Info

Type	Constant Current
120V	0.145A
208V	N/A
240V	N/A
277V	N/A
Input Watts	15.00W

LED Info

Watts	15W
Color Temp	3000K (Warm)
Color Accuracy	80 CRI
L70 Lifespan	50,000
Lumens	900
Efficacy	60 LPW

Technical Specifications

Listings

UL Listed & UL Classified:

Suitable for wet locations

ENERGY STAR V2.2:

This product is ENERGY STAR® Version 2.2 Certified.

Energy Star Model Number:

DLS0029

Electrical

Dimming Driver:

TRIAC compatible dimmer with dimming as low as 5%. See dimmer compatibility guide here.

PF:

≥0.9

Input Voltage:

120V

Operating Frequency (Hz):

60Hz

LED Characteristics

Lifespan:

50,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations

LEDs:

Long-life, high-efficacy, surface-mount LEDs

Wattage Equivalency:

75W Incandescent

Construction

IC Rated:

Suitable for direct contact with insulation

Air Tight:

Housing certified Air Tight as per ASTM E283

Housing:

Constructed from durable aluminum that provides thermal cooling. Housing frame built from non-electrically conductive polycarbonate.

Cold Weather Starting:

The minimum starting temperature is -30°C (-22°F)

Maximum Ambient Temperature:

Suitable for use in 40°C (104°F)

Lens:

Diffuse Polystyrene lens produces smooth uniform light that is glare free

Green Technology:

Mercury and UV free. RoHS-compliant components.

Socket Adapter:

Edison 26 Medium Base Socket adapter included in box

Mounting:

Torsions springs included in box for secure retrofit installations on existing cans. Mounts to most common 4" junction boxes. May be used in compatible junction boxes in direct contact with insulation. Includes mounting bracket for installations with electrical junction boxes. Retrofit mounting hardware sold separately. SM7UNV/ACCC - 7" 120-277V Surface Mount Retrofit Hardware.

Finish:

Matte White

SM7S15830120W

RAB

Technical Specifications (continued)

Optical

Beam Angle:

120°

Other

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish. RAB's warranty is subject to all terms and conditions found at rablighting.com/warranty.

Buy American Act Compliance:

RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.

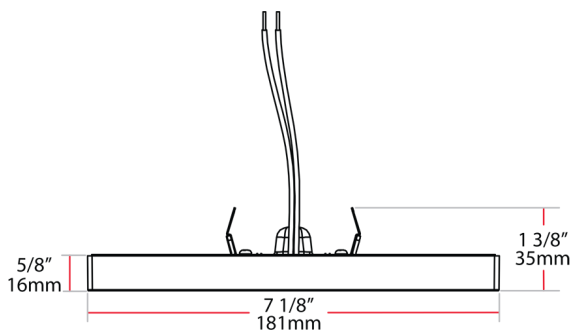
Minimum Compartment Size

Length x Width x Height [in]	Lamp Quantity
7.9 x 7.9 x 10.6	1

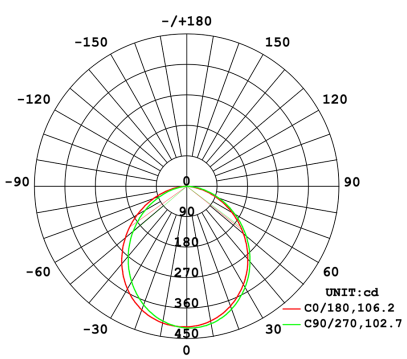
Case and Pallet Dimensions

	QTY	LENGTH	WIDTH	HEIGHT
CASE	6	20.55	6.61	8.46
PALLET	420	9.92	1.93	42.32

Dimension



Light Distribution



Features

- Low profile driverless design
- Aluminum backplate with superior thermal management
- Edge-lit design provides smooth diffused light
- New construction or retrofit applications
- Suitable for wet locations
- Dimmable down to 5% on compatible dimmers
- TRIAC and 0-10V dimming models available
- 5-Year, No-Compromise Warranty

SM7S15830120W

RAB

Ordering Matrix

Family	Size	Shape	Wattage	CRI/Color Temp	Voltage	Dimming	Finish
SM	7	S	15	830	120		W
	5.5 = 5.5" **7** = 7" **9** = 9"	**R** = Round **S** = Square	**10** = 600lm **15** = 900lm **20** = 1200lm	**940** = 90 CRI, 4000K (Neutral) **930** = 90 CRI, 3000K (Warm) **927** = 90 CRI, 2700K (Residential Warm) **840** = 80 CRI, 4000K (Neutral) **830** = 80 CRI, 3000K (Warm) **827** = 80 CRI, 2700K (Residential Warm)	**120** = 120V **UNV** = 120-277V	**Blank** = Blank [1] **T** = TRIAC Dimming	**W** = White

[1] If 120V is selected, 'blank' is TRIAC Dimming
If UNV is selected, 'blank' is 0-10V Dimming

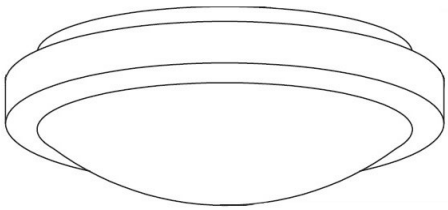
Submitted by MAXWELL LIGHTING & ENERGY			
MAXWELL LIGHTING & ENERGY	**Job Name:** NEXUS BERLIN VILLAGES Unit 24	**Catalog Number:** 4327D-30-BN-3K Notes:	**Type:** D1 MAXWELL20-1602

Catalog #		Type	
Project		Date	
Prepared by			

4325, 4326, 4327

120V

LED Flush Mount or Wall Mount



DESCRIPTION

This sleek low profile LED Flush Mount or Wall Mount is an energy efficient LED light that comes complete with an integrated LED light engine - no additional light bulbs needed. This fixture can be mounted on either a ceiling or wall to provide light anywhere you need it.

DESIGN FEATURES

Construction
- Durable steel construction

Electrical
- Operating voltage AC120V-60Hz
- Dimmable
- 50,000 hour projected life
- Available in 3000K
- Efficacy of 70 lm/w
- Power factory of .99
- Lamp: LED

Lens
- Gasketed frosted acrylic lens protects LEDs and diffuses glare while allowing for optimum lumen output
- Glass replacement: 4325-L, 4326-L, 4327-L

Dimensions
- Ø 8.88" x 2.75" depth

Finish
- Brushed Nickel, Oil Rubbed Bronze, or White

Certifications
- Energy Star
- cULus
- 5 year limited warranty

TEL: 856-234-2211 FAX: 856-234-0881 www.lum-techlighting.com

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Submitted by MAXWELL LIGHTING & ENERGY			
MAXWELL LIGHTING & ENERGY	**Job Name:** NEXUS BERLIN VILLAGES Unit 24	**Catalog Number:** 4327D-30-BN-3K Notes:	**Type:** D1 MAXWELL20-1602

4325-4327

120V

Specification & Ordering

Model #	Size	Dimensions (Dia x D)	Watts	Lumens	CRI
4325D-30	12”	12” x 3.5”	15W	1050Lm	83
4325D-30-EM	w/ emergency battery				
4326D-30	14”	14” x 4”	23W	1610Lm	84
4326D-30-EM	w/ emergency battery				
4327D-30	16”	16” x 4”	28W	2000Lm	84
4327D-30-EM	w/ emergency battery				

ORDERING

Example: 4325D-30-BA-3K

Model #	Finish	CCT
4325D-30 - 4327D-30		**-3K**
4325D-30 **4325D-30-EM** **4326D-30** **4326D-30-EM** **4327D-30** **4327D-30-EM**	: **WW** : White : **BN** : Brushed Nickel : **OB** : Oil-rubbed Bronze : : :	**-3K** : 3000 K

TEL: 856-234-2211 FAX: 856-234-0881 www.lum-techlighting.com

LUM-TECH LIGHTING

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Submitted by MAXWELL LIGHTING & ENERGY			
MAXWELL LIGHTING & ENERGY	**Job Name:** NEXUS BERLIN VILLAGES Unit 24	**Catalog Number:** RULB-22-CTS-W Notes:	**Type:** F MAXWELL20-1602

RAYON LIGHTING

RULB

CCT SHIFT LED UNDERCABINET

PROJECT:

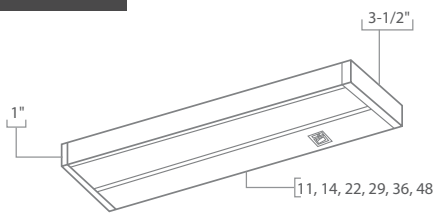
MODEL #:

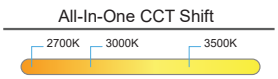
LOCATION:

CONTACT:

CCT SHIFT LED UNDERCABINET

DIMENSIONS





TITLE24 Compliant

5 YEAR LIMITED WARRANTY

USE OF PRODUCT

The ideal product for energy efficient lighting for retrofit or new construction applications. It is a great replacement for existing fluorescent, incandescent, halogen, or xenon undercabinet lighting. This product may be used in hospitality, health care, commercial, retail, and residential applications. The RULB series will reduce energy consumption, emits little heat, and reduces cooling loads for added costs.

Length	Watts	Lumens
11"	6W	270Lm
14"	9W	386Lm
22"	11W	548Lm
29"	13W	741Lm
36"	16W	1130Lm
48"	18W	1430Lm

Lumens base on 3000K CCT

RULB FEATURES

- Voltage: 120V
- Color Temperature Shift: 2700K,3000K,3500K
- Color Rendering Index: 90+ CRI
- LED Life: 50,000 hours
- Warranty: 5 Year Limited Warranty
- Finish: White or Black
- No LED pixelation or glare
- Dimmable
- Wide light distribution allows for continuous illumination when linked with end to end connecters

COLOR TEMPERATURE SHIFT

Rayon Lighting's all-in-one CCT Shift LED undercabinet allows for easy control between 2700K, 3000K or 3500K color temperature with a simple switch.

LED DRIVER

Integral 120 Volt dimmable driver

DIMMING

Please refer to dimmer list

ELECTRICAL CONNECTION

RULB Series may be connected with direct wire or duplex plug. End to end connectors allow fixtures to be linkable.

INCLUDED ACCESSORIES

Captive Screws, Plastic Washer, Wire Connector, End to End Connector, On/Off Locker Switch, 3/8" Diecast Outlet

OPTIONAL ACCESSORIES

Power Cord, Linkable Connector with wire (Available in 5 different lengths). Junction Box.

LABELS / COMPLIANCE

UL/cUL Classified
Can be used for State of California Title 24 & JA8 compliance.
Energy Star

ORDERING INFO

RULB	22	CTS		

Series	Length	Color Temp.	Finish	Options
RULB	**11** - 11" **14** - 14" **22** - 22" **29** - 29" **36** - 36" **48** - 48"	CTS - Color temperature shift (27K,30K,35K)	W - White B - Black	**LC24-W** - White linkable connector with 24" lead wire **LC24-BL** - Black linkable connector with 24" lead wire **LC12-W** - White linkable connector with 12" lead wire **LC12-BL** - Black linkable connector with 12" lead wire **LC4-W** - White linkable connector with 4" lead wire **LC4-BL** - Black linkable connector with 4" lead wire **LC3-W** - White linkable connector with 3" lead wire **LC3-BL** - Black linkable connector with 3" lead wire **LC2-W** - White linkable connector with 2" lead wire **LC2-BL** - Black linkable connector with 2" lead wire **PC120-W** - White power cord **PC120-BL** - Black power cord **JB-W** - White J-Box **JB-BL** - Black J-Box

Submitted by MAXWELL LIGHTING & ENERGY			
MAXWELL LIGHTING & ENERGY	**Job Name:** NEXUS BERLIN VILLAGES Unit 24	**Catalog Number:** RULB-22-CTS-W Notes:	**Type:** F MAXWELL20-1602

RAYON LIGHTING

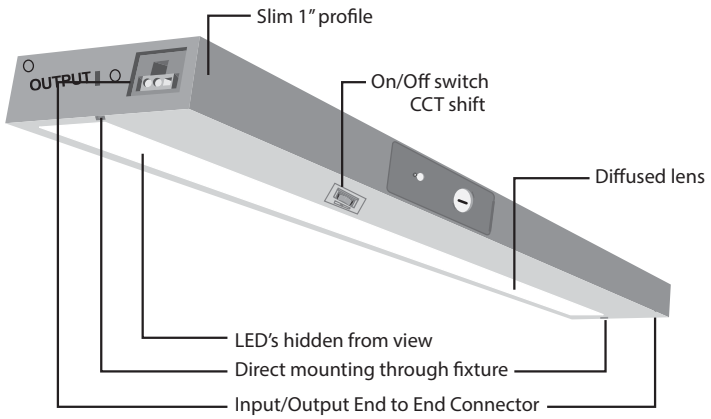
PROJECT:

MODEL #:

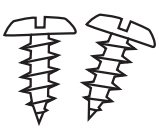
LOCATION:

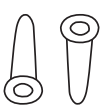
CONTACT:

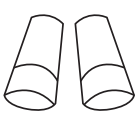
RULB ANATOMY

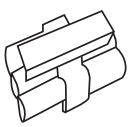


ACCESSORIES


Captive Screws


Plastic Washer


Wire Connector

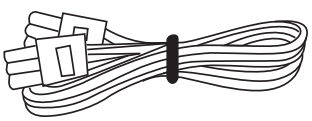

End to End Connector

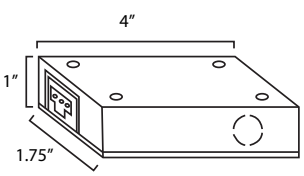

On/Off Switch


3/8" Diecast Outlet

RULB OPTIONAL ACCESSORIES


Power Cord


Linkable Connector with Wire
(Available in 4 different lengths)



Junction Box

Submitted by MAXWELL LIGHTING & ENERGY			
MAXWELL LIGHTING & ENERGY	**Job Name:** NEXUS BERLIN VILLAGES Unit 24	**Catalog Number:** EL-330-15LEDBN Notes:	**Type:** G MAXWELL20-1602

EfficientLighting
LIGHTING MADE BETTER

EL-330

TYPE:	Interior Wall Sconce
WIDTH:	8″
HEIGHT:	6″
PROJECTION:	3.75″ (E26) / 4.75″ (LED)
BACK PLATE:	6″ x 4.5″
SHADE:	Alabaster Glass
LIGHT OPTIONS:	E26 Base CFL (Non-Dimmable) E26 Base LED (Dimmable) Integrated LED (Dimmable)
AVAILABLE FINISH:	Brushed Nickel

ORDERING OPTIONS

EL-330 — _____ — _____

1. MODEL | 2. LIGHT OPTIONS | 3. FINISH

2. WATTAGE/ LIGHT OPTIONS

123E	1 x 23w E26 Base CFL
109E26LED	1 x 9w E26 Base LED Bulb (Meets CA Title 24 requirements)
15LED	15w Integrated LED

3. FINISH

BN Brushed Nickel

PROJECT NOTES
Name: _____
Location: _____
Type: _____
Qty: _____
Comments: _____
_____

LIGHT SOURCE SPECIFICATIONS

Light Options	Total Wattage	Voltage	Color Temperature	Lumen Output	Dimmable	CRI	Lamp Life	CA T24	ENERGY STAR	ADA
123E	23w	120V	2700K Only	1600	No	>80	10000 HR	No	No	Yes
109E26LED*	9w	120V	2700K Only	810	Yes	90	25000 HR	Yes	Yes	Yes
15LED	15w	120V / 120V-277V	3000K (MOQ Applies to other CCT)	1050	Yes	85	50000 HR	No	Yes	No

* Can be used to comply with California Energy Commission (CEC) 2016 Title 24 Part 6 High Efficacy LED Light Source Requirements if used with included lamps that are registered and appear in the CEC Appliance Database

2 Cranberry Rd #B1-B, Parsippany, NJ 07054 | East Coast: 973.846.8568 | West Coast: 714.228.9888 | Fax: 973.846.8567 | www.efficientlightingco.com

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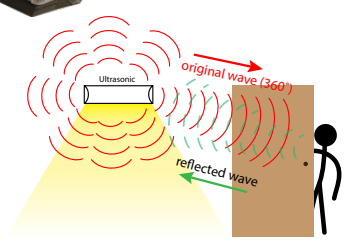
Submitted by MAXWELL LIGHTING & ENERGY			
MAXWELL LIGHTING & ENERGY	**Job Name:** NEXUS BERLIN VILLAGES Unit 24	**Catalog Number:** VOL48AFAXXEMASBT Notes:	**Type:** J MAXWELL20-1602

NEW LAMAR LED

VOL Gen4 Voyager series with ultrasonic motion sensor

NOW WITH BLUETOOTH PROGRAMMING!

ESR - Emergency Shunt Relay
(see options & application notes)



Ultrasonic motion sensors are ideal for stairwells and corridors where 360˚ coverage can detect motion beyond the line of sight around barriers such as staircases, workspace partitions, shelves and other obstacles in the area

occu-smart® S³ simple sensor solutions

The Voyager series is part of our Occu-Smart®S³ product line. Equipped with an integral ultrasonic motion sensor, the VOL Gen4 features bi-level operation with adjustable standby light levels and time delay for maximum energy savings. Now with Bluetooth programming, there is no need to open the fixture for light level adjustment! All that's needed is an IOS or Android device and free companion app!

Features and Specifications:

Construction:
- Direct setting of sensitivity and time delay using the switches on the sensor, adjustable high and low light levels through the app
- Durable steel housing and die formed end caps
- Efficient LED formula impact resistant diffuser, smooth exterior for easy cleaning, retained by captive ends and linear channels
- Units are factory set for Low output and 5 minute time delay (suitable for most applications)
- Optional Casambi® Bluetooth mesh for fixture to fixture communication (see back for details)

Size Options:
- Available in 2', 4' and 8' lengths (nominal)

Sensor:
- Highly sensitive ultrasonic motion sensor detects motion outside direct line of sight
- Easy setup with 5 minute walk test mode
- Adjustable sensitivity and time delay of 1, 5 or 20 minutes
- User selectable standby options 5, 10, 25 or 50% nominal light output (factory shipped 10% standby level) - Can be adjusted to any non-listed value via app

Listing & Ratings:
- UL listed, ADA compliant
- IBEW Union made in the USA, Meets Buy America Act (ARRA)
- Design Lights Consortium® (DLC) qualified luminaire (at 57% via app)

Mounting Options:
- Rigid stem mount or surface mount on ceiling or wall

Driver:
- Universal voltage 120-277V standard
- Optional emergency backup available

Warranty:
- 5 years - part replacement only (see our terms & conditions page at www.lamarled.com for details)

See page 2 for lumen chart & dimensions
See page 3 for sensor info, application notes & APP QR code

Ordering Guide / Example — VOL48AFA50-AS-BT

VOL		A					
Series	Size	Power	Lens Options	CCT	Standby Options	Bluetooth	General Options
VOL = Voyager Gen4	**24** = 2' nominal **48** = 4' nominal **96** = 8' nominal	**A** = Adjustable power user selectable output power via app See chart on back Fixtures shipped in DLC® qualified low power setting	**FA** = Frosted impact resistant **PF** = Perforated metal (white)	**30** = 3000K **35** = 3500K **40** = 4000K **50** = 5000K SPECIFY	**AS** = User selectable standby options 5, 10, 25 or 50% nominal light output (factory shipped 10% standby level) **FO** = Dim to off	**BT** = Bluetooth (standard) **BTM** = Bluetooth mesh (optional)	**EM** = Emergency pack >90 min., ≥500 lumens **EMH** = High lumen emergency pack >90 min., ≥1100 lumens **ESR1** = 120V emergency shunt relay (must specify) **ESR2** = 277V emergency shunt relay (must specify)

Consult factory for additional options not shown or listed

Correlated Color Temperatures (CCTs) fall within the nominal range as per ANSI C78.377A

Project Information:

Job Name: _____ Fixture Type: _____

Catalog #: _____ Date: _____

Comments: _____

Certification & Listings:

DLC QPL LISTED · UL · 120-277V Universal · CRI 80+ · Designed • Built • Supported USA · RoHS COMPLIANT · 5 YEAR WARRANTY

LaMar Lighting Co., Inc. 485 Smith Street, Farmingdale, NY 11735 | tel 631.777.7700 fax 631.777.7705 | www.lamarled.com

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Submitted by MAXWELL LIGHTING & ENERGY			
MAXWELL LIGHTING & ENERGY	**Job Name:** NEXUS BERLIN VILLAGES Unit 24	**Catalog Number:** EL-507109E26LED Notes:	**Type:** K MAXWELL20-1602

EfficientLighting
LIGHTING MADE BETTER

EL-507

TYPE:	Interior Pendant
WIDTH:	4″
GLASS HEIGHT:	8.5″
ROD LENGTH:	40″ Total Adjusable Length (10″, 10″ and 20″ down rods included)
ROD FINISH:	Brushed Nickel
CANOPY COLOR:	Brushed Nickel
SHADE:	White Glass
SLOPE CEILING:	Yes
LIGHT OPTIONS:	E26 Base CFL (Non-Dimmable) E26 Base LED Bulb (Dimmable)

ORDERING OPTIONS

EL-507 — _____ — _____

1. MODEL | 2. LIGHT OPTIONS | 3. FINISH

2. WATTAGE/ LIGHT OPTIONS

123	1 x 23w E26 Base CFL
109E26LED	1 x 9w E26 Base LED Bulb (Meets CA Title 24 requirements)

3. FINISH

BN Brushed Nickel

PROJECT NOTES

Name:_____
Location:_____
Type:_____
Qty:_____
Comments:_____

LIGHT SOURCE SPECIFICATIONS

Light Options	Total Wattage	Voltage	Color Temperature	Lumen Output	Dimmable	CRI	Lamp Life	CA T24	ENERGY STAR
123	23w	120V	2700K Only	1600	No	>80	10000 HR	No	No
109E26LED*	9w	120V	2700K Only	810	Yes	90	25000 HR	Yes	Yes

* Can be used to comply with California Energy Commission (CEC) 2016 Title 24 Part 6 High Efficacy LED Light Source Requirements if used with included lamps that are registered and appear in the CEC Appliance Database

2 Cranberry Rd #B1-B, Parsippany, NJ 07054 | East Coast: 973.846.8568 | West Coast: 714.228.9888 | Fax: 973.846.8567 | www.efficientlightingco.com

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Submitted by MAXWELL LIGHTING & ENERGY			
MAXWELL LIGHTING & ENERGY	**Job Name:** NEXUS BERLIN VILLAGES Unit 24	**Catalog Number:** LDA-48-LED-40-DMV-WH-RF-30-EM-SSM Notes:	**Type:** L MAXWELL20-1602

MOBERN LIGHTING

LDA LED

LED Linear Surface Mount

JOB NAME: **CAT#:** **TYPE:**

APPLICATIONS

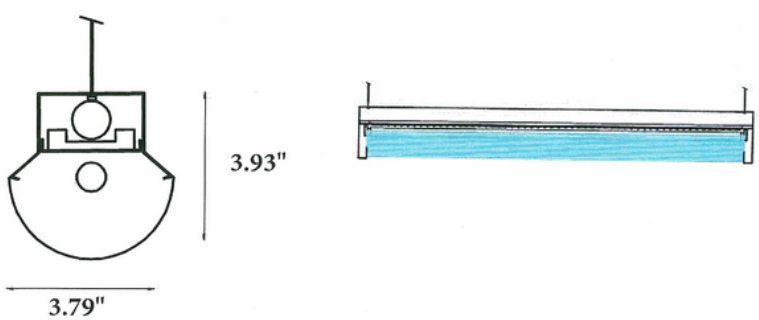
Full body micro silhouette makes a bold statement with a minimal design in post painted matte white finish (consult factory for other finishes). Scaled to the LED module the frosted diffuser surrounds the LEDs for a soft lighting. Fixture can be surface mounted on the wall or ceiling or pendant mounted with specially engineered cable mounting kit.

FEATURES & BENEFITS

- Housing is formed and welded 22 gauge steel, that is chemically treated and powder coated for a beautful finish and to resist corrosion
- Can be mounted individually or in a continuous row
- Ribbed frosted lens is standard
- Knockouts on back and ends accept standard electrical fittings (by others). Consult factory.
- Surface mountable to a wall or ceiling
- Pendant or cable mountable
- Whips, fuses and cord sets. See options page in Buyers' Guide or contact the factory for more.
- $_{C}$ETL$_{US}$ listed for damp locations

DIMENSIONS

-3.93"H x 3.79"W x 23.60"L
-3.93"H x 3.79"W x 47.20"L
-3.93"H x 3.79"W x 94.40"L



Dimensions and specifications subject to change without notice.

Appendix I: PSE&G Will Serve Letter

Public Service Electric & Gas Company

PSE&G

August 5, 2021

NEXUS Property Inc.
Attn: Joseph Kline
1333 Brunswick Pike
Lawrenceville, New Jersey 08648

Re: 1052 Spruce Street
Trenton, Mercer County,
New Jersey

To Whom It May Concern:

Gas and Electric service can be made available for the above project consistent with service requirements and the PSE&G tariffs for gas and electric services.

Please feel free to give this office a call at 1-800-832-0076 if you need additional information.

Sincerely,
PSE&G Construction Inquiry Department

Appendix J: Tables

TABLE 1 - NOISE LEVELS FOR ANTICIPATED VEHICLES AND CONSTRUCTION EQUIPMENT

EQUPMENT TYPE	NOISE LEVELS AT DISTANCE OF 50 FT. (DBA)
Backhoe	78
Compressor (air)	78
Concrete mixer truck	79
Concrete pump truck	81
Dozer	82
Excavator	81
Flat bed truck	74
Front end loader	79
Paver	77
Pick up truck	75
Roller	80
Generator	81
Chain saw	84
Concrete saw	90
Jackhammer	89
Pneumatic Tools	85
Pumps	81

Appendix K: Ewing Lawrence Sewerage Authority Will Serve Letter

EWING-LAWRENCE SEWERAGE AUTHORITY

MERCER COUNTY
600 WHITEHEAD ROAD • LAWRENCEVILLE, NEW JERSEY 08648
TELEPHONE: (609) 587-4061
FAX: (609) 890-1902
WWW.ELSANJ.ORG

August 10, 2021

Joseph D. Kline, VP of Construction
Nexus Properties Inc.,
1333 Brunswick Poke
Lawrenceville, NJ 08648

Re: 1052 Spruce Street, Trenton, NJ

Dear Mr. Kline:

We are in receipt of your "will serve" request. Please be advised that treatment capacity is available for the referenced project at the Authority's Treatment Plant, but it is subject to completion of an engineering review by the Authority's consulting engineer.

In order for the Authority to review the referenced project, an application must be filed with this office. The application package may be obtained from the Authority's website at ELSANJ.com.

If you have any questions or require additional information, please feel free to contact this office.

Very truly yours,

S. Robert Filler
Executive Director

SRF:sd
cc: Christopher Gianotto

Appendix L: Qualifications of the Preparer of the EIS

Nautilus Environmental Group, LLC

RANDY S. KERTES, PG, CPG
PRINCIPAL

RKERTES@NAUTILUSENVGROUP.COM
609.608.6081

EDUCATION

University of Cincinnati, Cincinnati, OH
M.S., Geology, 1995

Rider University, Lawrenceville, NJ
B.S., Geology, 1984

EXPERIENCE

General Qualifications and Current Responsibilities

Mr. Kertes has over 33 years of professional experience in a combination of environmental consulting, land development, permitting and academic fields. He manages a wide range of environmental projects, from initial due diligence work through the completion of soil and groundwater remediation investigations, preparation of remedial action workplans and the issuance of Response Action Outcomes.

Mr. Kertes also assists his clients in the acquisition of local, state and federal land use permits relating to development and redevelopment plans. In addition, he has provided testimony relating to environmental remediation and the minimization of adverse impacts for residential and commercial developments.

Mr. Kertes worked for Ginsburg Development Companies from 2004 through 2008, Hopewell, NJ. He was responsible for: 1) acquiring land for the development of commercial and residential projects in New Jersey, Pennsylvania, and New York; 2) performing municipality-wide environmental constraint studies to determine developable tracts of land for the targeting of prospects; and 3) completing financial analyses for the development of a purchase price based on density, market conditions, sales price and improvements, as well as site costs for construction.

Mr. Kertes has been an Adjunct Instructor at Rider University in the Geological, Environmental & Marine Sciences Department since 1999. Mr. Kertes instructs Environmental Geology, Oceanography, and Sustainability Capstone Seminar classes and serves as a mentor for Rider University juniors and seniors during their thesis research projects as a committee member.

Environmental Site Assessments and Due Diligence

- Assisted real estate attorneys and private and public companies in New Jersey, Pennsylvania, California, Arizona, Massachusetts, Ohio, New York, and the U.S. Virgin Islands in the completion of the due diligence process involving real estate transactions for residential, commercial, and industrial properties.

- Directed the completion of Phase I Environmental Site Assessments on numerous residential, commercial and industrial facilities in accordance with the American Society for Testing and Materials (ASTM) standards. Determined the recognized environmental conditions that potentially affected the property and provided the client with appropriate Phase II tasks to determine the risk and associated remedial costs.

- Directed the completion of Phase II Environmental Site Assessments on commercial and industrial facilities in New Jersey, New York and Pennsylvania investigating recognized environmental conditions. Samples that were collected included soils, groundwater, asbestos, lead paint, and air quality. These sample results aided in the preparation of remedial action work plans and implement remedial actions on soils, groundwater, and other media.

- Completed Preliminary Assessments (PAs) for industrial and commercial facilities in New Jersey in accordance with the Industrial Site Recovery Act (ISRA) and performed remedial soil and groundwater investigations in accordance with New Jersey Administrative Codes (7:26E, Technical Requirements for Site Remediation). These data results aided in the preparation of remedial action workplans and implement remedial actions on soils and groundwater.

- Directed and oversaw the completion of site investigation and remediation activities in accordance with New York State Department of Environmental Conservation (NYSDEC) DER-10 Technical Guidance for Site Investigations and Remediation associated with soil and groundwater remediation projects. Contaminants of concern included heavy metals, chlorinated pesticides, and organic compounds.

Site Planning and Development

- Responsible for acquiring land for the development of commercial and residential projects in New Jersey, Pennsylvania, and New York. Reviewed municipal ordinances and performed municipality-wide environmental constraint studies to determine developable tracts for targeting prospects. Completed financial analyses for the development of a purchase price based on density, market conditions, sales price and improvements, as well as site costs for construction. Prepared and negotiated agreements of sale and related development and closing documents for developable properties.

- Responsible for directing development projects through the municipal planning board approval process in both New Jersey and New York. Responsible for maintaining approval timeframes, budgets, and contractual payments to sellers. Managed and directed outside professionals including legal, insurance, geotechnical, wetlands, civil engineering, environmental, traffic, air, noise, wastewater, potable water, and threatened and endangered species consultants. Reviewed and scrutinized reports from professional consultants and coordinated the development of site development plans for submission and approval by Municipal Boards.

Environmental Permitting and Planning

- Prepared numerous soil erosion and sediment controls plans for watershed restoration projects and land development applications in New Jersey and New York.

- Prepared numerous freshwater wetlands permit applications (both general and individual) for submission to the NJDEP Land Use Regulation Program relating to land development and watershed/wetland restoration projects in New Jersey.

- Prepared numerous flood hazard (formerly stream encroachment) permit application for submission to the NJDEP Land Use Regulation Program relating to land development and site remediation projects in New Jersey.

- Prepared numerous CAFRA permit application for submission to the NJDEP Land Use Regulation Program relating to landfill closure, stream restoration, and shoreline redevelopment projects in New Jersey.

- Completed a Pollution Prevention Plan for an industrial establishment, including chemical process descriptions and delineation of cost-effective solutions for the reduction of emissions to the atmosphere, water, and land.

- Completed one of the first Facility Wide Permits in New Jersey for an industrial textile company involving discharges to air, ground water and surface water, and the disposal of solid waste.

- Completed a Discharge Prevention, Containment and Countermeasure (DPCC) and Discharge Cleanup and Removal (DCR) Plan and Spill Prevention Containment and Countermeasure (SPCC) Plans for industrial and commercial facilities in New Jersey storing and transferring hazardous substances.

- Completed several environmental compliance audits for large commercial and industrial facilities in New Jersey including an analysis of wastewater disposal, air permitting and releases, solid and hazardous waste disposal, above ground and underground storage tanks, land use permitting and regulations, and site remediation compliance.

Environmental Impact Statements

- Implemented environmental impacts statements relating to a variety of commercial properties and residential subdivisions in New Jersey and Pennsylvania. These environmental impact statements included a detailed description and analysis of soil types, topography, geology, vegetation, wildlife, subsurface water, distinctive scenic and/or historic features, and existing development features. Adverse and positive impacts during and after construction relating to soil erosion and sedimentation, flooding and floodplain disruption, degradation of surface water quality, sewage disposal, solid waste disposal, and vegetation destruction were discussed. Lastly, measures utilized for the mitigation of adverse impacts due to the construction activities were described in detail.

- Directed environmental impact statements in New York State in accordance with the State Environmental Quality Review (SEQR) regulations (6 NYCRR Part 617 State Environmental Quality Review) associated with several large multi-million dollar town center redevelopment projects.

- Prepared environmental impact statements and compliance statements supporting NJDEP Land Use permit applications for site remediation and/or land development projects pertaining CAFRA, freshwater wetlands, and flood hazard regulations.

Environmental Constraints Analyses and Habitat Assessment

- Prepared environmental constraints analyses for proposed commercial and residential developments. These analyses included the preparation of the GIS database, including but not limited to, soils, geology, surface water, wetlands, threatened and endangered species, land use, state plan designations, sewer service, slopes, depth to bedrock, vegetation types, and municipal zoning.

- Performed environmental constraints analyses on properties throughout New Jersey, New York, Pennsylvania, and Florida. These analyses included the performance of a site reconnaissance of the subject properties and a review and evaluation of the local municipal zoning, land use, and environmental impact statement rules and regulations relating to the development of land.

- Completed an evaluation of wetland delineations (completed by others) of proposed site development plans for properties in New Jersey. Reviewed original soil survey data, on-site specific information for the technical justification of a realignment of previously established wetland lines and related transitional areas.

- Reviewed NJDEP Landscape data information and managed / directed the evaluation of habitat assessments for the potential presence of wood turtle habitat associated with proposed residential subdivisions.

- Completed an assessment of an urban stream corridor located in Hudson County, New Jersey. Completed a wetland delineation and a habitat assessment associated with a proposed realignment of the stream corridor.

Air Permitting and Compliance

- Prepared air permit applications in New Jersey for industrial and commercial facilities relating to large (i.e., greater than 100 million btu/hr) and small (<100 million btu/hr) industrial boilers (burning #2 fuel oil, #6 fuel oil and natural gas). Applications included the estimation of emission rates in pounds per hour

and tons per year for elements of combustion (i.e., particulate matter, nitrogen oxides, sulfur oxides, carbon monoxide, organic compounds, and carbon dioxide).

- Prepared air permit applications in New Jersey for gasoline and diesel internal combustion engines (i.e., generators). Applications included the estimation of emission rates in pounds per hour and tons per year for elements of combustion (i.e., particulate matter, nitrogen oxides, sulfur oxides, carbon monoxide, organic compounds, and carbon dioxide), organic compounds and hazardous air pollutants.

- Prepared air permit applications for landfill flares. Applications included the estimation of emission rates in pounds per hour and tons per year for methane, carbon dioxide, and non-methane hydrocarbons before and after control devices.

- Prepared annual emission statements for industrial facilities such as petroleum research laboratories, textile dyeing and finishing, landfills, and bulk storage terminals. Emission statements included the collection and analysis of annual usage of fossil fuels and/or process materials and hours of operation for all of the applicable sources at each specific facility.

- Estimated air emissions from organic liquid storage tanks for both fixed roof and floating roof storage vessels.

- Implemented compliance audits on commercial and industrial facilities evaluating compliance with NJDEP air permitting regulations and site-specific air permit requirements for emission sources.

- Prepared a permit application for a solid waste transfer station processing 1,000 tons per day of construction and demolition debris. Collected air samples for particulate matter during a one-week period during the processing of solid waste for the development of a site-specific particulate matter control device operating at six air changes per hour within a 10,000 square foot building.

- Prepared air permit for bench scale and pilot operations for the conversion of wood pellet feed stock and natural gas into gasoline for automobile use. Application included the estimation of emission rates in pounds per hour and tons per year for elements of combustion (i.e., particulate matter, nitrogen oxides, sulfur oxides, carbon monoxide, organic compounds, and carbon dioxide) and hazardous air pollutants.

- Assisted a large textile dyeing, processing, and finishing facility in the development of a facility-wide air permit (and fulfillment of Federal Title V requirements) including the development and implementation of a site-specific data tracking system to monitor air emissions and the subsequent submission of annual air emission statements.

- Prepared air permit applications using NJDEP's RADIUS software system.

Wastewater Management Plans

- Prepared wastewater management plan (WMP) amendment submissions for proposed commercial and residential developments not in conformance with the existing wastewater management planning area designations. WMP amendment submissions included a description and impacts of the proposed development to the region.

- Completed the environmental analysis as required by Executive Order 109 (EO 109) to support the WMP amendment application as required by NJDEP. These analyses included the description and mitigation of impacts relating to riparian corridors, threatened and endangered species, hydraulic modification, nonpoint source loading analysis, point source loading analysis, and a depletive/consumptive water use analysis.

Groundwater Modeling

- Completed recharge and nitrate dilution analyses for various soils types and geologic formations in the coastal plain and highlands of New Jersey for the completion of a NJDEP "50 Or More Certification" for non-sewered residential developments.

- Completed recharge and nitrate analyses for various soils types and geologic formations in the coastal plain of New Jersey for the completion of a NJDEP's Carrying Capacity Model for nitrates from septic systems for non-sewered residential developments.

- Performed groundwater recharge calculations comparing the pre- and post-development land uses because of proposed residential or commercial developments. Groundwater recharge calculations were utilized to support subsequent nitrate dilution modeling.

Design of Best Management Practices for Stormwater Management

- Prepared nonpoint source loading analyses relating to proposed commercial and residential developments. Pre- and post-development land use characterizations were prepared using GIS to calculate the increase or decrease of nonpoint source loads such as total suspended sediment, nitrogen, phosphorus, lead, copper, zinc, and total petroleum hydrocarbons.

- Designed Best Management Practices (BMPs) for the mitigation of the increase of nonpoint source loads because of the development of residential and commercial properties. These BMPs include, but are not limited to, extended detention basins, bio-retention basins, and grassy swales. These BMPs were designed to conform to the proposed development plans for the projects.

- Performed nonpoint source loading analyses on properties throughout New Jersey.

Wastewater (Subsurface Disposal Systems)

- Collected soils and groundwater data relating to the design of subsurface wastewater disposal systems for commercial and residential developments. Work included the collection of soil descriptions, permeability analyses, basin flooding tests, and aquifer tests including pump and slug tests resulting in the determination of aquifer transmissivity, hydraulic conductivity, and specific yields.

Hazardous Waste Characterization and Disposal

- Performed waste disposal classifications for Resource Conservation and Recovery Act (RCRA, 40 CFR Part 260 et. seq.), types wastes generated from contaminated soil cleanups and industrial facilities in New Jersey and oversaw the proper delineation and disposal of solid and hazardous waste.

Solid Waste Facility Permitting

- Project Manager for the Hainesport Industrial Rail Road, a transfer station in Burlington County, NJ that processes 1,000 tons of construction and demolition waste daily, shipping material by rail to out-of-state landfills for disposal. Reviewed municipal, state and federal permitting regulations. Prepared Solid Waste Permit application for submission to NJDEP. Submission included an Environmental Health & Impact Statement, Operations & Maintenance Plan, Engineering Report, and Engineering Plan. Also prepared Air Permit application for submittal to NJDEP.

Wetland Design, Restoration and Permitting

- Directed numerous wetland investigations within Somerset, Mercer, Burlington, Hunterdon, Cumberland, and Cape May Counties involving the redevelopment or development of land for the subsequent acquisition of NJDEP Freshwater Wetland General and Individual Permits, Flood Hazard General and Individual Permits, and Waterfront Development Permits.

- Designed and completed numerous riparian buffer restoration projects in New Jersey in accordance with the Federal 319(h) grant program. These designs included the restoration of lake and stream shorelines utilizing "soft" bioengineering procedures, such as the installation of herbaceous, shrubs, and tree materials.

- Implemented a Wetland Mitigation Bank Preliminary Evaluation project on a several properties in central Mercer County. A site specific GIS database inventory was developed and incorporated available digital data including, but not limited to watershed designation, topography, land cover, wetlands, wetland

buffers, soils, streams and stream classifications (e.g., freshwater two-non trout and category one). In addition, data were collected and reviewed pertaining to: 1) local mitigation banks; 2) ecological data on the site from NJ Geo Web; 3) and results of a data request from NJDEP's Natural Heritage Program regarding the presence of sensitive species and/or habitats at or near the properties. Mr. Kertes implemented a site investigation to document the types of wetland soils, wetland plants, wetland fauna, and hydrology that characterize the properties. Lastly, an analysis of the data collected was completed and a report was prepared summarizing the findings based on the development of the site-specific GIS database and the site investigation. This report also include a feasibility assessment for the potential development of a wetland mitigation bank.

- Evaluated a pre-existing wetland delineation and threatened / endangered species technical documents as related to a proposed residential subdivision in Somerset County. Prior work (by others) delineated wetlands and identified wood turtle habitat resulting in the establishment of 150-foot wetland transition area buffers. An independent evaluation, implemented by Mr. Kertes, of the site soils showed that previously documented hydric soils was misidentified due to the dark green color of the parent bedrock (argillite). The site was located within a headwater area where surface water swales only contained flowing water immediately after precipitation events. Wood turtle habitats require perennial flowing clean water, which were not present at the site. Lastly, the site was dominated by the presence of a red oak, red cedar, shagbark hickory and white ash forest (with few red maple). A resubmission of civil design plans with updated environmental constraint maps reestablished appropriate 50-foot wetland transition area buffers and the lack of wood turtle habitat allowed for the approval of a fully conforming five-lot subdivision. Mr. Kertes' reevaluation was reviewed by NJDEP Land Use representatives and subsequently approved.

- Acquired a NJDEP Freshwater Wetlands and Flood Hazard General Permits for a 12-acre property located in Bordentown Township, New Jersey. This site was previously evaluated and a freshwater wetlands and stream encroachment permit were issued associated with a convenience store development project. These previous approvals expired and a new proposed application was submitted to NJDEP under a pre-application meeting venue. Nautilus was able to document that a suspected creek that traversed the site was present due only to several stormwater outfalls constructed and discharged to the site during an expansion of a NJDOT project in 1942. Subsequent technical studies and meetings with NJDEP Land Use representatives allowed for approvals under updated wetland delineations, flood hazard studies and general permit approvals for a new proposed development plan. The updated NJDEP approvals and civil design plans will result in an improvement of water quality after development, as the uncontrolled stormwater will be routed through a detention basin.

- Completed a wetland design and restoration of a 1,100-foot section of a heavily degraded stream corridor in Hudson County, New Jersey. Design included the installation of an aquatic zone, a low marsh habitat, high marsh habitat, and an upland tree/shrub area utilizing "soft" bioengineering procedures such as the installation of herbaceous, shrubs, and tree materials.

Undergraduate Instruction, Research and Mentoring

- Responsible for teaching Environmental Geology, Oceanography and Sustainability Capstone Seminar. The focus of the undergraduate instruction involves the presentation and subsequent classroom discussions relating to chapter summaries, special lectures, case studies and guest speakers. These discussions and debates and intertwining current events and from my personal experiences as an environmental consultant expose my students a unique well-balanced combination of academic lectures covering basic theory with the application of said theory to practical issues of the day.

- Responsible for teaching Environmental Geology. Topics for this class include, but are not limited to, introduction to environmental geology and planetary geology; plate tectonics; earthquakes, and volcanoes; surface processes (e.g., streams, coasts, mass movements, ice and glaciers, wind and deserts); water, soil, rocks and minerals as a resource; energy resources; waste disposal (e.g., water pollution, and air pollution); and environmental law and land use planning.

- Responsible for teaching Oceanography. Topics for this class include, but are not limited to, plate tectonics and the ocean floor; marine provinces; marine sediments; water and sea water; air-sea

interaction; ocean circulation; waves and water dynamics; tides; coastal processes; marine habitats; animals of the pelagic / benthic environments; marine resources; and marine environmental concerns.

- Responsible for teaching Sustainability Capstone Seminar focusing on topics relating to the protection and sustainability of natural environmental resources and evaluation of applicable federal, state, and local regulations. Topics for this class include, but are not limited to, sustainability concepts relating to geology, soils, surface water, riparian buffers, groundwater / groundwater recharge, wastewater disposal / reuse, wetlands, threatened and endangered species and energy / climate change.

- Responsible for mentoring juniors and seniors as a committee member during the completion of their research projects and senior thesis projects as a requirement of graduation. Past research topics, include water quality sampling, lake dredging feasibility, nonpoint source loading analyses, and watershed investigations. The following are examples of selected mentored projects.

    - Chemical and Sedimentological Analysis of Centennial Lake Sediment: An Analysis for the Use of Dredging to Help Restore the Lake Ecosystem, Sarah Faugno
    - Robert L. Martin Lake Watershed, Hamilton Township, New Jersey, Karen Antozzeski
    - Water Chemistry of Colonial Lake, Lawrenceville, New Jersey, Jennifer Fager
    - Land Use History of Colonial Lake Watershed and Potential Nonpoint Source and Point Source Implications, Heidi Burns
    - Centennial Lake Restoration, Watershed Protection, Initial Public Outreach Program, Lawrenceville, New Jersey
    - Analysis of Different Parameters of Centennial Lake during the Summer of 1998, Jennifer Sliko
    - Land Use, Potential Pollutant Sources and Stormwater Quality of a Portion of the Centennial Lake Watershed, Rider University Campus, Lawrenceville, New Jersey, Shauna Lee
    - Twenty-Four Hour Tidal Fluctuations of Centennial Lake, Alanna Sanders.
    - Natural Resource Inventory of the Lawrenceville Campus of Rider University, Sustainability Capstone 2018 Class

SELECTED PRESENTATIONS AND PUBLICATIONS

Redevelopment and Natural Habitat Restoration of 78 Corporate Center, Lebanon Borough, Hunterdon County, New Jersey, AIPG Regional Meeting, Burlington, VT, September 2019.

Kertes, R.S., Positives, Negatives and Economics of Fracking, Guest Speaker, Sustainability Studies Seminar Capstone Class, Rider University, 2018.

Kertes, R.S., The Application of the Trela-Douglas Nitrate Dilution Model and the Utilization of Geographical Information Systems for the Determination of Lot Size, Guest Speaker, Sustainability Studies Seminar Capstone Class, Rider University, 2018.

Kertes, R.S., Druckenbrod, D., Positives, A Partial Wetland Delineation Demonstration along a Portion of the Little Shabakunk Creek on Lawrenceville Campus of Rider University, Field Demonstration, Sustainability Studies Seminar Capstone Class, Rider University, 2018.

Kertes, R.S. and Wysocki, T., A Direct Push Demonstration along an Upland Portion of the Little Shabakunk Creek on Lawrenceville Campus of Rider University, Field Demonstration, Sustainability Studies Seminar Capstone Class, Rider University, 2018.

Kertes, R.S., The Redevelopment an Natural Habitat Restoration of the 78 Corporate Center, Lebanon Borough, Hunterdon County, New Jersey, NJDEP Land Use Regulation Meeting, 2017.

Kertes, R.S., Proposed Development of Block 115, Lots 5.01, 5.02 and 5.03 and the Acquisition of NJDEP General Permits of a Manmade Stormwater / Drainage Ditch, Bordentown Township, Burlington County, New Jersey, NJDEP Land Use Regulation Meeting, 2017.

Kertes, R.S., Understanding Surface Water Protection, Stormwater Management, and Potable Water Supplies in New Jersey, Guest Speaker, Department of Geological, Environmental and Marine Sciences, Rider University, 2014.

Kertes, R.S., Evaluation of a recently Constructed Bioretention Basin, Princeton Township, Mercer County, New Jersey, Field Trip Director, Department of Geological, Environmental and Marine Sciences, Rider University, 2014.

Browne, K.M. Hyatt, L., and Kertes, R.S., Holistic Loosestrife Management: Rider University's Restored Centennial Lake Riparian Buffer, Rider University, Lawrenceville, NJ, 2013 Watershed Congress Along the Schuylkill, Pottstown, PA, 2013.

Kertes, R.S., Thompson, L., McCaddin, C., and Kurisko, R., Complicating Factors Relating to Parent Bedrock, Riparian Corridors, and Anthropogenic Impacts in the Identification of Wetlands for a Minor Subdivision, Montgomery Township, Somerset County, NJ: A Case Study**,** Society of Wetland Scientists Mid-Atlantic Chapter 2012 Conference.

Kertes, R.S., L. Chibani, Ph.D., and M. M. Sadat, Ph.D. Frank's Creek and Dead Horse Run Restoration, A Restoration Project that Benefits Local Economies and the Environment, Abstract, Passaic River Symposium V, 2012.

Amira A. Fahim, Ph.D., L. Chibani, Ph.D., and R.S. Kertes, Engineering Design of Frank's Creek and Dead Horse Run Restored Riparian Corridor, Abstract, Passaic River Symposium V, 2012.

Kertes, R.S., Marcellus Shale – A Case Study, Environmental Geology, Rider University, 2011.

Kertes, R.S, Municipal Land Use Approval Process, Environmental Geology, Rider University, 2011.

Kertes, R.S., Deepwater Horizon – A Case Study, Oceanography and Environmental Geology, Rider University, 2010-2011.

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LICENSES, CERTIFICATIONS, MEMEBERSHIPS, AND AWARDS

Professional Geologist (PG) – State of Tennessee
Certified Professional Geologist (CPG) – American Institute of Professional Geologists

40-Hour OSHA Hazardous Waste Site Operations and Safety

Rider University Science Advisory Board (Former Member)
Rider University Science Walk-of-Fame, 2008
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